

Summary: Maintaining reliable supply to Western Sydney

RIT-T Project Assessment Conclusions Report

Region: Greater Sydney

Date of issue: 15 November 2024

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Executive summary

Demand forecasts from Endeavour Energy show rapid demand growth in the Western Sydney and Aerotropolis areas due to the connection of new data centres and ongoing development of commercial and residential lands and associated infrastructure in the area. There is an emerging risk of unserved energy at the Sydney West Bulk Supply Point (BSP) due to increasing summer demand exceeding the firm capacity at the site. This will result in load shedding under single or multiple outages of 330/132 kV transformers at Sydney West BSP to ensure loads are within the ratings of the remaining in-service transformers.

We are applying the Regulatory Investment Test for Transmission (RIT-T) to options that allow Transgrid to meet expected demand and connection point reliability requirements in the Sydney West supply area. Publication of this Project Assessment Conclusions Report (PACR) represents the final step in the RIT-T process. As investment is needed to meet externally imposed regulatory obligations and service standards, we consider this a reliability correction action RIT-T.

Identified need: meeting demand and reliability requirements in the Sydney West area

The identified need for this RIT-T analysis is to meet demand for electricity and connection point reliability requirements in the Sydney West area.

The latest Endeavour Energy demand forecast for Sydney West BSP shows significant demand growth which is mainly driven by spot load including data centres, metro train lines and large commercial and residential development around the new airport in Western Sydney.

In the absence of network investment, our central maximum demand forecast for the Western Sydney area (Latest POE50 demand forecast) is expected to exceed the firm transformer capacity at Sydney West BSP from 2025/26. The difference between forecast maximum demand and firm transformer capacity at this BSP will increase from 130 MVA in 2025/26 to 694 MVA in 2032/33.

If there is a single or multiple outage of 330/132 kV transformers at the Sydney West BSP, and this contingency event occurs at or near times of high demand, load shedding will be required to maintain load below the firm capacity of the remaining in-service transformers. Based on probabilistic planning studies of transformer failure rates and repair times, we estimate expected unserved energy of 26 MWh in 2025/26, increasing to approximately 1411 MWh in 2031/32, and 13517 MWh in 2047.

We have commenced this RIT-T to assess options which will enable us to meet our reliability requirements in the Sydney West area in view of the significant increase in forecast demand.¹

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 5.1.4 of the National Electricity Rules (NER).

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'*")

No submissions received in response to the Project Specification Consultation Report

We published a Project Specification Consultation Report (PSCR) on 22 April 2024 and invited written submissions on the material presented within the document. No submissions were received in response to the PSCR.

No material developments since publication of the PSCR

No additional credible options were identified during the consultation period following publication of the PSCR. In addition, no material changes have occurred since the PSCR that have made an impact on the preferred option.

Two credible network options have been considered

We consider that there are 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.

Table E-1 Summary of the credible options

Option	Description	Capital costs (\$M, 2024/25)	Operating costs (\$M/yr, 2024/25)	Remarks
Option 1	Install a new 330/132 kV 375 MVA transformer at Sydney West BSP	25.78	0.26	This is our preferred option as it results in the highest net economic benefit
Option 2	Establish a new 330/132 kV BSP at Mt Druitt and convert existing 132 kV Line 932 and 219 to 330 kV	83.28	0.83	This option has a higher cost, longer implementation time and will result in a lower net economic benefit.

The preferred option is Option 1, as it has the highest weighted NPV result of the technically and commercially feasible options which have been considered at this stage of the RIT-T.

Two other options were considered but not progressed. These were transferring load to a new Kemps Creek BSP and transferring load to the Vineyard BSP. The reasons these options were not progressed are outlined in section **Error! Reference source not found.** of this PACR.

No submissions received in relation to non-network options

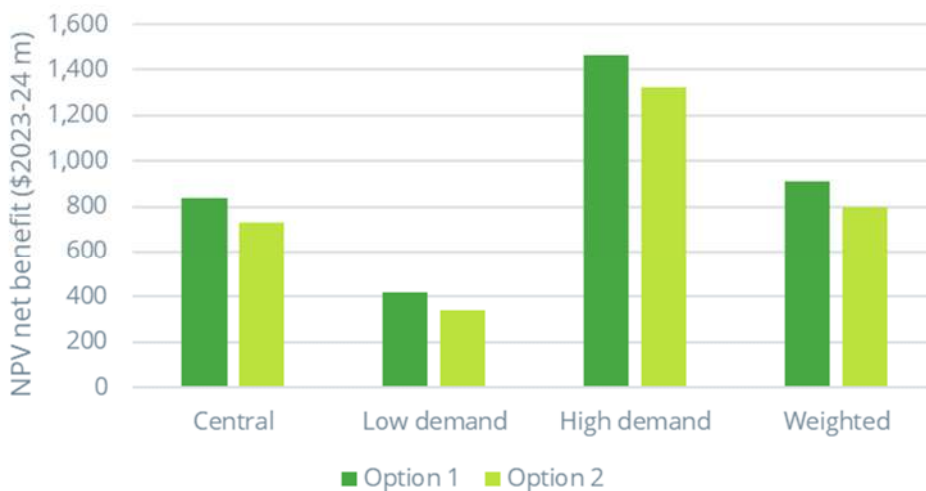
In the PSCR we noted that we considered non-network options may be able to assist with meeting the identified need, specifically non-network options that offer demand management, embedded generation or energy storage. We invited parties to make written submissions regarding the potential of non-network options to satisfy, or contribute to satisfying, the identified need for this RIT-T. No submissions were received in response to the PSCR in relation to non-network options.

² As per clause 5.15.2(a) of the NER.

Option 1 delivers the highest net economic benefit and will meet NER requirements

We have assessed that Option 1 is the best performing option under all three reasonable scenarios considered in this PACR. Option 1 will address the identified need sooner compared to the alternative option, and at a lower cost. On a weighted basis, where each scenario is weighted equally, Option 1 is expected to deliver net benefits of approximately \$908.12 million (in \$2024/25). Sensitivity testing finds that Option 1 delivers the highest net economic benefits even under changes in key modelling assumptions. This makes Option 1 our preferred option.

Figure E-1 NPV of net economic benefits (\$2024/25 m)



Conclusion

This PACR finds that Option 1 is the preferred option to address the identified need. Option 1 involves installing a new 375 MVA 330/132 kV transformer at the existing Sydney West BSP. This option will increase the firm transformer capacity at Sydney West BSP by 375 MVA. Option 1 will meet the identified need, is technically and commercially feasible, and will result in the highest net economic benefit.

The capital cost of this option is approximately \$25.78 million \pm 25% (in \$2024/25). The work will be undertaken over a four-year period with all works expected to be completed by 2027/28. In addition, routine operating and maintenance costs are estimated at approximately \$0.26 million per annum (in \$2024/25).

All works will be completed in accordance with the relevant standards and components shall be replaced to have minimal modification to the wider transmission network. Necessary outages of relevant assets in service will be planned appropriately in order to complete the works with minimal impact on the network. It is not anticipated that the project will have a significant impact on the environment in accordance with the Environmental Planning and Assessment Act 1979 (NSW) (EP&A Act).

Next steps

This PACR represents the final step of the consultation process in relation to the application of the RIT-T process undertaken by Transgrid. It follows a PSCR released on 22 April 2024. No submissions were received in response to the PSCR.

The second step of the RIT-T process, production of a Project Assessment Draft Report (PADR), was not required as Transgrid considers its investment in relation to the preferred option to be exempt from that part of the RIT-T process under NER clause 5.16.4(z1). Production of a PADR is not required due to:

- the estimated capital cost of the preferred option being less than \$54 million³;
- the PSCR stating:
 - 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 options 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;
- no PSCR submissions identifying additional credible options that could deliver a material market benefit; and
- the PACR addressing any issues raised in relation to the proposed preferred option during the PSCR consultation.

Parties wishing to raise a dispute notice with the AER may do so prior to 19 December 2024 (30 days after publication of this PACR). Any dispute notices raised during this period will be addressed by the AER within 40 to 100 days, after which the formal RIT-T process will conclude. Further details on the RIT-T can be obtained from Transgrid's Regulation team via regulatory.consultation@transgrid.com.au. In the subject field, please reference 'Supply to Sydney West area PACR'.

³ Varied from \$46m to \$54m based on the [AER Final Determination: Cost threshold review](#), November 2024.