Transgrid

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Summary: 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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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-**Error! No text of specified style in document.**: 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 **Error! Reference source not found.** 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 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.