Transgrid

People. Power. Possibilities.

Maintaining Reliable Supply to North West Sydney

RIT-T Project Specification Consultation Report

Region: Greater Sydney

Date of issue: 26 February 2025

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Executive summary

Transgrid is applying the Regulatory Investment Test for Transmission (RIT-T) to options for maintaining reliable supply in North West Sydney. Publication of this Project Specification Consultation Report (PSCR) represents the first step in the RIT-T process.

The Vineyard Precinct is part of the North West Priority Growth Area, an area identified by the NSW Government for new development. Stage 1 of the Vineyard area was rezoned in December 2017 and essential infrastructure such as roads, sewage and distribution infrastructure (provided by Endeavour Energy) has been delivered. Vineyard Precinct is now growing rapidly in line with the Stage 1 growth targets of 2,300 new homes and 7,000 residents.

Our power system studies show that this new development is resulting in rapid load growth to the area supplied by Transgrid's Vineyard 330/132 kV Bulk Supply Point (BSP). This load growth is forecast to cause the reactive margin at Vineyard BSP to drop to below one percent of the maximum fault level at the Vineyard 330 kV and 132 kV busbars.

Schedule 5.1.8 of the National Electricity Rules (NER) requires that the reactive margin (expressed as a capacitive reactive power (in MVAr)) must not be less than one percent of the maximum fault level (in MVA) at the connection point. The present network is unable to achieve this reactive margin in the future based on the latest demand forecasts. Shedding of load will be required to maintain this reactive margin at times of higher loads.

This RIT-T therefore examines various network and non-network options to address voltage stability to ensure compliance with the requirements of the NER and provide the greatest net benefit to the market.

Identified need: maintaining reliable supply to North West Sydney in light of rapid load growth

The identified need for this RIT-T is to maintain reliable supply in North West Sydney by managing voltage stability constraints which are forecast to arise due to rapid demand growth. If the constraints associated with load growth in North West Sydney are unresolved, it could result in the interruption of a significant amount of electricity supply.

Schedule 5.1.8 of the NER requires that the reactive margin at a connection point must not be less than one percent of the maximum fault level at the connection point. Our power system studies show that the rapid load growth in the Vineyard Precinct will cause the reactive margin at Vineyard BSP to drop to below one percent of the maximum fault level at the Vineyard 330 kV and 132 kV busbars from summer 2025/26.

We have therefore commenced this RIT-T to assess options to ensure the above NER requirements continue to be met in North West Sydney with forecast demand increases.[1]

[1] As part of a joint planning initiative with Endeavour Energy, a separate RIT-T is in progress to address load growth in the Western Sydney region ("Meeting demand growth in the Western Sydney Aerotropolis 'Priority Growth Area'")

Two credible network options have been identified

We have identified two credible network options that meet the identified need from a technical, commercial, and project delivery perspective.[2] These options are summarised in Table E-1 below.

The credible network options for this RIT-T all focus on improving the reactive margin at Vineyard BSP.

Table E-1: Summary of the credible options

Option	Description	Estimated capex ($2024-25)	Expected timing
1	Loop-in Line 26 to Vineyard BSP	$44.5 million	2028/29
2	Install shunt capacitors at Vineyard BSP then loop-in line 26 at a later date.	$86.9 million	2028/29

Non-network options may also be able to form credible options for this RIT-T

We consider that non-network options may be able to assist with meeting the identified need, either as standalone options or in combination with network options. At this stage we consider that possible solutions could include but are not limited to:

- demand management
- battery energy storage systems (BESS)
- generators in the region (embedded or grid-connected); and
- reactive power support.

We encourage parties to make written submissions regarding the potential of non-network options to satisfy, or contribute to satisfying, the identified need for this RIT-T. The technical characteristics for non-network options are outlined in section 4 of this PSCR.

Option 1 delivers highest net economic benefits and will meet relevant regulatory obligations

Implementing Option 1 by 2028/29 will not only satisfy relevant regulatory obligations set out in the NER and NSW reliability standards, it will also maintain voltage stability in North West Sydney for the long term.

Option 1 delivers the highest net economic benefits in all scenarios, meeting the identified need at a lower cost than Option 2. Accordingly, Option 1 has been identified as the preferred Option.

Draft conclusion

The optimal commercially and technically feasible option presented in this PSCR – Option 1 (loop-in Line 26 to Vineyard BSP) – is the preferred option to meet the identified need and maintain reliable supply in North West Sydney. Moving forward with this option is the most prudent and economically efficient solution to ensure NER requirements and NSW reliability standards are met in the long term.

[2] As per clause 5.15.2(a) of the NER.

The estimated capital expenditure associated with this option is $44.5 million (+/- 25 per cent). Routine operating and maintenance costs relating to planned activities are approximately $222,500 per year.

Option 1 is found to have a positive net market benefit under the weighted scenario.

We have also conducted sensitivity analysis to assess the robustness of the economic assessment to key assumptions (changes in capital costs and discount rates). This sensitivity analysis confirmed that Option 1 being the preferred option is a robust outcome.

The works are expected to be undertaken between 2024/25 and 2028/29. Planning, design, development and procurement (including completion of the RIT-T) will occur between 2024/25 and 2025/26, while project delivery and construction will occur in 2026/27. All works are expected to be completed by 2028/29.

Exemption from preparing a Project Assessment Draft Report

Subject to additional credible options being identified during the consultation period, publication of a Project Assessment Draft Report (PADR) is not required for this RIT-T as we consider its investment in relation to the preferred option to be exempt from that part of the process under NER clause 5.16.4(z1). Production of a PADR is not required due to:

- the estimated capital cost of the proposed preferred option being less than $54 million;[3]
- the PSCR states:
  - the proposed preferred option, together with the reasons for the proposed preferred option
  - the RIT-T is exempt from producing a PADR; and
  - the proposed preferred option and any other credible option will not have a material market benefit for the classes of market benefit specified in clause 5.15A.2(b)(4), with the exception of market benefits arising from changes in voluntary and involuntary load shedding;
- the RIT-T proponent considers that there were no PSCR submissions identifying additional credible options that could deliver a material market benefit; and
- the PACR must address any issues raised in relation to the proposed preferred option during the PSCR consultation.

We consider the investment in relation to Option 1 meets these criteria and therefore that we are exempt from producing a PADR under NER clause 5.16.4(z1).

In accordance with NER clause 5.16.4(z1)(4), the exemption from producing a PADR will no longer apply if we consider that an additional credible option that could deliver a material market benefit is identified during the consultation period. Accordingly, if we consider that any additional credible options are identified, we will produce a PADR which includes an NPV assessment of the net market benefit of each additional credible option.

Should we consider that no additional credible options were identified during the consultation period, we intend to produce a PACR that addresses all submissions received, including any issues in relation to the proposed preferred option raised during the consultation period, and presents our conclusion on the preferred option for this RIT-T.

[3] Varied from $43m to $54m based on the AER Final Determination: Cost threshold review, November 2024.

Submissions and next steps

We welcome written submissions on materials contained in this PSCR. Submissions are due on 3rd of June 2025 and should be emailed to our Regulation team via regulatory.consultation@transgrid.com.au.[4] In the subject field, please reference 'Maintaining Reliability in North West Sydney PSCR'.

At the conclusion of the consultation process, all submissions received will be published on our website. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. Subject to additional credible options being identified during consultation, we anticipate publication of a PACR in mid-2025.

[4] We are bound by the *Privacy Act 1988 (Cth)*. In making submissions in response to this consultation process, we will collect and hold your personal information such as your name, email address, employer and phone number for the purpose of receiving and following up on your submissions. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. See Privacy Notice within the Disclaimer for more details.

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1. Introduction

We are applying the Regulatory Investment Test for Transmission (RIT-T) to options which manage voltage stability to maintain reliable supply around the Vineyard area in North West Sydney. Publication of this Project Specification Consultation Report (PSCR) represents the first step in the RIT-T process.

The Vineyard Precinct is part of the North West Priority Growth Area, an area identified by the NSW Government for new development.[5] Stage 1 of the Vineyard area was rezoned in December 2017 and essential infrastructure such as roads, sewage and distribution infrastructure (provided by Endeavour Energy) has been delivered. Vineyard Precinct is now growing rapidly in line with the Stage 1 growth targets of 2,300 new homes and 7,000 residents.

Our power system studies show that this new development is resulting in rapid load growth to the area supplied by Transgrid's Vineyard 330/132 kV Bulk Supply Point (BSP). This load growth is forecast to cause the reactive margin at Vineyard BSP to drop to below one percent of the maximum fault level at the Vineyard 330 kV and 132 kV busbars.

Schedule 5.1.8 of the National Electricity Rules (NER) requires that the reactive margin (expressed as a capacitive reactive power (in MVAr)) must not be less than one percent of the maximum fault level (in MVA) at the connection point. The present network is unable to achieve this reactive margin in the future based on the latest demand forecasts. Shedding of load will be required to maintain this reactive margin at times of higher loads.

This RIT-T therefore examines various network and non-network options to address voltage stability to ensure compliance with the requirements of the NER and provide the greatest net benefit to the market.

1.1. Purpose of this report

The purpose of this PSCR[6] is to:

- set out the reasons why Transgrid proposes that action be taken (the 'identified need')
- present the options that Transgrid currently considers to address the identified need
- outline the technical characteristics that non-network options would need to provide
- summarise how we have assessed the options for addressing the identified need
- present the cost benefit assessment of all options for meeting the identified need
- identify the preferred option under the RIT-T assessment, and
- allow interested parties to make submissions and provide input to the RIT-T assessment.

1.2. Submissions and next steps

Transgrid welcomes written submissions on materials contained in this PSCR. Submissions are particularly sought on the credible options presented and from potential proponents of non-network options that could meet the technical requirements set out in this PSCR. Submissions are due on 3rd of June 2025.

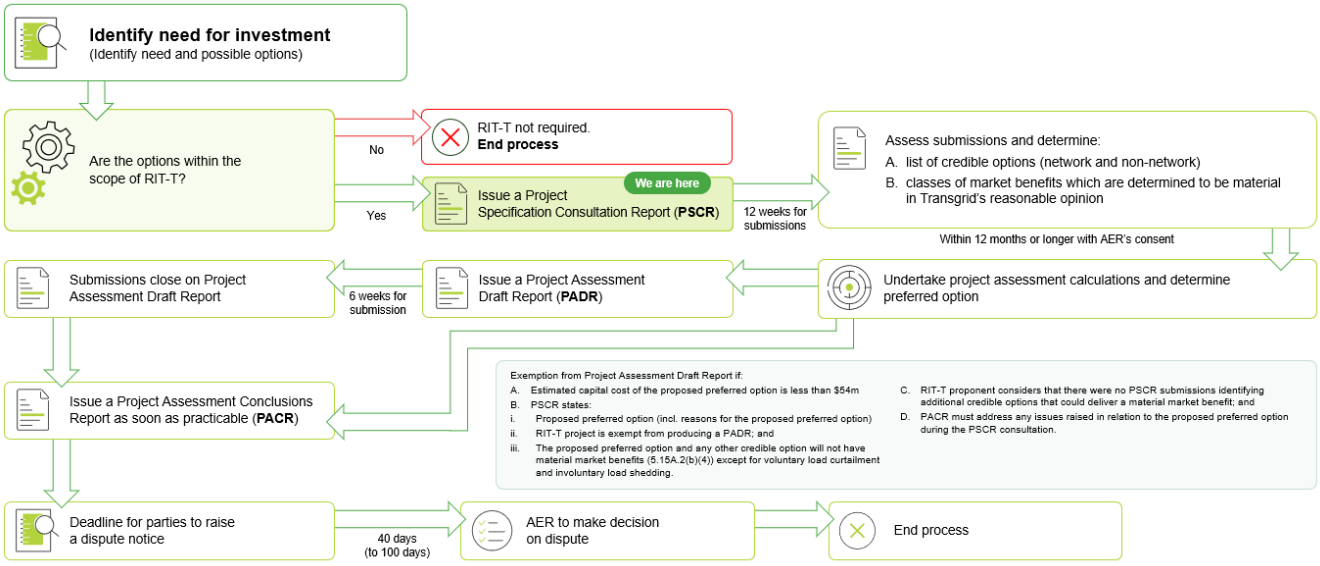
[5] NSW Department of Planning and Environment, Vineyard.
[6] See Appendix A for the National Electricity Rules requirements.

Submissions should be emailed to Transgrid's Regulation team via regulatory.consultation@transgrid.com.au.[7] In the subject field, please reference 'Maintaining Reliability in North West Sydney PSCR.'

At the conclusion of the consultation process, all submissions received will be published on Transgrid's website. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement.

Should we consider that no additional credible options were identified during the consultation period, we intend to produce a Project Assessment Conclusions Report (PACR) that addresses all submissions received including any issues in relation to the proposed preferred option raised during the consultation period. Subject to no additional credible options being identified, a PACR is expected to be published by mid-2025.

Figure 1-1 This PSCR is the first stage of the RIT-T process



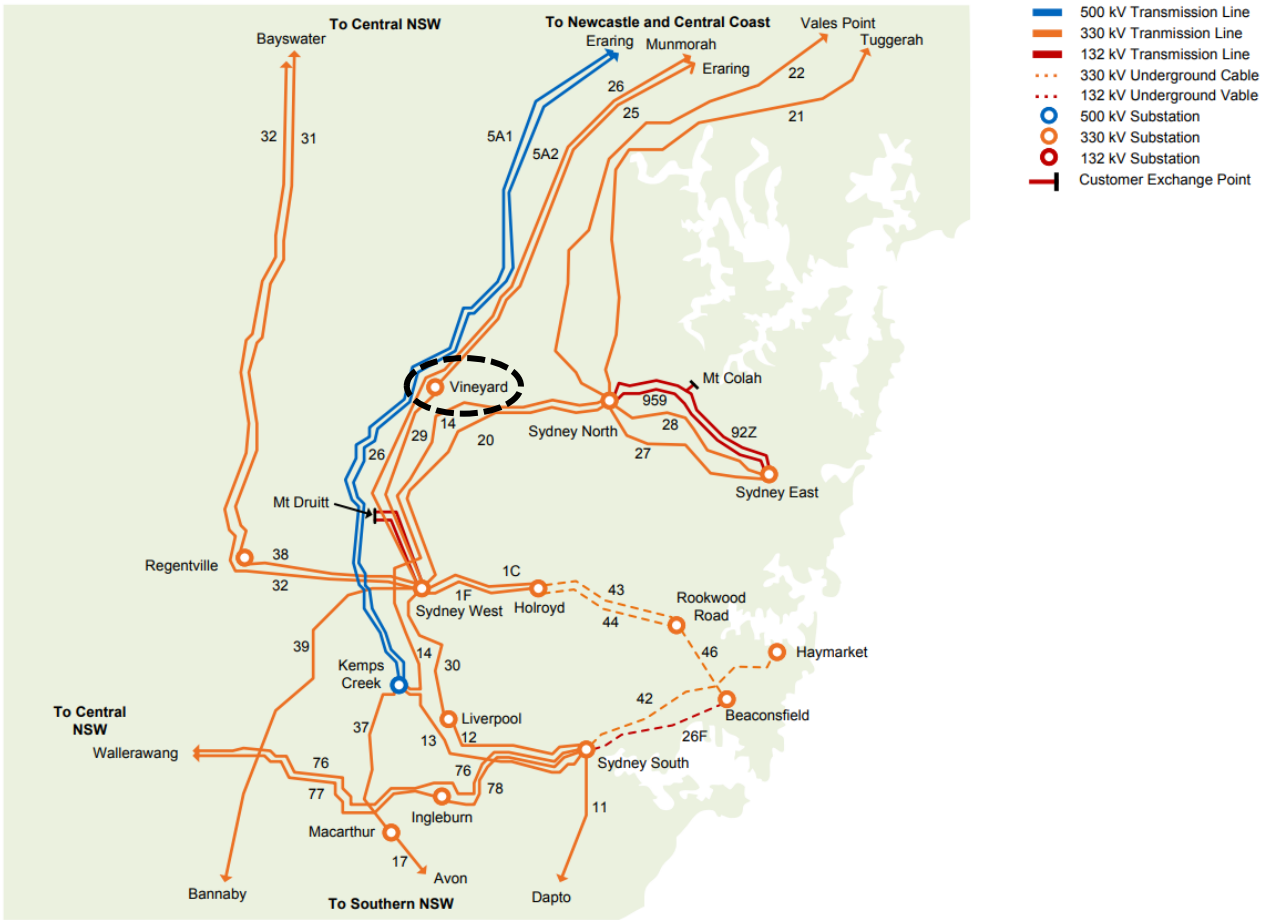
[7] Transgrid is bound by the Privacy Act 1988 (Cth). In making submissions in response to this consultation process, Transgrid will collect and hold your personal information such as your name, email address, employer and phone number for the purpose of receiving and following up on your submissions. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. See Privacy Notice within the Disclaimer for more details.

2. The identified need

2.1. Background to the identified need

The current Greater Sydney electricity transmission network is shown in in Figure 2-1 below. The North West Sydney area is supplied by Transgrid's Vineyard 330/132 kV substation, which is a customer connection point to Endeavour Energy. This substation connects to two 330 kV transmission lines, one from Eraring substation (Line 25) and one from Sydney West substation (Line 29). Vineyard substation is circled in Figure 2-1.

Figure 2-1: Greater Sydney transmission network



The Vineyard Precinct is part of the North West Priority Growth Area, an area identified by the NSW Government for new development. Stage 1 of the Vineyard area was rezoned in December 2017 and essential infrastructure such as roads, sewage and distribution infrastructure (provided by Endeavour Energy) has been delivered. Vineyard Precinct is now growing rapidly in line with the Stage 1 growth targets of 2,300 new homes and 7,000 residents.

Our power system studies show that this new development is resulting in rapid load growth to the area supplied by Transgrid's Vineyard 330/132 kV Bulk Supply Point (BSP). This load growth is forecast to cause the voltage stability issues at Vineyard BSP.

2.2. Description of the identified need

Schedule 5.1.8 of the NER requires that the reactive margin at a connection point (expressed as a capacitive reactive power (in MVAr)) must not be less than one percent of the maximum fault level (in MVA) at the connection point.

Our power system studies show that the rapid load growth in the Vineyard Precinct will cause the reactive margin at Vineyard BSP to drop to below one percent of the maximum fault level at the Vineyard 330 kV and 132 kV busbars from summer 2024/25 under a single credible contingency of the 330 kV Line 29 that supplies the Vineyard BSP from Sydney West.[8] As the present network is unable to achieve this reactive margin for higher expected demands, shedding of load will be required to maintain this reactive margin at times of higher loads to avoid voltage collapse in the network.

We have therefore commenced this RIT-T to assess options to ensure the above NER requirements continue to be met in the longer term in North West Sydney in light of the rapid load growth.[9]

We consider this a 'reliability corrective action' under the RIT-T, as the proposed investment is for the purpose of meeting externally-imposed regulatory obligations and service standards, i.e., Schedule 5.1.8 of the NER.

2.3. Assumptions underpinning the identified need

This RIT-T has been initiated in response to rapid load growth in the Vineyard Precinct. The demand forecasts underpinning the identified need for this RIT-T support the development of the NSW Government's North West Growth area.

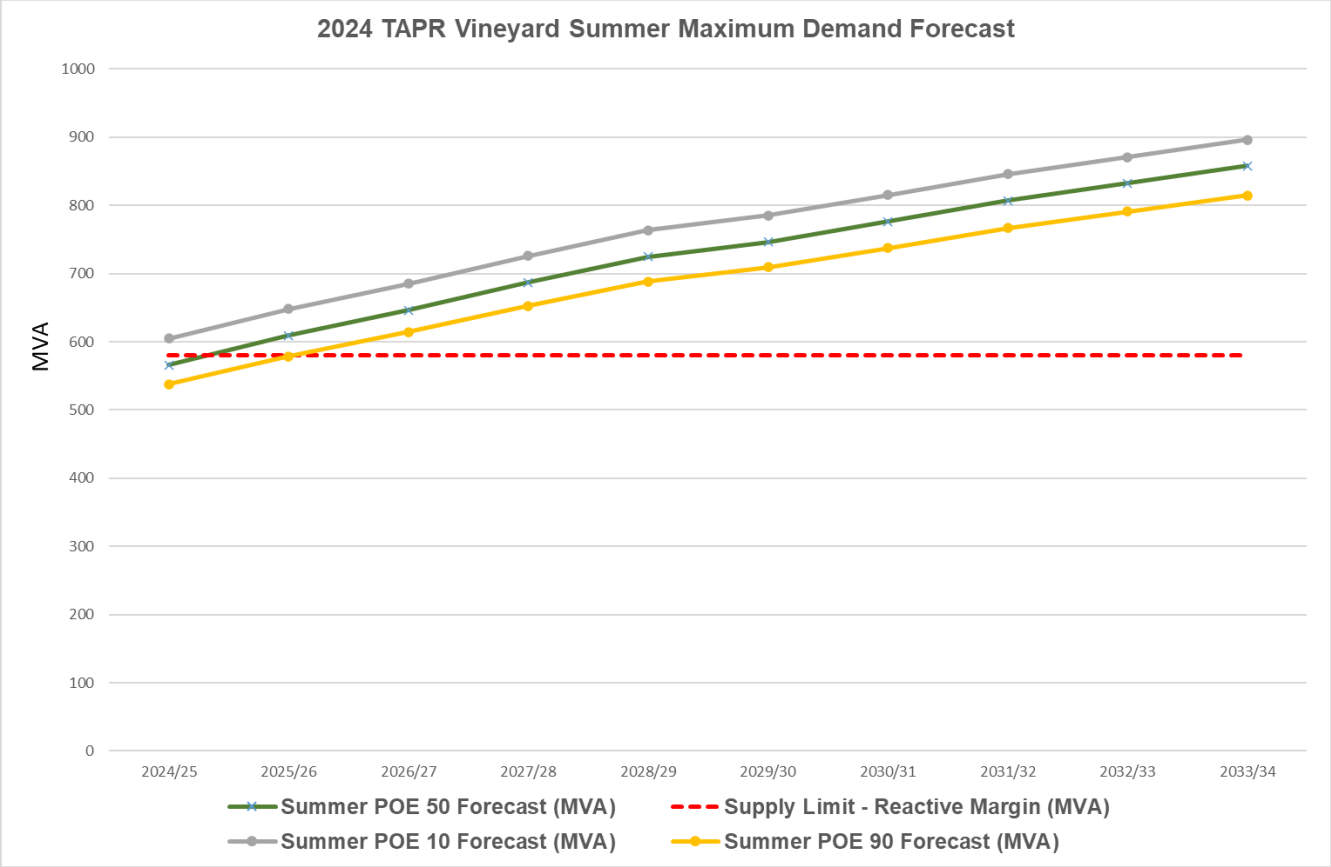
We have undertaken planning studies considering the load that can be served by Vineyard BSP in the event of a single credible contingency while maintaining compliance with the voltage stability requirements set out in the NER. These studies shows that the total demand at Vineyard BSP will need to be limited to 666 MVA to meet reactive margin requirements under the NER with the current network configuration.

Figure 2-2 below illustrates the Summer maximum demand forecast at Vineyard BSP against the maximum load which can be supplied at the site to meet the reactive margin requirements. The demand forecasts show that the forecast rapid load growth will exceed this limit by 2025/26 under POE 50 scenario.

[8] Under a single credible contingency of line 29, over 600 MW of Vineyard BSP load will be radially supplied through line 25 at summer peak demand. The significant reactive losses on the long 330 kV line (109 km in length) lead to a large voltage drop and potential voltage collapse at Vineyard BSP.

[9] As part of a joint planning initiative with Endeavour Energy, a separate RIT-T is in progress to address load growth in the Western Sydney region ("Meeting demand growth in the Western Sydney Aerotropolis 'Priority Growth Area'")

Figure 2-2 Vineyard BSP summer maximum demand forecast



The above assessment highlights the need is required to be addressed by summer 2025/26 in order to ensure compliance with the NER. The analysis in this PSCR uses the central (POE 50), low (POE 90) and high (POE10) demand forecasts provided by Endeavour Energy.

The expected completion date of the options identified to address the issue is 2027/28. To maintain compliance with the NER load transfers will take place initially to lower loading at Vineyard substation. However, it is expected that load curtailment would eventually be required until a remediation solution is implemented.

3. Options that meet the identified need

We consider credible options in this RIT-T assessment as those that would meet the identified need from a technical, commercial, and project delivery perspective.[10] This will include any credible options that are put forward by proponents in response to this PSCR.

The credible network options for this RIT-T all focus on improving the reactive margin at Vineyard BSP. Table 3-1 summarises each of the credible options we currently consider can meet the identified need.

Table 3-1: Summary of the credible options

Option	Description	Estimated capex ($2024-25)	Expected timing
1	Loop-in Line 26 to Vineyard BSP	$44.5 million	2028/29
2	Install shunt capacitors at Vineyard BSP and loop-in line 26 at a later date	$86.9 million	2028/29

In addition, we consider that non-network solutions may be able to form credible options for this RIT-T. Section 4 provides details on the technical information that proponents of non-network options need to provide to enable their option to be considered in this RIT-T.

None of the credible options listed above are expected to have a material inter-regional impact.

3.1. Base case

Consistent with the RIT-T requirements, the assessment undertaken in this PSCR compares the costs and benefits of each option to a base case 'do nothing' option. The base case is the (hypothetical) projected case if no action is taken, ie:[11]

> "*The base case is where the RIT-T proponent does not implement a credible option to meet the identified need, but rather continues its 'BAU activities'. 'BAU activities' are ongoing, economically prudent activities that occur in absence of a credible option being implemented*".

Under the base case, where the voltage stability issues due to load growth are unresolved, there is expected to be a requirement for load curtailment in the North West Sydney area from 2025/26. This is expected to result in unserved energy as set out in Table 3-2.

[10] As per clause 5.15.2(a) of the NER.
[11] AER, *Regulatory Investment Test for Transmission Application Guidelines,* November 2024, p. 21.

Table 3-2 Expected unserved energy at Vineyard BSP

Year	Expected unserved energy POE50 (MWh)
2025/26	74
2026/27	496
2027/28	1,355
2028/29	2,597
2029/30	3,649
2030/31	5,595
2031/32	8,406
2032/33	11,482
2033/34	15,434

While this is not a situation we plan to encounter, and this RIT-T has been initiated specifically to avoid it, the assessment is required to use this base case as a common point of reference when estimating the net benefits of each credible option.

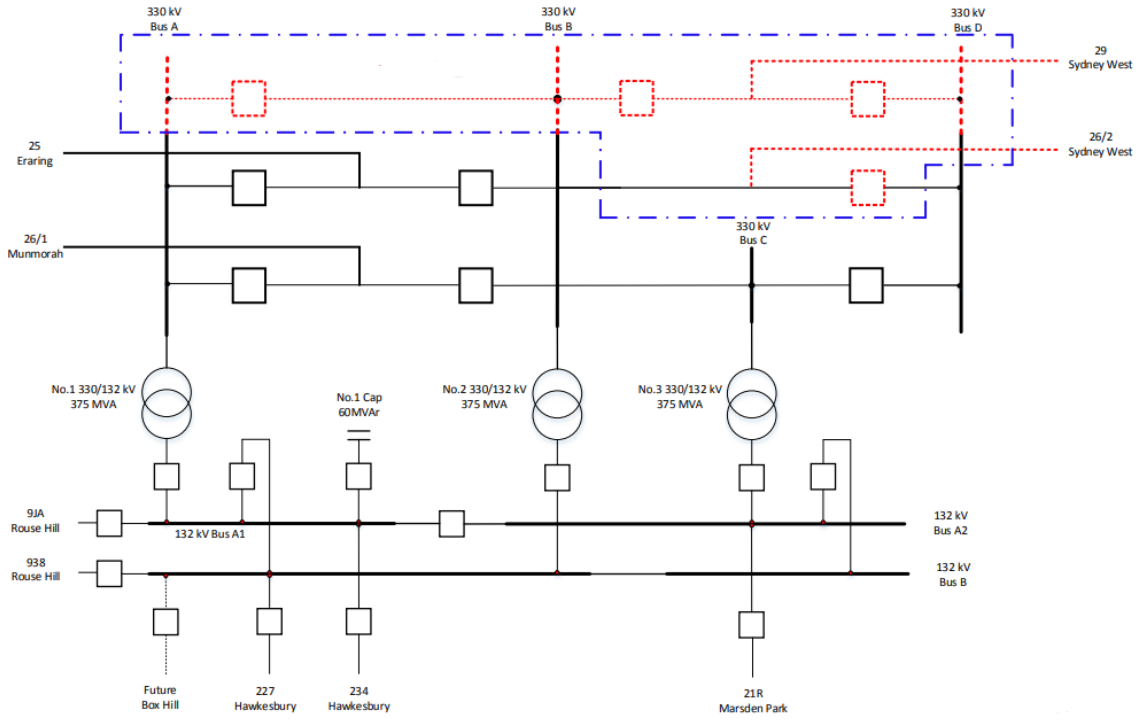
3.2. Option 1 – Loop-in Line 26 to Vineyard BSP

Option 1 involves connecting the existing Line 26, which runs from Munmorah to Sydney West substation, to Vineyard BSP. Line 26 presently runs as a double circuit with lines 25 and 29, passing Vineyard BSP. Connecting Line 26 as a loop in would involve the following works at Vineyard BSP:

- A deviation to Line 26 to connect it to Vineyard BSP
- Extension to the existing 330 kV busbars
- Four new bus section circuit breaker switchbays
- Two new transmission line switchbays
- Relocation of the connection point for the existing No. 2 330/132 kV transformer
- Associated secondary system works.

An indicative network diagram for Option 1 is shown in Figure 3-1 below (new elements shown in red).

Figure 3-1 Indicative option 1 network diagram



The estimated capital cost of Option 1 is approximately $44.5 million as set out in Table 3-3.

Table 3-3 Option 1 Capital Cost ($M, real 2024-25)

Capital cost	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Transmission line works	0.24	0.97	5.41	0.15
Substation works	1.36	5.53	30.09	0.82
TOTAL	1.6	6.5	35.5	0.97

This expenditure is comprised of:

- $7.0 million in labour costs;
- $4.2 million in materials costs; and
- $33.3 million in expenses.

Routine operating and maintenance cost are estimated at approximately $222,500/annum.

The works are expected to be undertaken between 2024/25 and 2028/29. Planning, design, development and procurement (including completion of the RIT-T) will occur between 2024/25 and 2025/26, while project delivery and construction will occur in 2026/27. All works are expected to be completed by 2028/29.

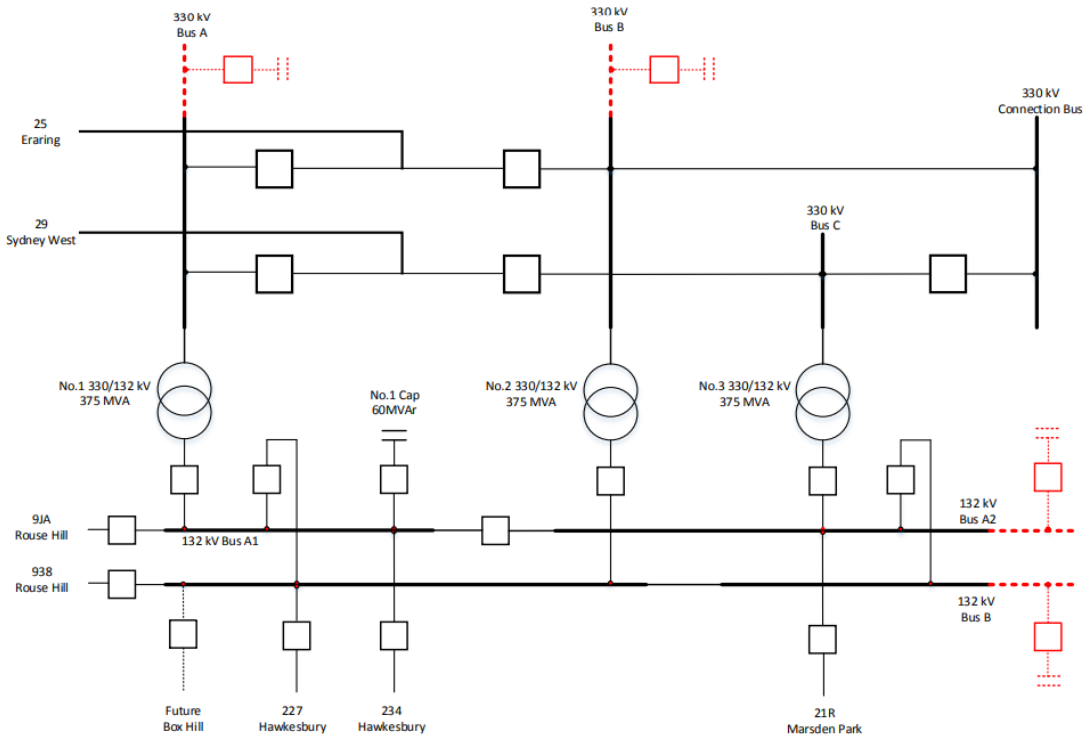
This option will increase the reactive margin to maintain NER voltage stability compliance and avoid unserved energy across the assessment period.

3.3. Option 2 – Install shunt capacitors at Vineyard BSP and loop-in line 26 at a later date

Option 2 involves increasing the reactive margin by installing two new 200 MVAr 330 kV shunt capacitors and two new 100 MVAr 132 kV shunt capacitors, with associated switchbays, bench extensions and secondary systems works to Vineyard BSP, while also connecting the existing Line 26, which runs from Munmorah to Sydney West substation, at a later date (as per Option 1).

An indicative network diagram for Option 2 (new shunt capacitors) is shown in Figure 3-2 below (new elements shown in red).

Figure 3-2 Indicative Option 2 network diagram



The estimated capital cost of Option 2 is approximately $86.9 million as set out in Table 3-4.

Table 3-4 Option 2 Capital Cost ($M, real 2024-25)

Capital cost	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28
Transmission line works	0.07	0.53	2.51	2.61
Substation works	1.03	7.57	35.59	36.99
TOTAL	1.1	8.1	38.1	39.6

This expenditure is comprised of:

- $10.7 million in labour costs;
- $45.2 million in materials costs;
- $23.0 million in expenses; and

- $7.9 million in property costs.

Routine operating and maintenance cost are estimated at approximately $457,000/annum.

We estimate that it will take 42 months from this RIT-T commencement to complete Option 2 with commissioning possible in 2028/29.

This option with the cap banks alone will increase the voltage stability limit to 900 MVA which can avoid unserved energy up to 2036. Additional reactive support devices will be required following this to maintain voltage stability compliance, however would not be effective due to large voltage step changes, and therefore the line turn-in would need to become a part of this solution to fully meet the need.

3.4. Options considered but not progressed

We have also considered whether other options could meet the identified need. Reasons these options were not progressed are summarised in Table 3-5.

Table 3-5: Options considered but not progressed

Option	Reason(s) for not progressing
Load transfer from Vineyard BSP to Sydney West BSP	Sydney West BSP is also experiencing rapid load growth and the supply capacity at Sydney West is reaching its limit. Therefore, this option is not technically feasible.
New shunt capacitors in Endeavour Energy's distribution network	This option involves the installation of ten 5 MVAr shunt capacitors in Endeavour Energy's distribution network, which is the maximum number that can be installed due to space limitations and can only address the need for one year before the voltage stability limit is breached again. Additional reactive support will require the expansion of multiple zone substations, which is not considered to be commercially feasible.

3.5. No material inter-network impact is expected

Transgrid has considered whether the credible options listed above is expected to have material inter-regional impact[12]. A 'material inter-network impact' is defined in the NER as:

> "*A material impact on another Transmission Network Service Provider's network, which impact may include (without limitation): (a) the imposition of power transfer constraints within another Transmission Network Service Provider's network; or (b) an adverse impact on the quality of supply in another Transmission Network Service Provider's network.*"

AEMO's suggested screening test to indicate that a transmission augmentation has no material inter-network impact is that it satisfies the following[13]:

- a decrease in power transfer capability between transmission networks or in another TNSP's network of no more than the minimum of 3 per cent of the maximum transfer capability and 50 MW

[12] As per clause 5.16.4(b)(6)(ii) of the NER.

[13] Inter-Regional Planning Committee. "*Final Determination: Criteria for Assessing Material Inter-Network Impact of Transmission Augmentations*." Melbourne: Australian Energy Market Operator, 2004. Appendix 2 and 3. Accessed 23 October 2024. https://aemo.com.au/-/media/files/electricity/nem/network_connections/transmission-and-distribution/170-0035-pdf.pdf

- an increase in power transfer capability between transmission networks or in another TNSP's network of no more than the minimum of 3 per cent of the maximum transfer capability and 50 MW
- an increase in fault level by less than 10 MVA at any substation in another TNSP's network; and
- the investment does not involve either a series capacitor or modification in the vicinity of an existing series capacitor.

We consider that each credible option satisfies these conditions as it does not modify any aspect of transmission assets and will only have localised effects around the Greater Sydney region of NSW. By reference to AEMO's screening criteria, there is no material inter-network impacts associated with any of the credible options considered.

3.6. Community engagement

Transgrid considers that through early engagement we can begin to build relationships and trust to gain communities input into the planning of a project during the early design phase as part of the RIT-T. Through consideration of the proposed [option/s], Transgrid will involve community in this decision to determine the most likely cost and delivery timeline for the option and uncover opportunities that can deliver sustainable social legacy outcomes, informed by community engagement.

Transgrid is a strong supporter of involving community in the option design process to better gain community acceptance for the option and reduce the risk of delay to project timelines due to community disagreement. Through earlier engagement we can quantify prudent and efficient social licence initiatives and mitigate impacts on project timing.

Transgrid recognises that some of the options being considered in this RIT-T may impact the surrounding communities. As a consequence, Transgrid has commenced activities to engage with stakeholders, including local landowners, local council, local community members, local environmental groups and traditional owners, ahead of publication of the PACR. This engagement enables us to better understand community concerns and identify whether there are amendments to the options being considered that have the potential to mitigate those concerns.

Transgrid has leveraged its existing community engagement process in conjunction with project delivery teams to commence the identification process, and will subsequently work with any stakeholders potentially impacted by this RIT-T prior to PACR publication. Where community stakeholders are identified, work may take the format of a community and stakeholders engagement plan. Further details in relation to the outcome of this community engagement will be provided as part of the PACR.

Transgrid plans to develop the PACR with updated information about the environment, planning and social constraints for credible options in this PSCR, should they be identified through ongoing community engagement. This information will contribute, where relevant, to potential refinements to relevant cost factors and time allowances for obtaining planning and environment approval prior to the construction of credible options.

4. Technical characteristics for non-network options

We consider that non-network options may be able to assist with meeting the identified need for several years before forecast load becomes too large to be supported by non-network options. We encourage parties to make written submissions regarding the potential of non-network options to satisfy, or contribute to satisfying, the identified need for this RIT-T.

At this stage we consider that possible solutions could include but are not limited to:

- demand management;
- battery energy storage systems (BESS)
- generators in the region (embedded or grid-connected); or
- reactive power support.

This section describes the technical characteristics that non-network options would need to deliver to address the identified need consistent with the NER. The NER requires the PSCR to include characteristics such as:

- the size of the load reduction, additional supply or reactive power support required
- the location; and
- the operating profile.

The non-network options have been estimated for the worst-case scenario which is the maximum demand forecast for the critical contingency (loss of Line 29).

Table 4-1 provides a summary of the active power requirements up to FY2030. Table 4-2 provides a summary of the reactive power requirements up to FY2030 that could be delivered as an alternative to the active power options. The reactive power requirements are expressed in terms of the impact measurable at the Vineyard 132kV bus.

Table 4-1 – Summary of demand management, BESS or embedded generation characteristics

Financial Year	Maximum Capacity (MW) [14]	Minimum dispatch hours	Maximum dispatch hours	Expected dispatch events	Availability period
2026	28	1.5	3.5	3	December to March
2027	105	3	6	7	December to March
2028	143	2.5	6.5	13	December to March
2029	165	3	7.5	17	December to March
2030	195	3.5	7.5	20	December to March

Table 4-2 – Summary of reactive power requirements

Financial Year	MVAr Requirement at Vineyard 132 kV [15]
2026	150
2027	175
2028	200
2029	225
2030	240

Network support may be required at any time the load exceeds the voltage stability limit, otherwise a rapid decline in voltage may occur following a contingency, leading to a voltage collapse (blackouts) in the area. Therefore, this network support needs to be available in anticipation of a voltage stability issue at times of high demand.

To improve the efficacy of these solutions, the non-network solution will need to be located at the Vineyard BSP or be supplied by one or more of the respective zone substations. The downstream Endeavour Energy zone substations where contributions may occur are:

- Box Hill ZS
- Bella Vista ZS
- Cheriton Avenue ZS
- Hawkesbury TS
- Marsden Park ZS
- Mungerie Park ZS
- Parklea ZS
- Schofields ZS
- South Marsden Park ZS
- West Castle Hill ZS

[14] Measured at Vineyard 132 kV bus
[15] Measured at Vineyard 132 kV bus

We welcome submissions to this PSCR from potential providers of non-network solutions.

We welcome written submissions on materials contained in this PSCR. Submissions are due on 3rd of June 2025[16] and should be emailed to our Regulation team via regulatory.consultation@transgrid.com.au.[17] In the subject field, please reference 'Maintaining Reliability in North West Sydney PSCR'.

[16] Consultation period is for 12 weeks, additional days have been added to cover public holidays.

[17] We are bound by the *Privacy Act 1988 (Cth)*. In making submissions in response to this consultation process, we will collect and hold your personal information such as your name, email address, employer and phone number for the purpose of receiving and following up on your submissions. If you do not wish for your submission to be made public, please clearly specify this at the time of lodgement. See Privacy Notice within the Disclaimer for more details.

5. Materiality of market benefits

The NER requires that all categories of market benefit identified in relation to the RIT-T are included in the RIT-T assessment, unless the TNSP can demonstrate that a specific category (or categories) is unlikely to be material in relation to the RIT-T assessment for a specific option.[18]

The PSCR is required to set out the classes of market benefit that the TNSP considers are not likely to be material for a particular RIT-T assessment.[19]

5.1. Avoided unserved energy is material

Transgrid considers that changes in involuntary load shedding are expected to be material for the credible options outlines in this PSCR.

We have estimated the expected unserved energy if action is not taken in order to specify the base case for the RIT-T assessment (refer Section 3.1).

We have taken into account option value as part of this PSCR for any options that exhibit the requisite flexibility for option value to exist (e.g., Option 2 where the installation of capacitor banks can be staged).

Other categories of market benefits prescribed in the NER have not been estimated and are not considered material for this RIT-T, as outlined below.

5.2. Wholesale electricity market benefits are not material

We consider at this stage that a number of classes of market benefits are not expected to be material in the RIT-T assessment, and so do not need to be estimated, since the credible options being considered are not anticipated to have a substantive impact on the wholesale electricity market.

The credible options considered in this PSCR do not address network constraints between competing generators and so will not have an impact on generation dispatch outcomes and the wholesale electricity market. Therefore, we consider that the following classes of market benefits are not material for this RIT-T assessment:

- changes in fuel consumption arising through different patterns of generation dispatch;
- changes in voluntary load curtailment (since there is no impact on pool price);
- changes in costs for parties other than the RIT-T proponent;
- changes in ancillary services costs; and
- competition benefits.

5.3. No other categories of market benefits are material

In addition to the classes of market benefits listed above, the NER also requires us to consider the following classes of market benefits arising from each credible option.[20] We consider that none of the

[18] NER clause 5.16.1(c)(6).
[19] NER clause 5.16.4(b)(6)(iii).
[20] NER, clause 5.15A.2(b)(4)-(6).

classes of market benefits listed are material for this RIT-T assessment for the reasons outlined in **Error! Reference source not found.**.

Table 5-1: Reasons non-wholesale electricity market benefits categories are considered not material

Market benefits	Reason
Differences in the timing of unrelated network expenditure	The credible options considered are all designed to meet the required reliability requirements and are unlikely to affect decisions to undertake unrelated expenditure in the network. Consequently, material market benefits will neither be gained nor lost due to changes in the timing of unrelated network expenditure from any of the options considered.
Option value	We note the AER's view that option value is likely to arise where there is uncertainty regarding future outcomes, the information that is available is likely to change in the future, and the credible options considered by the TNSP are sufficiently flexible to respond to that change.[21] We also note the AER's view that appropriate identification of credible options and reasonable scenarios captures any option value, thereby meeting the NER requirement to consider option value as a class of market benefit under the RIT-T.[22] We do not consider there to be any option value with the options considered in this PSCR. Additionally, a significant modelling assessment would be required to estimate the option value benefits which would be disproportionate to the potential additional benefits for this RIT-T. Therefore, we have not estimated additional option value benefit.
Changes in network losses	There is not expected to be any material difference in transmission losses between options.
Changes in Australian greenhouse gas emissions	Neither option in this RIT-T is expected to affect the dispatch of generation in the wholesale market. No other material source of a change in Australian emissions has been identified. Accordingly, this benefit has not been estimated.

[21] AER, *Regulatory Investment Test for Transmission Application Guidelines,* November 2024, p.56-57.
[22] AER, *Regulatory Investment Test for Transmission Application Guidelines,* November 2024, p.56-57.

6. Overview of the assessment approach

This section outlines the approach that Transgrid has applied in assessing the net benefits associated with each of the credible options against the base case.

6.1. Description of the base case

As outlined in section 3.1, all costs and benefits considered have been measured against a base case where no network development is undertaken to address the identified need and electricity supply in the North West Sydney area will continue to be supplied by the existing capacity of the Vineyard BSP.

6.2. Assessment period and discount rate

A 20-year assessment period from 2024-25 to 2043-44 has been adopted for this RIT-T analysis. This period takes into account the size, complexity and expected asset life of the options.

Where the capital components of the credible options have asset lives extending beyond the end of the assessment period, the NPV modelling will include a terminal value to capture the remaining asset life. This ensures that the capital cost of long-lived options over the assessment period is appropriately captured, and that all options have their costs and benefits assessed over a consistent period, irrespective of option type, technology or asset life. The terminal values have been calculated as the undepreciated value of capital costs at the end of the analysis period and can be interpreted as a conservative estimate for benefits (net of operating costs) arising after the analysis period.

A real, pre-tax discount rate of 7 per cent has been adopted in all scenarios presented in this PSCR, consistent with AEMO's 2023 Inputs, Assumptions and Scenarios Consultation Report (IASR).[23] The RIT-T requires that sensitivity testing be conducted on the discount rate and that the regulated weighted average cost of capital (WACC) be used as the lower bound. We have therefore tested the sensitivity of the Central scenario results to a lower bound discount rate of 3.63 per cent.[24] We have also adopted an upper bound discount rate of 10.5 per cent (i.e., AEMO's 2023 Inputs, Assumptions and Scenarios Report).[25] We also tested the sensitivity of the Central scenario results including in relation to the capital costs, operating and maintenance costs and VCRs.

6.3. Approach to estimating option costs

We have estimated the capital costs of the options based on the scope of works necessary together with costing experience from previous projects of a similar nature.

The cost estimates are developed using our 'MTWO' cost estimating system. This system utilises historical average costs, updated by the costs of the most recently implemented project with similar scope. All estimates in MTWO are developed to deliver a 'P50' portfolio value for a total program of works (i.e., there is an equal likelihood of over- or under-spending the estimate total).[26]

[23] AEMO '2023 Inputs, Assumptions and Scenarios Report', July 2023, p 123.
[24] This is equal to WACC (pre-tax, real) in the latest final decision for a transmission business in the NEM (TasNetworks) as of the date of this analysis, see: AER, TasNetworks – 2024-29 – Final decision – PTRM, April 2024, WACC sheet.
[25] AEMO '2023 Inputs, Assumptions and Scenarios Report', July 2023, p 123.
[26] For further detail on our cost estimating approach refer to section 7 of our Augmentation Expenditure Overview Paper submitted with our 2023-28 Revenue Proposal.

We estimate that actual costs will be within +/- 25 per cent of the central capital cost estimate. An accuracy of +/-25 per cent for cost estimates is consistent with industry best practice and aligns with the accuracy range of a 'Class 4' estimate, as defined in the Association for the Cost Engineering classification system.

All cost estimates are prepared in real, 2024-25 dollars based on the information and pricing history available at the time that they were estimated. The cost estimates do not include or forecast any real cost escalation for materials.

On 21 November 2024, the requirements set out in the Australian Energy Regulator's Regulatory Investment Test for Transmission (RIT-T) Application Guidelines were amended. The amended guidelines now expect a RIT-T proponent to explicitly consider community engagement and social licence during the RIT-T process.

The amended guidelines mean that Transgrid must consider social licence principles in the identification of credible options. This may affect how we determine the most likely cost and delivery timeline for an option.

Transgrid believes building relationships and trust is how we can gain and grow social licence. Through engagement with affected communities we identify prudent and efficient investment opportunities that can build and gain community acceptance for our options. Costs associated with social licence include those associated with engagements, community benefits, minor route adjustments and legislated additional landholders payments, as applicable.

We acknowledge this important change to the RIT-T guidelines and will continue to engage with community to identify opportunities to address social impacts and reduce the need for compensation due to project impact. We will take into account any additional social licence considerations (including those identified through ongoing community engagement, as outlined in section 3.6) identified and accordingly update the cost and timing of the credible options in the PACR, where appropriate.

Routine operating and maintenance costs are based on works of similar nature.

6.4. The options have been assessed against three reasonable scenarios

The RIT-T is focused on identifying the top ranked credible option in terms of expected net benefits. However, uncertainty exists in terms of estimating future inputs and variables (termed future 'states of the world').

To deal with this uncertainty, the NER requires that costs and market benefits for each credible option are estimated under reasonable scenarios and then weighted based on the likelihood of each scenario to determine a weighted ('expected') net benefit. It is this 'expected' net benefit that is used to rank credible options and identify the preferred option.

The RIT-T must include any of the ISP scenarios from the most recent IASR that are relevant unless:[27]

- the RIT–T proponent demonstrates why it is necessary to vary, omit or add a reasonable scenario to what was in the most recent IASR, and
- the new or varied reasonable scenarios are consistent with the requirements for reasonable scenarios set out in the RIT–T instrument.

[27] AER, *Regulatory Investment Test for Transmission Application Guidelines*, November 2024, p. 43

The AER's RIT-T Guidelines clarifies that the number and choice of reasonable scenarios must be appropriate to the credible options under consideration, and that the choice of reasonable scenarios must reflect any variables or parameters that are likely to affect the ranking or sign of the net benefit of any credible option.[28]

For the purposes of this RIT-T, we consider that the ISP scenarios are not relevant. The key input parameter that is likely to affect the ranking or sign of the net market benefits of the credible options is expected maximum demand in Western Sydney. This input is independent from the assumptions underpinning the ISP scenarios, which are much broader in scope and do not adequately account for the highly localised identified need in this RIT-T. It follows that adopting the ISP scenarios would not be consistent with adopting scenarios that reflect parameters that could reasonably change the ranking or sign of the net market benefits of the credible options.

In line with the RIT-T Guideline, we have constructed reasonable alternative scenarios. To do this, we developed a **Central Scenario** which reflects our best estimate of each of the modelling parameters, including maximum demand, and capital and operating costs. This was based on local demand forecasts provided by Endeavour Energy that are able to capture the expected significant growth in demand driven by spot load including data centres, metro train lines and large commercial and residential development around the new airport in Western Sydney.

As indicated above, we consider that the key input parameter that is likely to affect the ranking or sign of the net market benefits of the credible options is maximum demand in Western Sydney. We do not consider that variations in other parameters of the Central Scenario are likely to affect the outcome of the RIT-T assessment. In view of this, we have developed additional reasonable scenarios that reflect variations in maximum demand while holding other parameters the same as the Central Scenario.

In summary, we have developed the following scenarios:

- 'Central scenario' - assumes POE50 demand to be able to reflect our best estimate of maximum demand in Western Sydney.
- 'Low demand' scenario - assumes POE90 demand estimates to investigate a lower bound of maximum demand in Western Sydney.
- 'High demand' scenario - assumes POE10 demand estimates to investigate an upper bound of maximum demand Western Sydney.

The NPV results in this PSCR are reported for each scenario, as well as on a weighted basis. As we have no evidence or rationale for assigning a higher probability for one reasonable scenario over another, we have weighted each reasonable scenario equally.[29]

A summary of the key variables in each scenario is presented in the table below.

Table 6-1 Summary of scenarios

Variable / Scenario	Central scenario	Low demand scenario	High demand scenario
Scenario weighting	1/3	1/3	1/3
Discount rate	7.00%	7.00%	7.00%

[28] AER, *Regulatory Investment Test for Transmission Application Guidelines*, November 2024, p. 44
[29] As per: AER, *Regulatory Investment Test for Transmission Application Guidelines*, November 2024, p. 52

VCR ($2024-25)[30]	51,196/MWh	51,196/MWh	51,196/MWh
Maximum demand forecast	POE50	POE90	POE10
Network capital costs	Base estimate	Base estimate	Base estimate
Operating and maintenance costs	Base estimate	Base estimate	Base estimate
Avoided load shedding	Base estimate	Low demand forecast	High demand forecast

In addition to the scenario analysis, we undertook sensitivity analysis on key variables under the Central scenario, including in relation to capital costs and the discount rate.

[30] This VCR is equal to the $49,216 within AEMO's July 2023 2023 Inputs, Assumptions and Scenarios Report inflated to September 2024.

7. Assessment of credible options

This section outlines the assessment Transgrid has undertaken of the credible options. The assessment compares the costs and benefits of the option to a base case 'do nothing' option, where no network development is undertaken to address the identified need and electricity supply in the Vineyard area will continue to be supplied by the existing capacity of the Vineyard BSP.

7.1. Estimated gross benefits

The table below summarises the gross benefit estimated for each of the options relative to the base case in present value terms for the assessment period. The sole benefit included in this assessment is avoided involuntary load shedding.

Table 7-1 PV of gross economic benefits relative to the base case ($2024-25 m)

Option	Central scenario	Low demand scenario	High demand scenario	Weighted scenario
Scenario weighting	*1/3*	*1/3*	*1/3*	
Option 1	8233.61	4342.81	11145.17	7907.20
Option 2	8198.66	4340.67	11065.38	7868.23

7.2. Estimated costs

The table below summarises the capital costs, and the operating and maintenance costs, of each option relative to the base case in present value terms for the assessment period.

Table 7-2 PV of capital and operating costs relative to the base case ($2024-25 m)

Option	Central scenario	Low demand scenario	High demand scenario	Weighted scenario
Scenario weighting	*1/3*	*1/3*	*1/3*	
Option 1	8.30	8.30	8.30	8.30
Option 2	34.64	34.64	34.64	34.64

7.3. Estimated net economic benefits

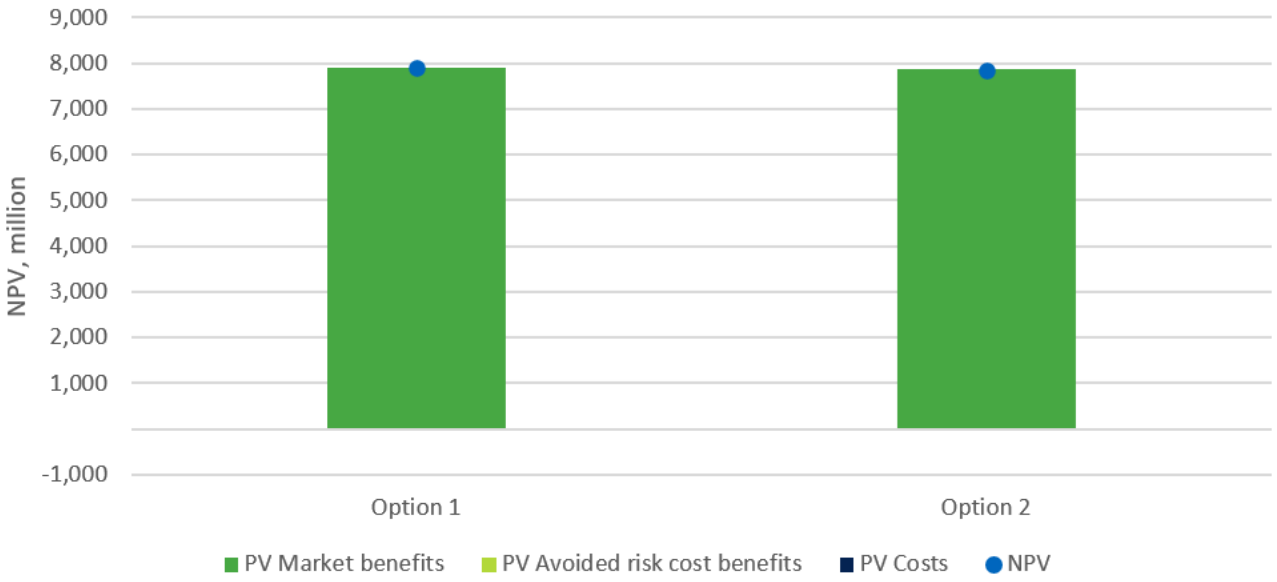
The net economic benefits are the estimated gross benefits less the estimated costs. The table below summarises the present value of the net economic benefits for each credible option across the three scenarios, and on a weighted basis. Since we only identified one credible option, Option 1 has the greatest net market benefits and is therefore our preferred option.

Table 7-3 PV of net economic benefits relative to the base case ($2024-25 m)

Option	Central scenario	Low demand scenario	High demand scenario	Weighted scenario
Scenario weighting	*1/3*	*1/3*	*1/3*	
Option 1	8225.31	4334.51	11136.86	7898.89

Option 2	8164.02	4306.03	11030.74	7833.60

Figure 7-1 PV of net economic benefits ($2024-25 m)



The substantial size of each scenario's avoided involuntary load shedding benefit can be attributed to the base case not meeting any commercial and industrial forecast load in the Vineyard area due to the absence of a switchbay.

Overall, the figure above shows that Option 1 has a positive net economic benefit in all demand scenarios.

7.4. Sensitivity testing

We have considered the robustness of the RIT-T assessment by undertaking a range of sensitivity testing. The purpose of this testing is to examine how the net economic benefit of the credible options changes with respect to changes in key modelling assumptions. The factors tested as part of the sensitivity analysis for this PSCR are:

- Scenario weights
- Higher or lower VCRs
- Higher or lower network capital costs of the credible options
- Higher or lower operating and maintenance costs of the credible options
- Alternate commercial discount rate assumptions.

The sensitivity testing was undertaken against the Central scenario. Specifically, we individually varied each factor identified above and estimated the net economic benefit in that scenario relative to the base case while holding all other assumptions under the Central scenario constant. The results of the sensitivity tests are set out in the sections below.

7.4.1. Scenario weights

Option 1 has positive net economic benefits in all three scenarios. Therefore, there is no reasonable combination of scenario weights that would change the RIT-T outcome.

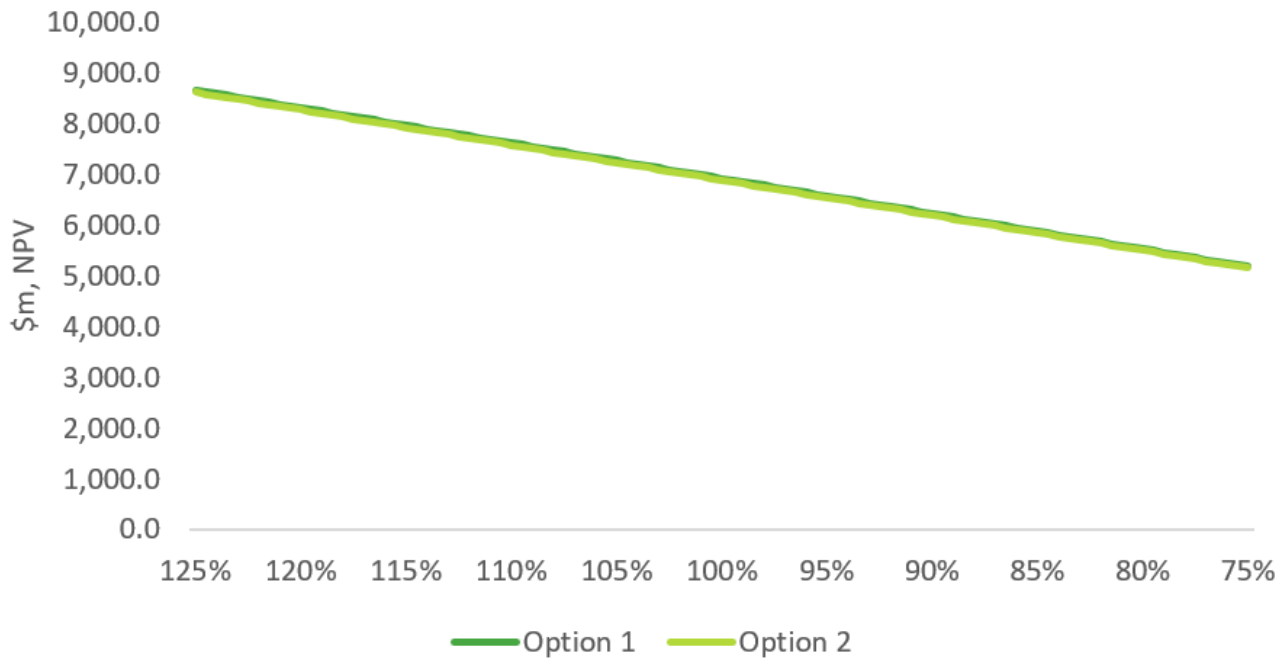
7.4.2. Value of customer reliability

We estimated the net economic benefit of each option by adopting a VCR that is 30% higher (the 'High VCR' scenario) and 30% lower (the 'Low VCR' scenario) than the estimate of VCR adopted in our Central scenario. The results of this analysis are presented in the table and figure below.

Table 7-4 PV of net economic benefits relative to the base case under a lower and higher VCR ($2024-25 m)

Option/scenario	Low VCR	High VCR	Ranking
Sensitivity	*Central estimate - 30%*	*Central estimate + 30%*	
Option 1	5190.32	8672.14	1
Option 2	5161.80	8626.49	2

Figure 7-2 PV of net economic benefits relative to the base case under a lower and higher VCR ($2024-25 m)



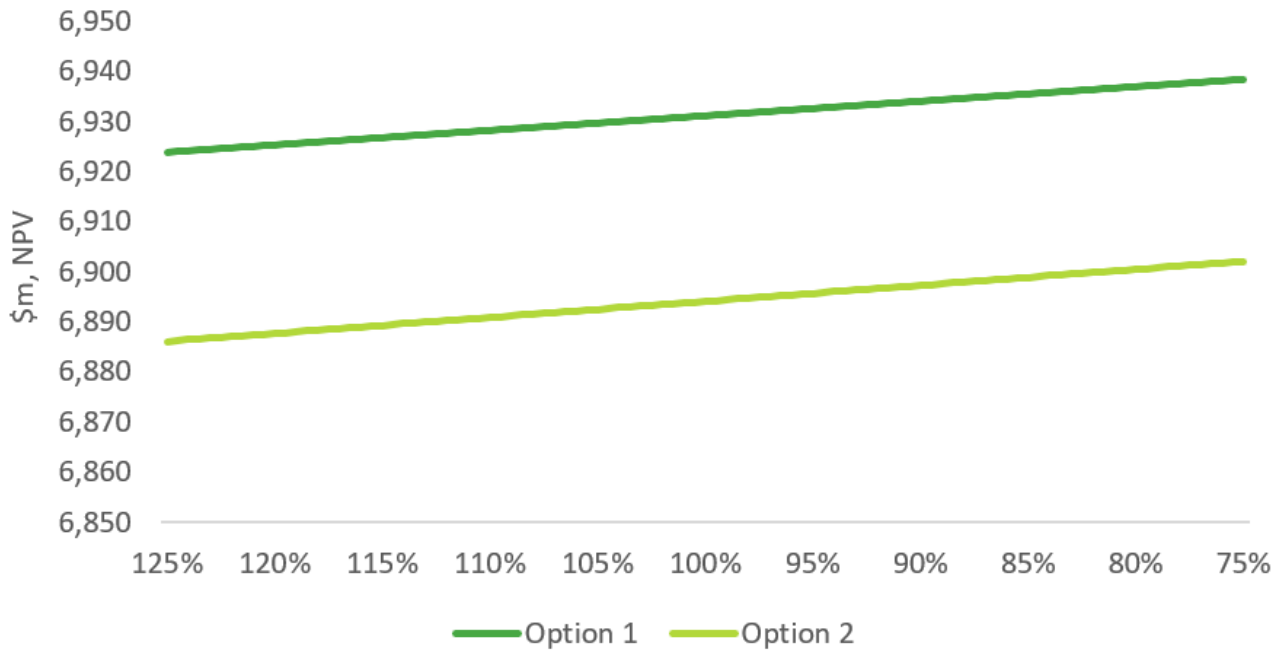
7.4.3. Network capital costs

We estimated the net economic benefit of each option by adopting capital costs for each option that are 25% higher (the 'High capex' scenario) and 25% lower (the 'Low capex' scenario) than the capital cost estimates in our Central scenario. Given that the capital costs are relatively minor compared to the benefits, the overall net economic benefits are unsensitive to changes in capital costs. The results of this analysis are presented in the table and figure below.

Table 7-5 Net economic benefits relative to the base case under lower and higher capital costs ($2024-25 m)

Option/scenario	Low capex	High capex	Ranking
Sensitivity	*Central estimate - 25%*	*Central estimate + 25%*	
Option 1	6938.55	6923.91	1
Option 2	6902.15	6886.14	2

Figure 7-3 Net economic benefits relative to the base case under lower and higher capital costs ($2024-25 m)



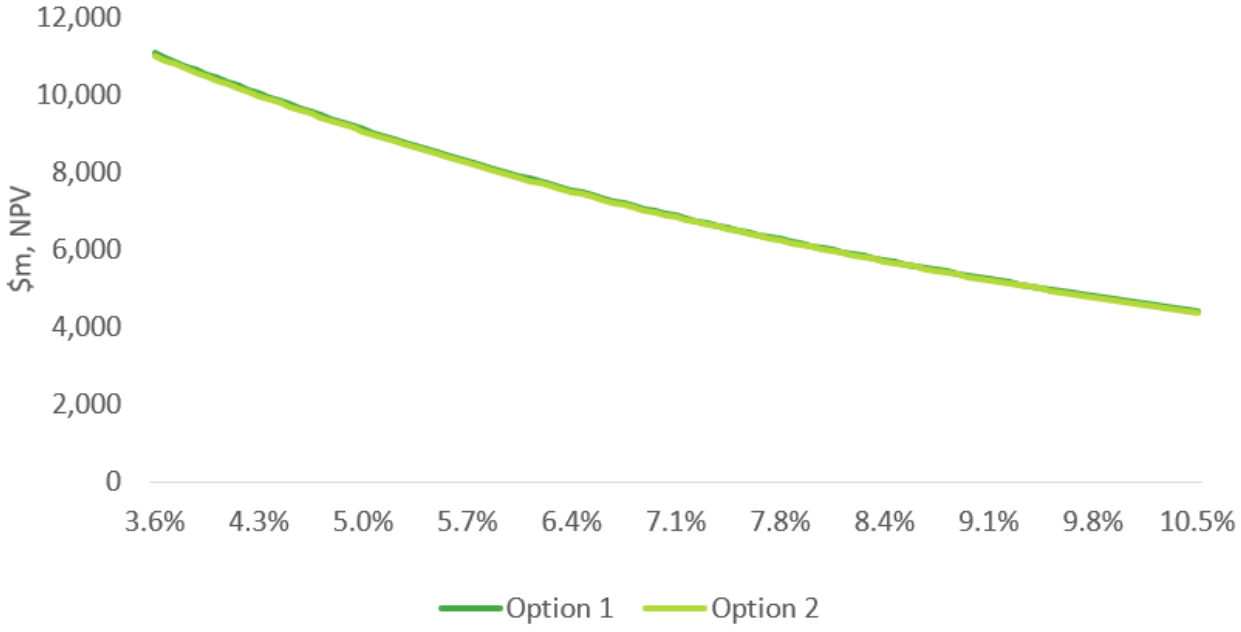
7.4.4. Discount rate

We estimated the net economic benefit of each option by adopting a low discount rate of 3.63% (the 'Low discount rate' scenario) and a high discount rate of 10.5% (the 'High discount rate' scenario). The results of this analysis are presented in the table and figure below.

Table 7-6 Net economic benefits relative to the base case under a lower and higher discount rates ($2024-25 m)

Option/scenario	Low discount rate	High discount rate	Ranking
Sensitivity	*3.63%*	*10.50%*	
Option 1	11059.48	4400.17	1
Option 2	10995.92	4378.41	

Figure 7-4 Net economic benefits relative to the base case under a lower and higher discount rates ($2024-25 m)



7.4.5. Threshold analysis

We have also undertaken a threshold analysis to identify whether a change in the discount rate would change the RIT-T outcome. Our approach involved solving for the discount rate that would result Option 1 not being the preferred option. Our results suggest that there is no reasonable discount rate that would change the RIT-T outcome.

8. Draft conclusion and exemption from preparing a PADR

Implementation of Option 1, which involves connecting the existing Line 26, which runs from Munmorah to Sydney West substation, to Vineyard BSP, is the preferred option at this stage of the RIT-T process.

The capital cost of this option is approximately $44.5m (in $2024-25). The works are expected to be undertaken between 2024/25 and 2028/29. Planning, design, development and procurement (including completion of the RIT-T) will occur between 2024/25 and 2025/26, while project delivery and construction will occur in 2026/27. All works are expected to be completed by 2028/29.

Subject to the identification of additional credible options during the consultation period, publication of a Project Assessment Draft Report (PADR) is not required for this RIT-T as we consider that the conditions in clause 5.16.4(z1) of the NER exempting RIT-T proponents from providing a PADR have been met.

Specifically, production of a PADR is not required because:

- the estimated capital cost of the preferred option is less than $54 million;[31]
- we have identified in this PSCR our preferred option and the reasons for that option, and noted that we will be exempt from publishing the PADR for our preferred option; and
- we consider that the preferred option and any other credible options do not have a material market benefit (other than benefits associated with changes in voluntary load curtailment and involuntary load shedding).

If an additional credible option that could deliver a material market benefit is identified during the consultation period, then we will produce a PADR that includes an NPV assessment of the net economic benefit of each additional credible option.

If no additional credible options with material market benefits are identified during the consultation period, then the next step in this RIT-T will be the publication of a PACR that addresses all submissions received, including any issues in relation to the proposed preferred option raised during the consultation period.[32]

[31] Varied from $43m to $54m based on the AER Final Determination: Cost threshold review, November 2024.
[32] In accordance with NER clause 5.16.4(z2).

Appendix A Compliance checklist

This appendix sets out a checklist which demonstrates the compliance of this PSCR with the requirements of the National Electricity Rules version 224.

Rules clause	Summary of requirements	Relevant section
5.16.4 (b)	A RIT-T proponent must prepare a report (the project specification consultation report), which must include:	–
	(1) a description of the identified need;	2
	(2) the assumptions used in identifying the identified need (including, in the case of proposed reliability corrective action, why the RIT-T proponent considers reliability corrective action is necessary);	2
	(3) the technical characteristics of the identified need that a non-network option would be required to deliver, such as: (i) the size of load reduction of additional supply; (ii) location; and (iii) operating profile;	4
	(4) if applicable, reference to any discussion on the description of the identified need or the credible options in respect of that identified need in the most recent National Transmission Network Development Plan;	NA
	(5) a description of all credible options of which the RIT-T proponent is aware that address the identified need, which may include, without limitation, alterative transmission options, interconnectors, generation, demand side management, market network services or other network options;	3
	(6) for each credible option identified in accordance with subparagraph (5), information about: (i) the technical characteristics of the credible option; (ii) whether the credible option is reasonably likely to have a material inter-network impact; (iii) the classes of market benefits that the RIT-T proponent considers are likely not to be material in accordance with clause 5.15A.2(c)(6), together with reasons of why the RIT-T proponent considers that these classes of market benefit are not likely to be material; (iv) the estimated construction timetable and commissioning date; and (v) to the extent practicable, the total indicative capital and operating and maintenance costs.	3 & 5

In addition, the table below outlines a separate compliance checklist demonstrating compliance with the binding guidance in the latest AER RIT-T guidelines.

Guidelines section	Summary of the requirements	Section in the PSCR
3.5A.1	Where the estimated capital costs of the preferred option exceeds $103 million (as varied in accordance with a cost threshold determination), a RIT-T proponent must, in a RIT-T application: i. outline the process it has applied, or intends to apply, to ensure that the estimated costs are accurate to the extent practicable having regard to the purpose of that stage of the RIT-T ii. for all credible options (including the preferred option), either • apply the cost estimate classification system published by the AACE, or • if it does not apply the AACE cost estimate classification system, identify the alternative cost estimation system or cost estimation arrangements it intends to apply, and provide reasons to explain why applying that alternative system or arrangements is more appropriate or suitable than applying the AACE cost estimate classification system in producing an accurate cost estimate	NA
3.5A.2	For each credible option, a RIT-T proponent must specify, to the extent practicable and in a manner which is fit for purpose for that stage of the RIT-T: i. all key inputs and assumptions adopted in deriving the cost estimate ii. a breakdown of the main components of the cost estimate iii. the methodologies and processes applied in deriving the cost estimate (e.g. market testing, unit costs from recent projects, and engineering-based cost estimates) iv. the reasons in support of the key inputs and assumptions adopted and methodologies and processes applied v. the level of any contingency allowance that have been included in the cost estimate, and the reasons for that level of contingency allowance	6.3
3.5.3	The RIT-T proponent is required to provide the basis for any social licence costs in their RIT-T reports, and may choose to refer to best practice from a reputable, independent and verifiable source.	6.3
3.8.2	Where the estimated capital cost of the preferred option exceeds $103 million (as varied in accordance with an applicable cost threshold determination), a RIT-T proponent must undertake sensitivity analysis on all credible options, by varying one or more inputs and/or assumptions.	NA
3.9.4	If a contingency allowance is included in a cost estimate for a credible option, the RIT-T proponent must explain: • the reasons and basis for the contingency allowance, including the particular costs that the contingency allowance may relate to, and • how the level or quantum of the contingency allowance was determined.	NA
4.1	RIT-T proponents are required to describe in each RIT-T report • how they have engaged with local landowners, local council, local community members, local environmental groups or traditional owners and sought to address any relevant concerns identified through this engagement • how they plan to engage with these stakeholder groups, or • why this project does not require community engagement	3.6