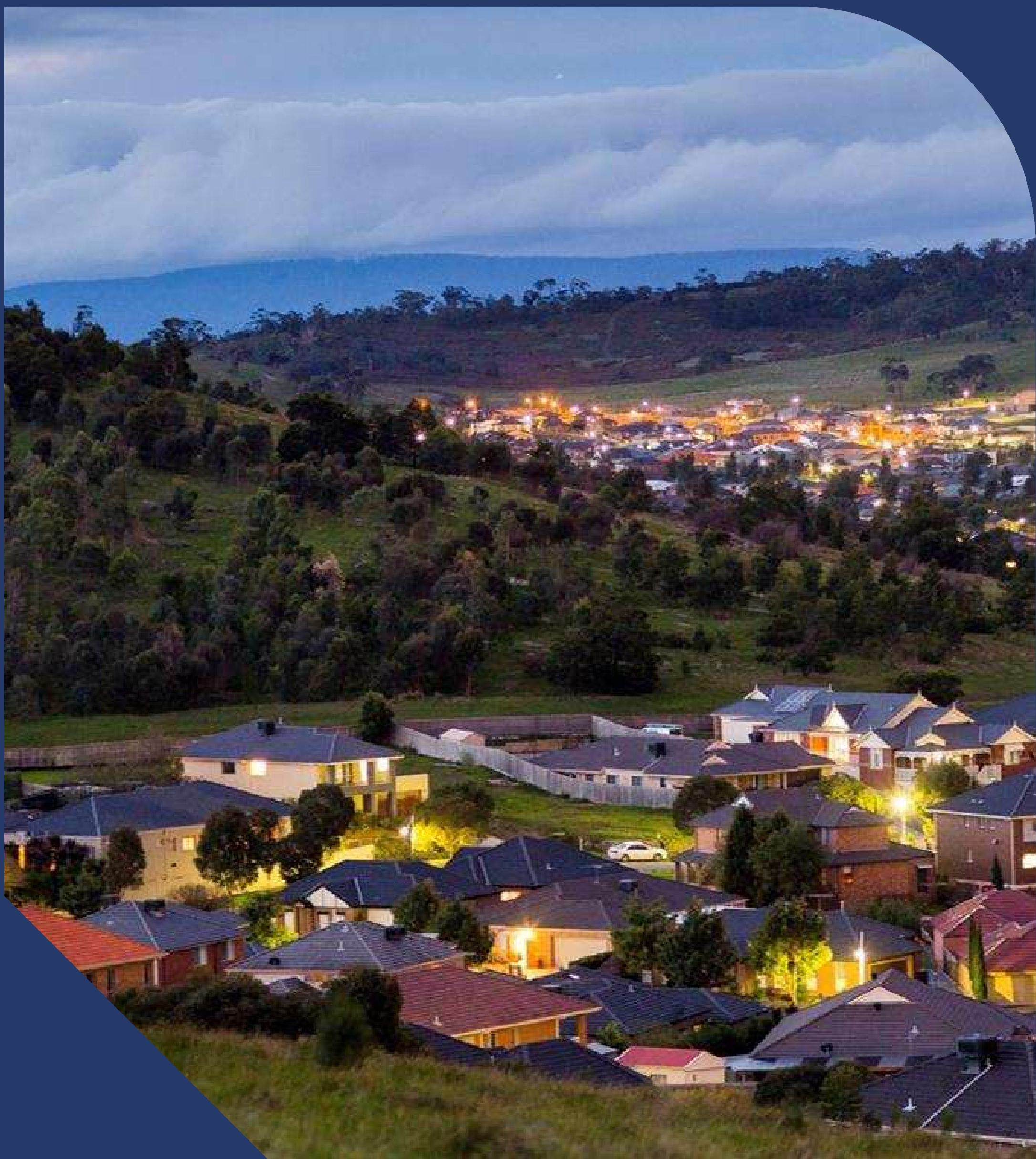
Tower replacement on the Heywood to Alcoa Portland 500kV line

Regulatory Investment Test for Transmission

Project Assessment Conclusions Report

Monday, 29 December 2025



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1. Executive summary

AusNet owns and operates the electricity transmission network in Victoria, which transports electricity from large coal, gas and renewable generators across Victoria and interstate, to terminal stations that supply large customers and the distribution networks.

The Regulatory Investment Test for transmission (**RIT-T**) is an economic cost-benefit test used to assess and rank potential investments capable of meeting an 'identified need'. The purpose of the RIT-T 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 National Electricity Market (**the preferred option**).

This Project Assessment Conclusions Report (**PACR**) is the final stage of the RIT-T process, which follows the publication of:

- the Project Specification Consultation Report (**PSCR**), which explained the identified need to replace towers on the Heywood Terminal Station to Alcoa Portland 500 kV Nos. 1 and 2 lines (HYTS- APD), which are at risk of failure if no remediation actions are performed; and
- the Project Assessment Draft Report (**PADR**), which set out the cost benefit analysis and identified the preferred option.

AusNet received no non-network option or submissions in response to the PSCR consultation and no submissions in response to the PADR.

In the PADR, AusNet followed the AER's RIT-T application guidelines to analyse and rank the economic cost and benefits of the investment options considered in this RIT-T. We explained that the preferred option (Option 1) is to replace the existing corroding transmission towers with galvanised[1] steel lattice towers that comply with current design standard AS/NZS 7000. At the time, this option entailed replacement in a staged approach, starting with the most corroded structures in the circuit, which involves the replacement of nine towers. The PADR explained that this option:

- Maintains the reliability of supply to the Alcoa smelter at Portland Victoria, a major customer of AusNet.
- Reduces the safety risks to the public and the environment.
- Demonstrates our ongoing commitment to meeting our safety regulatory obligations.

Since the publication of the PADR, we have been undertaking further engineering assessment and analysis. This includes detailed assessment of the tower condition and tower modelling using structural software to confirm their remaining lives. We have also considered a refurbishment option (Option 3), which previously was not feasible because of outage constraints.[2] This Option is more costly than Option 1, and has higher residual risks.

While Option 1 still remains the preferred option, we have made an amendment to the scope that reduces the cost compared to the previous solution, noting that the costs of both solutions have increased markedly since the PADR was published. Under the revised scope, AusNet has removed T609 and added T623 due to its worse structural condition. Given the passage of time since the publication of the PADR, we have also reviewed and updated the input data and assumptions, including the Value of Customer Reliability and data from AEMO's 2025 Inputs, Assumptions and Scenario Report.

In accordance with the RIT-T, this PACR confirms that Option 1, with its updated scope, is expected to maximise the present value of the net economic benefit to all those who produce, consume and transport electricity in the NEM. The updated scope for Option 1 is summarised in the appendix.

Any comments or feedback in this document should be emailed to rittconsultations@ausnetservices.com.au. In the subject field, please reference 'RIT-T PACR Tower Replacement HYTS-APD'. Telephone enquires can be directed to Francis Lirios on (03) 9695 6000.

[1] AusNet review of galvanising and painting options determined that the former provides better economic outcome by avoiding regular re-coating (i.e., spot re-painting) through the life of the tower.

[2] In September this year, discussion with Alcoa yielded a one-hour extension on the outage recall time from 2-hours to 3-hours which made tower refurbishment feasible for structures that need its conductors and/or groundwires unloaded.

2. Background

Heywood Terminal Station (**HYTS**) is located in south western Victoria and is the main terminal station interconnecting the Victorian 500 kV transmission back bone with the South Australian transmission network via a double circuit 275 kV line. HYTS also supplies the Portland aluminium smelter via a double circuit 500 kV line as shown in Figure 1.

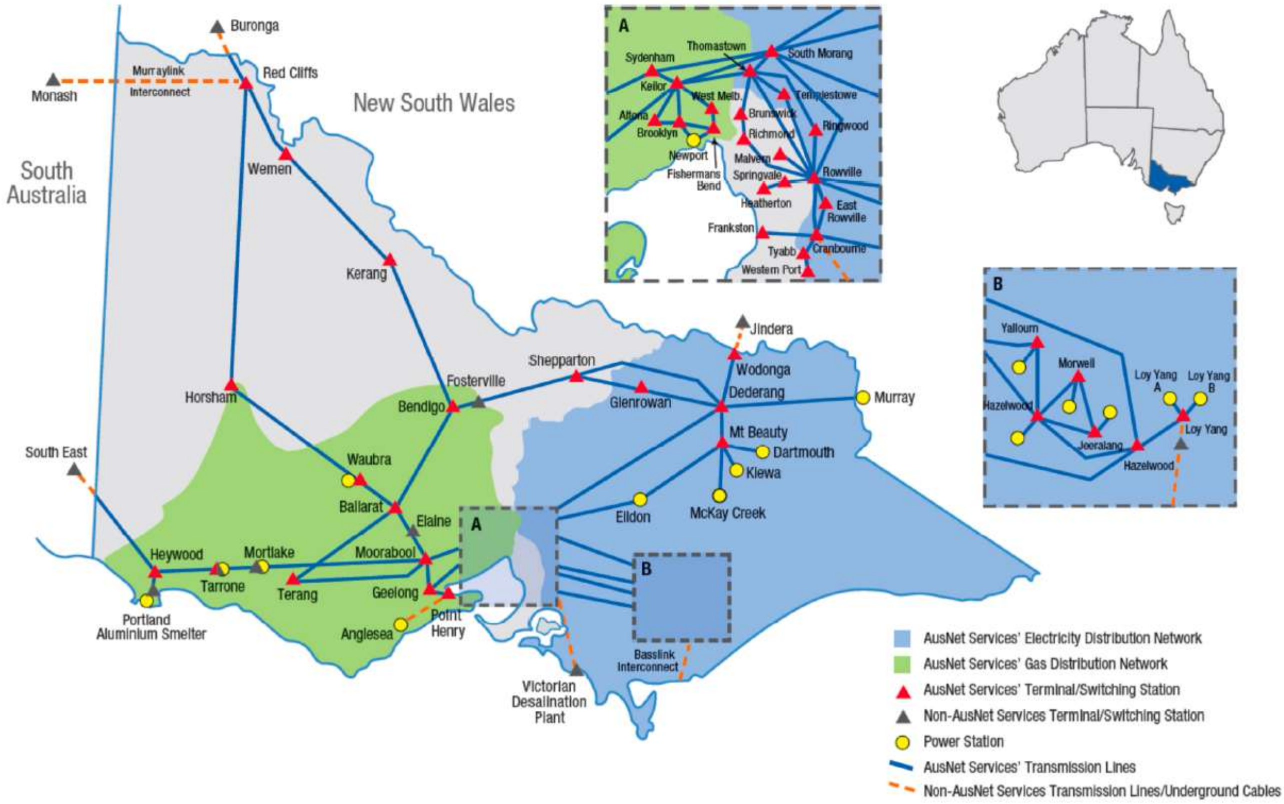

Figure 1: AusNet's transmission network, including the Heywood to Portland Aluminium Smelter

The main load supplied from HYTS is the Portland Aluminium smelter. A reliable and secure supply to the Portland Aluminium smelter is of high importance as significant cost impacts could result if the supply is interrupted.

Twenty-eight[3] towers (i.e., T597, T603 to T628B) along the Heywood Terminal Station to Alcoa Portland 500 kV Nos. 1 and 2 lines (**HYTS- APD**) have been identified as being in need of corrosion management including member and bolt replacement works. The coating systems on these structures have deteriorated to a point where section loss has occurred due to the severe corrosivity of the environment.

AusNet must comply with its regulatory obligations, which include the Electricity Safety Act 1998. This Act requires AusNet to minimise hazards and risks to the safety of any person as far as reasonably practicable.

AusNet has developed risk-based models to assist with the application of formal risk assessments as required by the Electrical Safety (Management) Regulations 2019 (the **Regulations**). Implementation of AusNet's selective replacement strategy, addressing both failure frequency and consequences, is necessary to maintain public safety in accordance with the Regulations, and to assist in meeting the safety objectives set out in AusNet's MissionZero strategy.

In relation to the towers along HYTS-APD, replacing the transmission towers, as opposed to refurbishing them, has the safety benefit of being constructed to modern standards AS/NZS7000 and reducing the risks of a failure from a high-intensity downdraft wind event that may occur in the area. In this RIT-T, AusNet must identify which option maximises the net economic benefit, having regard to the capital and operating expenditure for each option and the residual risks compared to the BAU option.

[3] The increase of three structures was identified during deep down analysis of the towers' condition and anticipated remaining lives.

3. Identified need

3.1. Description

Twenty-eight towers on the HYTS-APD line are currently exhibiting an increased risk of failure as a result of corrosion from the coastal environment in which the line is situated. A failure of any of these towers could potentially lead to a catastrophic safety incident and almost certainly would impact the ability of the Portland aluminium smelter to operate.

A staged replacement program is envisaged as the best way to mitigate the increasing risk of asset failure. The program will start at the poorest condition end of the circuit (i.e., closest to the coast), and then progressively move inland. The first phase of the program is focused on nine towers - T628B; T628; T627; T626; T625; T624; T623; T621; and T618. A recent condition assessment survey found that these assets need 'urgent replacement'.

In 2001 and 2002, towers on the HYTS-APD line were painted to reduce the effects of corrosion and have since been maintained through member and bolt replacements on an as-needed basis. From an asset management perspective, it is no longer economic to refurbish the towers by replacing corroded members and bolts and then repainting the structures. The location and function of corroded members and bolts means that replacement has a high probability of scope creep and cost blow-outs, as the interconnected members are also likely to require replacement.

The figure below shows examples of corrosion of tower members on the HYTS-APD line.

Figure 2: Examples of corroded tower members on the HYTS-APD line

In addition to the need for remedial action to mitigate the risks and consequences of tower failure on the HYTS-APD line, AusNet must also comply with its regulatory obligations, which include the Electricity Safety Act 1998. This Act requires AusNet to minimise hazards and risks to the safety of any person as far as reasonably practicable. In relation to the towers on the HYTS-APD line, compliance obligations under this Act (and other regulations) contribute to the identified need.

3.2. Assumptions

In assessing the identified need, AusNet must consider the risk of asset failure and the likelihood of potential adverse consequences eventuating. In addition to undertaking this analysis, AusNet has adopted the following further assumptions to quantify the potential costs of tower failure.

3.2.1. Supply risk costs

In the event of a tower failure on the HYTS-APD line, customers will experience a loss of supply event. The supply risk costs are the probability of an event occurring multiplied by the cost of the unserved energy that would result from that event. The cost of unserved energy is determined by the Value of Customer Reliability (**VCR**), which is estimated by the AER and depends on the customers supplied by the HYTS-APD line, which notably includes the Portland aluminium smelter. AusNet notes that the AER's RIT-T application guideline requires a RIT–T proponent to use the VCR estimates that the AER publishes and updates annually. AusNet notes that the Portland aluminium smelter may be significantly impacted commercially if there is a sustained outage.

The VCR estimate for an industrial load is estimated by the AER to be $34.08 per kWh for industrial customers[4]. It is important to note that the AER's VCR estimates represent the aggregate value which customers place on standard outages. This encompasses outages which are relatively localised and last up to twelve hours in duration. The VCRs factor in the additional value (if any) a customer may place on an outage occurring in peak times (defined as occurring between 7-10 am and 5-8 pm) or during a particular season (summer or winter). Standard outages are the outages customers are most likely to experience and can be caused by issues relating to distribution, transmission and/or generation.

As a tower failure on the HYTS-APD line may lead to an extended outage for the Portland aluminium smelter, care must be taken in applying the VCR for industrial load as this may substantially overstate the value of the unserved energy. We note, however, that the AER substantially reduced the VCR estimate in latest assessment. For the purpose of this PACR, we have adopted the VCR estimate for industrial customers, which is closely aligned with the estimate adopted in the PADR, which was $31 per kWh.

3.2.2. Health and safety risks

The Electricity Safety Act 1998 requires AusNet to design, construct, operate, maintain, and decommission its network to minimise hazards and risks to the safety of any person as far as reasonably practicable or until the costs become disproportionate to the benefits from managing those risks. By implementing this principle for assessing safety risks from asset failures, AusNet uses:

- a value of statistical life to estimate the benefits of reducing the risk of death;[5]
- a value of lost time injury;[6] and
- a disproportionality factor.[7]

AusNet's approach to assessing the risk and consequence of asset failure, including the use of a disproportionality factor, is consistent with the guidance provided by the AER.[8]

3.2.3. Asset reinstatement costs

In the event of a tower failure, costs will be incurred in replacing the failed assets (and any consequential damage to other assets). The risk of this impact may vary for different credible options and, therefore, should be factored into the cost-benefit assessment.

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4 AER, 2025 Values of Customer Reliability Annual Adjustment, December 2025.

5 Department of the Prime Minister and Cabinet, Australian Government, "Best Practice Regulation Guidance Note: Value of statistical life," available at https://www.pmc.gov.au/resource-centre/regulation/best-practice-regulation-guidance-note-value-statistical-life.

6 Safe Work Australia, "The Cost of Work-related Injury and Illness for Australian Employers, Workers and the Community: 2012-13," available at https://www.safeworkaustralia.gov.au/system/files/documents/1702/cost-of-work-related-injury-and-disease-2012-13.docx.pdf.

7 Health and Safety Executive's submission to the1987 Sizewell B Inquiry suggesting that a factor of up to 3 (i.e. costs three times larger than benefits) would apply for risks to workers; for low risks to members of the public a factor of 2, for high risks a factor of 10. The Sizewell B Inquiry was a public inquiry conducted between January 1983 and March 1985 into a proposal to construct a nuclear power station in the UK.

8 Australian Energy Regulator, "Industry practice application note for asset replacement planning," available at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/industry-practice-application-note-for-asset-replacement-planning.

4. Potential Credible Options

This section describes the 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 the RIT-T is to identify the credible option for addressing an identified need that maximises 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.

As the identified need in this case arises from the condition of towers on the HYTS-APD line, however, there are no credible non-network options that could address the identified need. The HYTS-APD line is critical in providing supply to the Portland Smelter. In addition, the HYTS-APD line is an important component of the transmission network that may be required to support offshore wind projects. For these reasons, it is essential to maintain the existing service capability provided by the HYTS-APD line.

Figure 3 provides an aerial view of the proposed project.

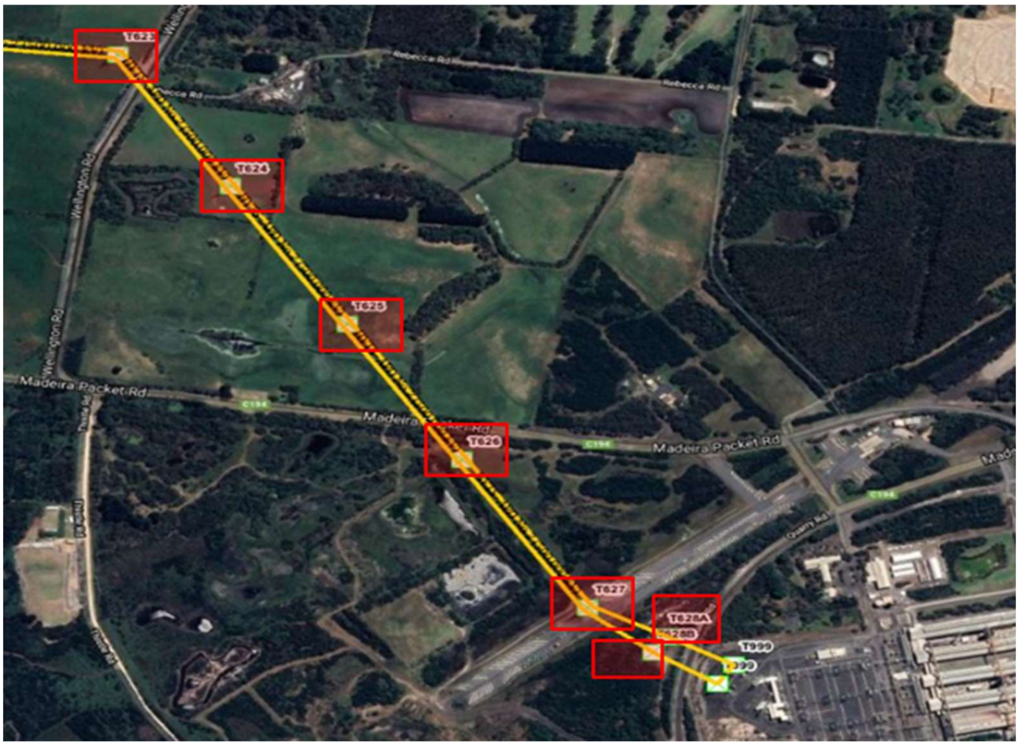

Figure 3: Aerial view of project sites

The options considered in this PACR are unchanged from the PADR, although we have updated the scope of Option 1. We have also included a refurbishment option (Option 3), that was not feasible the time of the PADR because of outage constraints. Therefore, we consider with following options:

- Option 1: Replace corroded towers with new steel lattice towers
- Option 2: Replace corroded towers with steel transmission poles
- Option 3: Refurbish corroded towers

None of these options is expected to have an inter-regional impact. Each option is discussed in further detail below.

4.1. Option 0: Do Nothing/BAU

The Do Nothing/BAU option assumes that AusNet would not undertake any investment, outside of the normal operational and maintenance processes. The Do Nothing/BAU option establishes the base level of risk and provides a benchmark for comparing other credible options. Whilst the direct capital cost of this option is zero, the continued exposure to residual risks means that this option has significant costs associated with it. In relation to this project, 'do nothing' or 'BAU' is not a credible option given the existing condition of the towers and our safety obligations.

4.2. Option 1: Replace corroded towers with new steel lattice towers

This option would address the nine worst corroded tower by replacing these with galvanised steel lattice towers that comply with current overhead line design standard AS/NZS 7000.

Since significant bypass works are already required under this option, and all overhead infrastructure on the last strain section is in fair to poor condition in such a corrosive environment, wholesale replacement is the most cost-effective and efficient approach for the last strain section. This strategy avoids future replacement disruptions within the next 10-15 years and ensures long-term reliability by upgrading insulators, conductors, ground wires, and towers in one coordinated effort.

The key benefit associated with this option is that it removes all risks associated with the failure of degraded assets, as well as reducing the risks associated with a failure from a high intensity wind event. By eliminating the risk of a tower and overhead asset failure, AusNet also reduces the risk of a public health and safety incident occurring, noting that there are two road crossings along this section of the line.

The total capital cost of this option is estimated to be approximately $61.3 million in present value terms. The operating expenditure arising from this option is not expected to be materially different to the BAU option.

4.3. Option 2: Replace corroded towers with steel transmission poles

Option 2 involves replacing the nine corroded transmission towers with 16 galvanised steel transmission poles. Under this option, the existing double circuit towers (T627 – T623, T621 and T618) and two single circuit towers (T628 and T628B) would be retired and replaced with AS/NZS7000 compliant single circuit steel poles. The key benefit of this option is that it would eliminate the risk of a tower collapse event due to corrosion, in accordance with the identified need.

The lowest cost construction methodology has been adopted for this option, which involves replacing the towers sequentially using two by-pass structures per tower, and then progressing to the next tower. While this is the lowest cost construction method, with direct costs of $36.3 million in present value terms, the construction method allows only for the replacement of insulators, but not conductors and groundwires[9]. As a consequence, this option has significant residual risk compared to Option 1.

This option also has the following additional disadvantages compared to Option 1:

- It requires the redesign and construction of new footings for the steel poles, causing increased disruption to the local community and landowners.
- Additional planning permits would be required, potentially introducing delays compared to Option 1.
- As this option does not include the replacement of conductors or groundwire, these assets will need to be replaced at some point in the next 10-15 years, leading to increased disruption to the community and the Alcoa smelter.

[9] To replace the conductors and groundwires while keeping Alcoa energised, all 9-towers need to have a bypass installed simultaneously. This alternative construction method was considered but was eventually discounted due to having a higher cost than Option 1. This is discussed further in the section.

As noted in relation to option 1, the operating expenditure arising from this option is not expected to be materially different to the BAU option.

AusNet considered an alternative scope for this option that involved a different construction method that would allow the replacement of conductors and groundwires to be undertaken at the same time as the tower replacement. While this construction method avoided the higher residual risks associated with Option 2 compared to Option 1, the construction costs were found to be higher than Option 1, which rendered it uneconomic. On that basis, the lower cost construction method was adopted as the preferred scope for Option 2.

4.4. Option 3: Refurbish corroded towers

This option involves refurbishing the nine towers that have been identified as being in poor or very poor condition, rather than replacing the structures. The required works for this option would include:

- Install access tracks to allow workers and plant to reach the structures.
- Install hardstands for cranes and other plant items.
- Replace corroded members and bolts from the towers.
- Use cranes to unload the conductors and groundwires from the towers to safely enable the replacement of corroded components.
- Use bypass if the unloading of the conductors and groundwires takes longer than 3 hours, to prevent Aluminium pots from hardening.
- Multiple outages will be required for the circuits to connect the bypass to the existing line.
- Apply paint on the towers to arrest further corrosion on the towers.
- Every 2 years, conduct spot-painting. Every 10 years, complete tower painting.

Similar to Option 2, this nature of this option would not make it economic to replace the conductors and groundwire at the same time. The cost of this option has been assessed as $74.8 million, in present value terms, which includes significant on-going maintenance costs as noted above. A further consideration with this option is that there is additional risk[10] compared Options 1 and 2, as the integrity of the structures would be inferior to the replacement options.

[10] Examples of additional risks include not being able to meet the 3-hour recall time; risks associated with aged/degraded assets having its corroded components replaced; and the risk of further delays due to the need for detailed tower modelling to formulate safe replacement methods of corroded members and bolt replacement.

5. Economic assessment of the credible options

5.1. Market benefits

Clause 5.16.4 (b)(6)(iii) of the NER requires the RIT-T proponent to consider whether each credible option provides the classes of market benefits described in clause 5.15A.2(b)(4). To address this requirement, the table below discusses our approach to each of the market benefits listed in that clause for both credible options. This approach is unchanged from that presented in the PADR.

Table 1: Analysis of Market Benefits

Class of Market Benefit	Analysis
(i) changes in fuel consumption arising through different patterns of generation dispatch;	The credible options will not have any impact on fuel consumption.
(ii) changes in voluntary load curtailment;	The credible options are not expected to lead to changes in voluntary load curtailment.
(iii) changes in involuntary load shedding with the market benefit to be considered using a reasonable forecast of the value of electricity to consumers;	The credible options are expected to have an impact on involuntary load shedding, by affecting the risk of asset failure. The cost benefit analysis will therefore consider the impact of each option on load shedding. AusNet applies probabilistic planning techniques to assess the expected cost of unserved energy for each option.
(iv) changes in costs for parties, other than the RIT-T proponent, due to differences in: *(A) the timing of new plant;* *(B) capital costs; and* *(C) the operating and maintenance costs;*	There is not expected to be any difference between the credible options.
(v) differences in the timing of expenditure;	There is not expected to be any difference between the credible options.
(vi) changes in network losses;	The credible options will not result in changes to electrical energy losses.
(vii) changes in ancillary services costs	The credible options will not have any impact on ancillary service costs.
(viii) competition benefits	The credible options will not provide any competition benefits.
(ix) any additional option value (where this value has not already been included in the other classes of market benefits) gained or foregone from implementing the credible option with respect to the likely future investment needs of the National Electricity Market;	There will be no impact on the option value in respect of the likely future investment needs of the NEM.
(x) any other class of market benefit determined to be relevant by the AER.	There are no other classes of market benefit that are relevant to the credible options.

5.2. Methodology

The purpose of this section is to provide a high-level explanation of our methodology for identifying the preferred option. As a general principle, it is important that the methodology takes account of the identified need and the factors that are likely to influence the choice of the preferred option. As such, the methodology is not a 'one size fits all' approach, but one that is tailored to the particular circumstances under consideration.

In general, the identified need for a project can be described in terms of two types of risk:

- supply risk, where an asset failure may lead to a loss of supply to customers; and
- non-supply risk, which captures the potential consequences of an asset failure, which include safety risk and damage to adjacent assets or property, as discussed in sections 3.2.2 and 3.2.3.

In relation to supply risk, we adopt a probabilistic planning methodology which considers the likelihood and severity of critical network conditions and outages. As explained in section 3.2.1of this PACR, the expected annual cost to customers associated with supply risk is calculated by multiplying the expected unserved energy (the expected energy not supplied based on the probability of the supply constraint occurring in a year) by the value of customer reliability (VCR).

In relation to non-supply risks, our approach monetises this risk by multiplying the following parameter estimates:

- the probability of asset failure;
- the cost of consequence of the asset failure;
- the likelihood of the consequence given the failure has occurred; and
- the number of assets to which the analysis relates.

For this project, the cost benefit analysis that underpins the RIT-T assessment identifies the most cost-effective option to mitigate the sum of the supply and non-supply risks (the aggregate 'risk-cost').

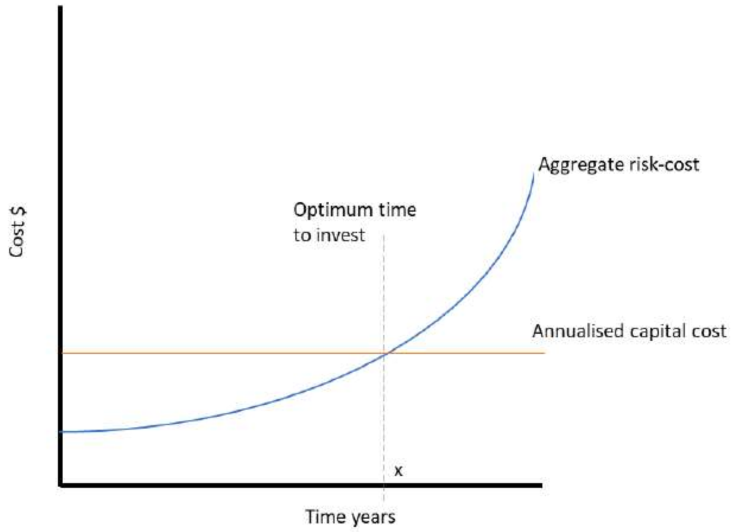

Figure 4: Increasing risk-cost over time and optimal project timing[11]

In the absence of remedial action, the above figure shows how the aggregate risk-cost will typically increase as the risk of asset failure increases over time. The optimal timing of the preferred option occurs when the annualised capital cost of that option (or the operating cost for a non-network option) is equal to the aggregate risk-cost.

The preferred option delivers the lowest total cost to customers, which is the sum of the cost of implementing that option and any residual risk-cost. The identification of the preferred option is complicated by the fact that the future is uncertain and that various input parameters are 'best estimates' rather than known values. Therefore, the RIT-T analysis must be conducted in the face of uncertainty.

To address uncertainty in our cost benefit assessment of the credible options, we use sensitivity analysis and scenario analysis. In accordance with the AER's application guidelines, we use sensitivity analysis to assist in determining a set

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11 This figure is reproduced from the AER's Industry practice application note, Asset replacement planning, January 2019, figure 8. This figure assumes that the option eliminates the aggregate risk-cost in full, which may not be the case.

of reasonable scenarios.[12] The relationship between sensitivity analysis and scenarios is best explained by the AER's practice note as follows:[13]

> *Scenarios should be constructed to express a reasonable set of internally consistent possible future states of the world. Each scenario enables consideration of the prudent and efficient investment option (or set of options) that deliver the service levels required in that scenario at the most efficient long run service cost consistent with the National Electricity Objective (NEO).*
>
> *Sensitivity analysis enables understanding of which input values (variables) are the most determinant in selecting the preferred option (or set of options). By understanding the sensitivity of the options model to the input values a greater focus can be placed on refining and evidencing the key input values. Generally the more sensitive the model output is to a key input value, the more value there is in refining and evidencing the associated assumptions and choice of value.*
>
> *Scenario and sensitivity analyses should be used to demonstrate that the proposed solution is robust for a reasonable range of futures and for a reasonable range of positive and negative variations in key input assumptions. NSPs should explain the rationale for the selection of the key input assumptions and the variations applied to the analysis.*

In applying sensitivities and scenarios to our cost benefit assessment, we have regard to the different circumstances that may eventuate that would affect the choice of the preferred option. Where our analysis shows that an option is clearly preferred, we will not undertake further testing. This approach is consistent with clause 5.15A.2(b)(2) of the Rules, which states that the RIT–T must not require a level of analysis that is disproportionate to the scale and likely impact of each credible option considered.

In preparing this RIT-T, we have also had regard to AEMO's 2025 Inputs, Assumptions and Scenarios Report (IASR) and its draft 2026 Integrated System Plan (ISP), which was published in December 2025. We note that the scenarios adopted by AEMO in its 2025 IASR are focused particularly on the matters that are relevant to major transmission investments, rather than smaller transmission investments of the type considered in this report. Accordingly, we have adopted an approach that is appropriate to the specific circumstances described in this report relating to the identified need and the credible options.

5.3. Key variables and assumptions

Table 2 below lists the key variables and assumptions applied in the economic assessment, which are essential inputs to our methodology for the purpose of this PACR. The table also sets out the upper and lower bounds of the range of forecasts adopted for each of these variables. The lower bound and upper bound estimates are used to undertake sensitivity testing and scenario analysis. The detailed results of this modelling are provided in section 5.4.

In relation to the discount rate, we have adopted central, upper and lower bound estimates that are consistent with AEMO's IASR. We note that discount rates are subject to change, particularly in the current economic climate. As such, the rates employed in this PACR are considered reasonable in exploring the impact of different rates on the cost-benefit assessment of the competing options to address the identified need.

In relation to the supply risk costs, the expected costs could be affected by a combination of changes in the probability and consequences of asset failure, which in turn are affected by estimates of the VCR and expected unserved energy. Similarly, the cost parameter description recognises that different aspects of the risk-cost could be varied to deliver a higher or lower expected cost. For example, an increase in the risk-cost could reflect an increased risk of asset failure or an increase in the consequence of an asset failure, or a combination of the two. The same observation applies to a reduction in the risk-cost, which is also considered in the sensitivity testing.

12 AER, Application guidelines, Regulatory investment test for transmission, October 2023, page 44.
13 AER, Asset replacement planning, January 2019, page 36.

Table 2: Key variables and assumptions

Variable / assumption	Lower bound	Central estimate	Upper bound
Cost of involuntary supply interruption	15% reduction in central estimate	VCR for transmission-connected very large business load as determined by the AER	15% increase in central estimate
Safety cost	Central Estimate	Value of statistical life of $4.5 million[14]	Central estimate
Safety cost Disproportionate Factor	Central estimate	Factor of 3	Central estimate
Option cost	15% reduction in central estimate	In-house cost estimates using detailed and high-level project scopes	15% increase in central estimate
Real pre-tax discount rates	3.0%[15]	7.0%[16]	10%[17]
Probability or consequence of asset failure	15% reduction in central estimate	Historical asset performance data, plus forecasts based on condition monitoring and CBRM modelling	15% increase in central estimate

5.4. Cost benefit analysis

The economic analysis allows comparison of the economic costs and benefits of each option to rank the options and to determine the optimal timing of the preferred option. It quantifies the capital costs and the cost of the residual risk for each option, to determine a total cost for each option. The net economic benefit for each credible option is the total cost associated with that option minus the costs of the Do Nothing/BAU option.

Section 5.4.1 presents the NPV analysis using central estimates, while Section 5.4.2 presents the sensitivity testing and scenarios analysis.

5.4.1. Net present value analysis- central estimates

The table below sets out the present value net economic benefit of each credible option, being:

- Option 1: Replace corroded towers with new steel lattice towers
- Option 2: Replace corroded towers with steel transmission poles
- Option 3: Refurbish corroded towers.

Table 3: Costs and net economic benefit for each option in present value terms ($M, real 2025)[18]

	Option 0 – Do Nothing/BAU	Option 1 – Replace corroded towers with new steel lattice towers	Option 2 – Replace corroded towers with steel transmission poles	Option 3 – Refurbish corroded towers
Capital expenditure	$0m	$61.3m	$36.3m	$56.6m
Operating expenditure	N/A	N/A	N/A	$18.3m
Unserved energy, safety and collateral damage	$143.7m	$0	$41.4m	$42.9m
Replacement costs	$28.6m	$0	$8.5m	$8.5m
Total costs	**$172.3m**	**$61.3m**	**$86.3m**	**$126.2m**
Net benefit compared to BAU	N/A	$111.0m	$86.1m	$46.1m

14 Best Practice Regulation Guidance Note Value of statistical life, December 2014, escalated.
15 AEMO, Inputs, Assumptions and Scenario Report 2025, July 2025, page 158.
16 Ibid.
17 Ibid.
18 Totals may not add due to rounding.

The replacement cost in the above table accounts for the expected costs of replacing towers in the event of an asset failure. The analysis shows that Options 1 and 2 deliver significant net benefits compared to the BAU option, whereas Option 3 has the highest costs having regard to the additional risks relating to this option. The primary difference between Options 1 and 2 is that the latter has lower capital expenditure, but much higher residual risk-related costs which more than offsets these savings. As a consequence, Option 1 is expected to provide a substantially higher net benefit than Option 2 and Option 3, being $111.0 million compared to $86.1 million and $46.1 million respectively, in present value terms.

5.4.2. Sensitivity analysis and scenario testing

The table below shows the net economic benefit for each credible option applying sensitivity analysis. We note that low or high risk of asset failure has a similar effect to varying the VCR.

Table 4: Net economic benefit for each option in present value terms ($M, real 2025)[19]

	Central Case	High failure risk or consequence	Low failure risk or consequence	High option cost	Low option cost	High discount rate	Low discount rate
Option 1	$111.0m	$132.6m	$89.5m	$101.8m	$120.2m	$78.6m	$176.6m
Option 2	$86.1m	$101.4m	$70.7m	$80.6m	$91.6m	$63.1m	$132.3m
Option 3	$46.1m	$61.3m	$31.0m	$37.7m	$54.6m	$29.9m	$78.9m

Source: AusNet

The sensitivity analysis shows that Option 1 is preferred to Options 2 and 3 for each sensitivity. The magnitude of the net benefit is also material, especially compared to the project costs. This analysis provides very strong evidence to support Option 1 being the preferred option.

For completeness, we have considered whether scenario analysis is required to further test this proposition. The current IASR scenarios – which relate principally to changes in the wholesale generation market – are not relevant to this investment decision. Specifically, the 2025 IASR outlines three core scenarios to model the future of Australia's energy system. These scenarios represent different pathways for economic growth, decarbonization, and energy transition, which are:

- **Accelerated Transition (formerly Green Energy Industries)**
  - Rapid decarbonisation to limit global temperature rise to ~1.5°C by 2100.
  - Strong and consistent government policy signals for decarbonisation.
  - High levels of renewable energy deployment and consumer investment in energy efficiency and consumer energy resources (CER).
  - Significant uptake of hydrogen and biomethane.
  - Higher economic growth compared to other scenarios.
- **Step Change**
  - Fast-paced transition to net zero emissions by 2050.
  - Strong government policies and consumer action drive rapid decarbonisation.
  - High levels of renewable energy deployment and electrification.
  - Moderate levels of CER coordination and demand-side participation.
  - Achieves Australia's current policy requirements and Paris Agreement commitments.
- **Slower Growth (formerly Progressive Change)**
  - Gradual transition with weaker economic growth and slower decarbonisation.
  - Lower levels of economic growth and industrial activity.
  - Reduced consumer investment in CER and energy efficiency measures.
  - Lower coordination of CER and demand-side participation.

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19 Totals may not add due to rounding.

- Achieves Australia's current policy requirements but with less investment after 2030.
- Corresponds to a global temperature rise of ~2.6°C by 2100.

AEMO notes that the above scenarios provide a broad range of plausible futures to test investment risks and opportunities in the energy transition.

In contrast to the ISP scenarios in the IASR, for this asset replacement project the scenarios described below comply with the requirements of the RIT-T application guidelines, noting that they describe different sets of states of the world that are relevant to the investment decision that is being addressed in this PACR. In reaching this conclusion, we note that the AER's RIT-T Application Guidelines explains:[20]

> Under the RIT–T instrument, the number and choice of reasonable scenarios must be appropriate to the credible options under consideration. Specifically, the choice of reasonable scenarios must reflect any variables or parameters that are likely to affect:
>
> - the ranking of the credible options, where the identified need is for reliability corrective action, inertia network services or system strength services. In these cases, only the ranking (as opposed to the sign) of credible options' net economic benefits is important; and
> - the ranking or sign of the net economic benefit of any credible option where the identified need is not for reliability corrective action, inertia network services or system strength services. In these cases, the preferred option must have a positive net economic benefit.
>
> The appropriate number and choice of reasonable scenarios could vary depending on the credible options under consideration. This recognises that NER clause 5.15A.2(b)(2) requires RIT–T proponents to apply the RIT–T to a level of analysis that is proportionate to the scale and likely impact of each credible option.

Table 5 below defines the scenarios that we have adopted for the purpose of this PACR. In the scenario analysis, we have varied the VCR by +/-15% in the upper and lower bound cases.

Table 5: Definition of reasonable scenarios

Scenario	Failure risk or consequence	Value of customer reliability	Option Cost	Discount rate
Central Case	Central estimate	Central	Central estimate	Central estimate
Weak economic growth	Central estimate	Lower bound	Lower bound	Lower bound
High delivery costs	Central estimate	Upper bound	Upper bound	Upper bound

Table 6 below provides a brief description of each scenario.

Table 6: Guide to scenarios

Scenario	Description
Central Case	This scenario adopts the central estimate for each variable in the economic assessment. It represents the most likely outcome.
Weak economic growth	This scenario reflects weak economic growth, following a period of higher interest rates compared to those during and immediately prior to the Covid-19 pandemic. It has lower costs of delivering the option, a low VCR and a lower discount rate.
High delivery costs	This scenario represents an economic rebound and continuing supply side issues. It is characterised by higher costs of delivering the option, a high VCR and an upper bound discount rate.

The table below shows the NPV of the options for each scenario. Scenarios may incorporate variations in multiple input factors to the NPV.

[20] Australian Energy Regulator, Application guidelines – Regulatory investment test for transmission, August 2020, page 41.

Table 7: Net benefit for each scenario in present value terms ($M, real 2025)

	Central case	Weak economic growth	High delivery costs
Option 1	$111.0m	$156.0m	$86.9m
Option 2	$86.1m	$116.1m	$70.0m
Option 3	$46.1m	$66.3m	$33.7m

Source: AusNet

The scenario analysis confirms the findings from our sensitivity analysis, which is that Option 1 is strongly preferred to Options 2 and 3 for each scenario.

5.5. Preferred option

Our preferred option (Option 1) is to replace the nine corroded transmission towers with galvanised steel lattice towers that comply with current design standard AS/NZS 7000. The construction will commence in a staged manner that prioritises the highest risk towers.

This option:

- Maintains the reliability of supply to the Alcoa smelter at Portland Victoria, a major customer of AusNet.
- Reduces the safety risks to the public and the environment.
- Demonstrates our ongoing commitment to meeting our safety regulatory obligations.

In accordance with the RIT-T, this option is expected to maximise the present value of the net economic benefit to all those who produce, consume and transport electricity in the NEM. This finding is unchanged from the PADR.

5.6. Capital and operating costs of the preferred option

The incremental change in operating expenditure between the preferred option (Option 1) and BAU is expected to be zero, i.e. this option is not expected to involve any change in the operating expenditure from BAU operating expenditure.

The total direct capital expenditure of Option 1 is approximately $60.18million ($, nominal), which is slightly below the total costs expressed in present value terms. The principal capital expenditure elements, expressed in nominal terms, are:

- Design, $2.34 million;
- Internal labour, $3.29 million;
- Materials, $2.67 million;
- Plant and equipment, $0.07 million;
- Contracts, $47.25 million; and
- Other, including decommissioning $4.56 million.

6. Satisfaction of the RIT-T

In accordance with clause 5.16.4(k)(9)(iv) of the Rules, we certify that the proposed option satisfies the regulatory investment test for transmission. The table below shows how each of these requirements have been met by the relevant section of this report. As no submissions were received in response to the PADR, 5.16.4(v)(2) is not applicable to this PACR.

Table 8: Compliance with regulatory requirements

Requirement				Section
5.16.4(v) The project assessment draft report must set out the matters detailed in the project assessment draft report as required under paragraph (k) (below)[21]:				Noted. See details below
(1)	a description of each credible option assessed;			Section 4
(2)	a summary of, and commentary on, the submissions to the project specification consultation report			No submissions were received.
(3)	a quantification of the costs, including a breakdown of operating and capital expenditure, and classes of material market benefit for each credible option;			Section 4
(4)	a detailed description of the methodologies used in quantifying each class of material market benefit and cost;			Sections 5.1 and 5.2
(5)	reasons why the RIT-T proponent has determined that a class or classes of market benefit are not material;			Section 5.1
(6)	the identification of any class of market benefit estimated to arise outside the region of the Transmission Network Service Provider affected by the RIT-T project, and quantification of the value of such market benefits (in aggregate across all regions);			Not applicable
(7)	the results of a net present value analysis of each credible option and accompanying explanatory statements regarding the results);			Section 5.4.
(8)	the identification of the proposed preferred option;			Section 5.5
(9)	For the proposed preferred option identified under subparagraph (8), the RIT-T proponent must provide:			
		(i)	details of the technical characteristics;	Section 4.2 and Appendix
		(ii)	the estimated construction timetable and commissioning date;	Appendix
		(iii)	if the proposed preferred option is likely to have a material inter-network impact and if the Transmission Network Service Provider affected by the RIT-T project has received an augmentation technical report, that report; and	Not applicable
		(iv)	a statement and the accompanying detailed analysis that the preferred option satisfies the regulatory investment test for transmission	Section 5.5
(10)	if each of the following apply to the RIT-T project:			

21 Although this provision refers to the project assessment drat report, it is applicable to this PACR by virtue of clause 5.16.4(v)(1).

Requirement	Section
(i) the estimated capital cost of the proposed preferred option is greater than $100 million (as varied in accordance with a cost threshold determination); and (ii) AEMO is not the sole RIT-T proponent, the RIT reopening triggers applying to the RIT-T project.	Not applicable

Appendix – Technical characteristics

Project description

The project involves the replacement of all 7 towers in the last strain section of the 500 kV overhead line from Heywood Terminal Station to Alcoa Smelter in Portland, Victoria, and 2 towers further down the line, located in different strain sections. The scope includes the replacement of all components of the overhead lines and towers in the last strain section and designed to the current Australian and New Zealand Standard, AS/NZS 7000.

As much as possible, the existing footings will be retained based on the design investigations completed as part of the tower resilience study conducted over the last three years, indicating that these are appropriate for the higher reliability design.

The planned commencement date of the works is January 2026, for completion and commissioning by March 2027.

Scope inclusions

The scope includes the following:

- Site establishment which includes vegetation removal where needed, and creation of access tracks.
- Erection of bypass using monopoles on both sides of the existing 500 kV HYTS-APD circuit.
- String the monopoles with phase conductors and groundwire, one by-pass will support OPGW.
- Remove the existing phase conductors, groundwire, OPGW and insulators from the corroded towers.
- Dismantle existing lattice towers, and if needed strengthen or replace the existing foundations.
- Install new galvanised towers on the reinforced or new foundations.
- Install new conductors, groundwires, OPGW and insulators on the new towers along the last strain section of the line, i.e., T628 & T628B to T623.
- Establish connection between existing tower T622 and new tower T623, and between new towers T628A & T628B and APDs rack/gantry structures.
- Dismantle the bypass structures.
- Re-establish the site.

Scope changes from PADR

The scope change compared to the PADR involves the following adjustments:

- Descope T609 and add T623: T609 has been removed from the scope, and T623 has been added due to its worse structural condition.
- Upgrade of 3 transmission tower footings: The new scope includes upgrading the footings of three transmission towers.
- These changes prioritise higher-risk towers closer to the coastline and aim to fulfill regulatory commitments while optimising costs and safety.

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