Transgrid

# Sydney Ring South

## Regulatory Investment Test for Transmission

**Project Assessment Draft Report Summary**

**29 May 2026**

# Acknowledgement of Country

We acknowledge the long-standing connection to Country shared by the Traditional Custodians of the lands, skies and waterways we live and work on. This connection inspires and informs the care we take when working across the lands as well.

We recognise that Country in every corner of every state we operate in, is rich in tens of thousands of years of history and culture. And that every community we work in has their own connection with the land. We honour this in the actions we take – and honour the Elders past, present and emerging.

See more information about Transgrid's commitment to cultural heritage and reconciliation

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# Executive Summary

## Securing reliable supply of clean, affordable power to NSW's major urban centres

The Sydney, Newcastle, and Wollongong region will be home to 8.1 million people by 2041.[1] It is Australia's largest economic powerhouse, underpinning a material share of GDP and serving as the country's major centre for finance, technology and trade. It currently accounts for 75 per cent of energy demand in NSW, with this share growing as homes and businesses electrify.[2]

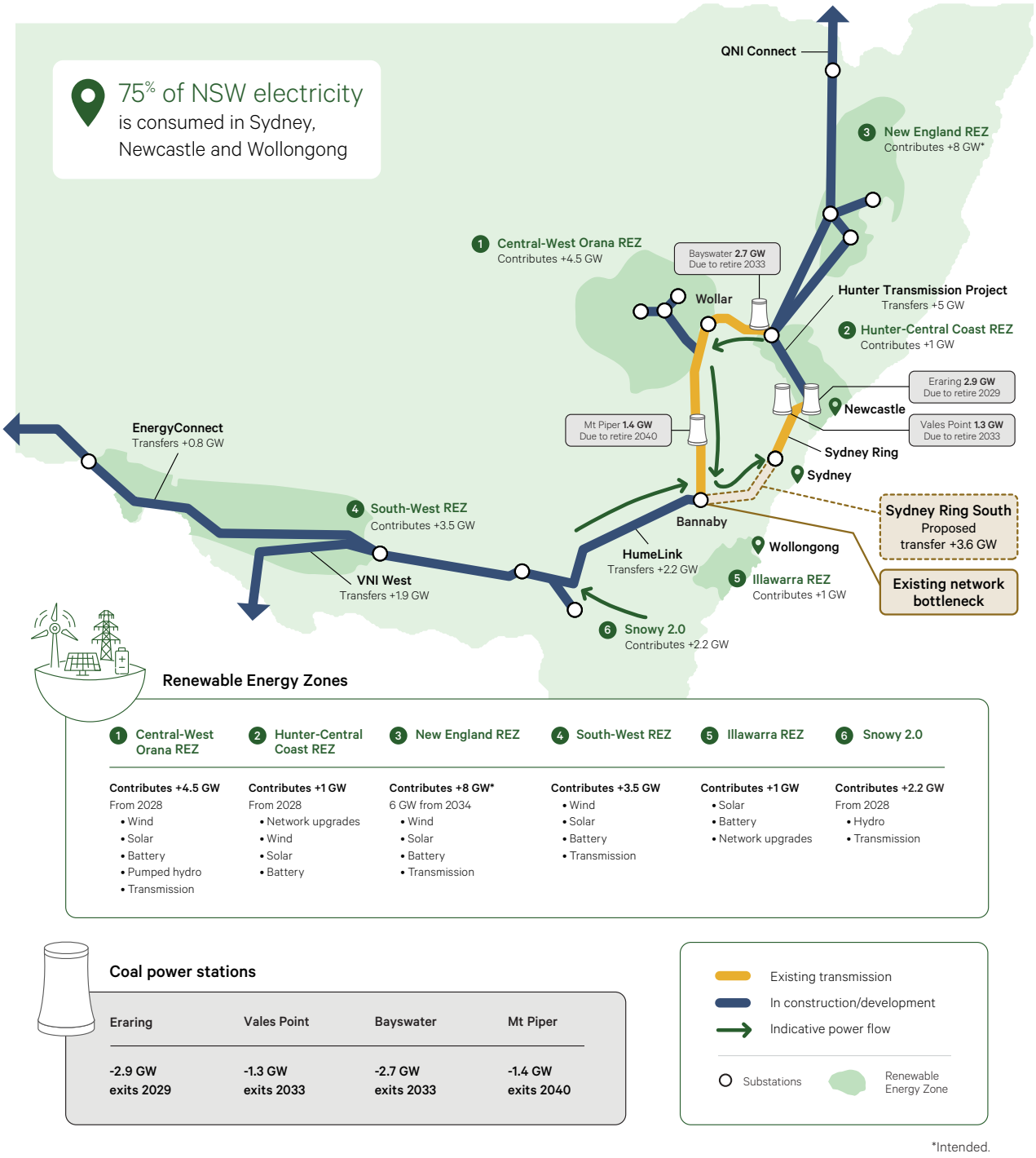
The electricity transmission network supplying the Sydney, Newcastle, and Wollongong region with generation from the south was built in the 1960s to connect the original Snowy Hydro Scheme, and it hasn't changed substantially for over 60 years. Since then, the region's population has more than doubled from less than three million people to more than six million today, and the way we now live and work in the modern economy has become far more energy intensive.

Securing a reliable and affordable, long-term power supply for electricity consumers in this region is critical as the system undergoes a new, highly dynamic phase of 'deep transition'. This transition means that as coal generators located close to Sydney, Newcastle, and Wollongong exit the system, our power will instead be generated in diverse locations across NSW and interstate.

The current transmission network approaching Sydney from the south relies on three single-circuit 330 kV transmission lines, which now represent a bottleneck that will increasingly limit the amount of renewable generation from South West NSW that reaches our rapidly growing cities to service their growing demand for electricity. While this network was fit for historical generation connections to coal-fired power stations and lower demand for electricity, it is not designed for the modern economy.

[1] NSW population projections - key findings | NSW Department of Planning, Housing and Infrastructure.
[2] AEMO Draft 2026 ISP demand forecast for the Sydney, Newcastle, and Wollongong subregion.

**Figure E.1:** Sydney Ring South will enable growing electricity demand in the Sydney, Newcastle, and Wollongong demand centres to be supplied by lower-cost renewable generation as aging NSW coal generators retire




*Intended.

Since the 1970s, network planners have proposed and constructed a transmission network that gradually formed a ring around Sydney, Newcastle, and Wollongong (known as the Sydney Ring), to transfer power from existing generators to our largest cities. A high voltage 500 kV network was envisioned to supply the Sydney Basin – running from South Western Sydney to the Southern Tablelands, turning north along the Great Dividing Range to the Upper Hunter, and looping back into Sydney via the Hunter and Central Coast.

The Hunter Transmission Project[3] in the north, and now the proposed Sydney Ring South Project are intended to strengthen the Sydney Ring by increasing its capacity to efficiently transfer over 15 GW of power generated by renewable sources across NSW to our growing cities, maintaining reliable supply as 8.3 GW of coal-fired generation, which our major economies rely on, leaves the system by 2040.[4]

The long-term impact of a strengthened ring on the NSW energy system becomes greater than the sum of its parts,

[3] Hunter Transmission Project.
[4] Combination of transfer capacity uplift from Hunter Transmission Project and a 500 kV transmission line option for the Sydney Ring South Project. Source: AEMO 2025 Electricity Network Options Report.

ensuring homes, small businesses and major industry in Sydney, Newcastle, and Wollongong will benefit from secure access to an abundant supply of reliable, lower-cost energy from renewable generation.

We anticipate that developing a Sydney Ring South transmission line will open up the supply of lower-cost energy, delivering significant bill savings to NSW energy consumers. If built, the preferred option is forecast to lower average household bills by $51 per year between 2034 and 2043, and to lower average small business bills by $110 per year (real $2024/25).

The project will provide greater access to lower-cost generation and enable the energy market to operate more efficiently, lowering wholesale electricity prices - the largest component of bills. While network charges will increase due to the investment, these costs will be more than offset by reductions in generation costs. Consumer benefits and lower prices will be even greater if electricity demand grows faster than currently forecast.

This Project Assessment Draft Report (PADR) identifies a new 500 kV line between Bannaby in the Southern Tablelands and South Western Sydney, to be in service as soon as practicable in the mid 2030s, as the best option to deliver new sources of energy in a changing system that meets the long-term needs of NSW energy consumers.

All options tested within this PADR that include a high voltage transmission line show similar cost-benefit results (within 4.5 per cent of each other), and effectively rank equal first (Option 6, Option 3, Option 4 and Option 5). These options all feature the development of a new transmission line at the core, with variations to initially operate at 330 kV (Option 3, which defers some capital expenditure); to add power flow control devices (Option 5 and Option 6); or, later in-service commissioning of a 500 kV transmission line (Option 5). Option 6, which combines a 500 kV transmission line planned in the mid 2030s with a power flow control solution in 2030/31, performs best under high-growth sensitivities and scenarios, given it delivers the largest uplift in network capacity.

Strong engagement is crucial in getting this right. Community and stakeholder feedback will play a critical role in the project, and we are seeking community views before decisions are made, not after. We encourage communities and stakeholders to participate, challenge assumptions, and help inform the future of the electricity system for NSW.

## Community will play a critical role

This document is a starting point for a long-term conversation, not a determined outcome. The final engineering solution will not be decided for some time. The project identified in this PADR will not be easy to build, with a new 500 kV transmission line extending more than 100 km from Bannaby in the Southern Tablelands to South Western Sydney.

Any pathway through South Western Sydney would traverse areas transformed by historic and unprecedented urban growth, from lower-density and semi-rural landscapes to Australia's third-largest and fastest-growing economy, which is now home to more than 2.5 million people, the new City of Bradfield and the Western Sydney International Airport. These diverse communities are experiencing rapid population growth, significant infrastructure investment, land-use transformation and new industrial development.

While the Sydney Ring South Project is critical to securing the reliable and affordable energy future that communities need, this significant change in the urban landscape across South Western Sydney means strengthening the Sydney Ring will create impacts on local landowners and communities. In this assessment, Transgrid has considered how this complexity may affect project delivery options and costs, and how impacts might be mitigated and recompensed. However, we recognise that it will not be an easy balance to strike for Transgrid, planning authorities, energy regulators, energy consumers and affected communities alike.

It will be critical that Transgrid works in partnership with communities and key local stakeholders to ensure transparent engagement, build trust, and enable meaningful participation in decision making.

This assessment sets out a high-level view, which focuses on the future and recommends a pathway forward that delivers the greatest economic net benefit and meets the long-term interests of NSW energy consumers.

Strong engagement is crucial in getting this right. Community and stakeholder feedback will play a critical role in the project, and we are seeking community views before decisions are made, not after. We encourage communities and stakeholders to participate, challenge assumptions, and help inform the future of the electricity system for NSW.

Transgrid is committed to working with local communities with honesty and integrity in a meaningful, responsive and equitable way through transparent and inclusive practices. Commencing early engagement on the corridor and route for a new 500 kV transmission line would allow more time to work with communities, government planners and developers, minimising the impacts of delivering this transformational project. Starting this process early would minimise risks and impacts to developing communities that may otherwise drive higher costs to deliver a more complex project in the future, resulting in higher costs for energy consumers.

## Transgrid is responding to a need identified by the national transmission planner

As early as the *2020 Integrated System Plan* (ISP), the Australian Energy Market Operator (AEMO) expected that a future project would be needed to reinforce the network supplying the Sydney, Newcastle, and Wollongong region, reduce costs and enhance system resilience and optionality.[5]

Since the *2020 ISP*, the Sydney Ring South Project has been identified as a future need and was named an actionable project in the *2024 ISP*, with that status reaffirmed in the recent *Draft 2026 ISP*.[6]

This PADR is the first step in the Regulatory Investment Test for Transmission (RIT-T) that assesses a range of credible options against an identified need and proposes the option that delivers the greatest net market benefits in the long-term interest of consumers. AEMO identifies the need for the Sydney Ring South Project as:

- delivering net market benefits for consumers to increase the power system's capability to supply the Sydney, Newcastle, and Wollongong demand centres, replacing supply capacity that will be removed on the closure of coal-fired power stations in the Newcastle area; and
- efficiently service increasing peak demand.[7]

While the *2024 ISP* specified a publication date of June 2025 for this PADR, the Australian Energy Regulator (AER) granted Transgrid an extension in 2025 to publish the PADR by 30 April 2026.[8] On 16 April 2026, Transgrid advised the AER that publication of the Sydney Ring South PADR would be deferred until 29 May 2026. The extension has allowed Transgrid to better consider relevant new data and insights arising from the *2025 Inputs, Assumptions and Scenarios Report*[9] (IASR), the *2025 Electricity Statement of Opportunities*[10] (ESOO) and the *Draft 2026 ISP* to minimise the risk of material changes impacting the project between the release of this PADR and publication of the Project Assessment Conclusions Report (PACR).

## Six Sydney Ring South Project options are assessed at this stage of the RIT-T

This PADR adopts and builds on the four credible Sydney Ring South Project options identified in the *2025 Electricity Network Options Report* (ENOR),[11] which were tested in AEMO's *Draft 2026 ISP*, including updated cost estimates. Two additional options that combine and stage components of the *2025 ENOR* options have also been considered.

The option numbering referenced in this PADR reflects the option numbering in the *2025 ENOR* except for Option 5 and Option 6, which are introduced in this PADR. Option 1 in the ENOR is not considered here as this is progressing separately as the Hunter Transmission Project; delivered by Energy Corporation of NSW (EnergyCo) as a Priority Transmission Infrastructure Projects (PTIP) under the *NSW Electricity Infrastructure Roadmap*.


[5] Sydney Ring South was originally part of the "Reinforcing Sydney, Newcastle & Wollongong Supply" project, which was identified as a future ISP project in the final 2020 ISP. See 2020 Integrated System Plan pg. 15-16.
[6] AEMO Draft 2026 ISP.
[7] ISP Appendix 5: Network Investments, pg. 25.
[8] Sydney Ring South PADR publication extension | Australian Energy Regulator.
[9] AEMO 2025 Inputs, Assumptions and Scenarios Report.
[10] AEMO 2025 Electricity Statement of Opportunities.
[11] AEMO 2025 Electricity Network Options Report.

**Table E.1:** Summary of the options assessed in this PADR

| Option | Description | Added network capacity | Timing | Capital cost (nominal) |
|---|---|---|---|---|
| **Incremental augmentations** | | | | |
| **Option 2** | New South Creek 500/330 kV substation | +0 MW (improves utilisation of existing network) | 2030/31 | $644 million |
| **Option 2d** | Install series reactors as power flow controllers in the existing 330 kV network (2024 ISP candidate option) | +0 MW (improves utilisation of existing network) | 2030/31 | $240 million |
| **Options including a new transmission line** | | | | |
| **Option 3** | Staged delivery of a high-capacity transmission line from Bannaby in the Southern Tablelands to South Western Sydney:<br>Stage 1: 500 kV double-circuit line from Bannaby, initially operated at 330 kV, plus a South Creek 330 kV switching station<br>Stage 2: Upgrade South Creek to a 500/330 kV substation, and upgrade line operation at 500 kV | Stage 1: +1,300 MW<br>Stage 2: +2,300 MW | Stage 1: 2033/34<br>Stage 2: 2040/41 | Stage 1: $2,646 million<br>Stage 2: $1,162 million<br>Total: $3,808 million |
| **Option 4** | High-capacity transmission line from Bannaby in the Southern Tablelands to South Western Sydney, including a new South Creek 500/330 kV substation<br>Stage 1: New South Creek 500/330 kV substation<br>Stage 2: 500 kV double-circuit line from Bannaby to South Western Sydney | Stage 1: +0 MW (improves utilisation of existing network)<br>Stage 2: +3,600 MW | Stage 1: 2030/31<br>Stage 2: 2033/34 | Stage 1: $942 million[12]<br>Stage 2: $2,411 million<br>Total: $3,353 million |
| **Option 5** | Installing series reactors as power flow controllers and a deferred high-capacity transmission line from Bannaby in the Southern Tablelands to South Western Sydney and a new South Creek 500/330 kV substation (Draft 2026 ISP optimal development path):<br>Stage 1: Install series reactors as power flow controllers in the existing 330 kV network<br>Stage 2: New South Creek 500/330 kV substation and a 500 kV double-circuit line from Bannaby to South Western Sydney | Stage 1: +0 MW (improves utilisation of existing network)<br>Stage 2: +3,600 MW | Stage 1: 2030/31<br>Stage 2: 2037/38 | Stage 1: $251 million<br>Stage 2: $4,664 million<br>Total: $4,915 million |
| **Option 6** | Option 5 scope, delivered to an earliest in-service schedule:<br>Stage 1: Install series reactors as power flow controllers in the existing 330 kV network, plus a new South Creek 500/330 kV substation<br>Stage 2: 500 kV double-circuit line from Bannaby to South Western Sydney | Stage 1: +0 MW (improves utilisation of existing network)<br>Stage 2: + 3,600 MW | Stage 1: 2030/31<br>Stage 2: 2033/34 | Stage 1: $1,135 million<br>Stage 2: $2,384 million<br>Total: $3,519 million |

*Option numbering in this PADR aligns with the Draft 2026 ISP. Option 1 is not considered as it is progressing separately as the Hunter Transmission Project, and Options 2a, 2b and 2c were considered in previous ISPs, but are no longer being assessed.*
*Cost estimates provided reflect the cumulative risks, contingencies and timing associated with delivery of the entire program of works for each option. As a result, options demonstrating overlapping but varying scope do not reflect a 'building block' approach to cost estimates.*

Option 3, Option 4, and Option 6 all reflect a new 500 kV line from Bannaby in the Southern Tablelands to South Western Sydney built by the mid 2030s, whereas Option 5 proposes later in-service commissioning of a 500 kV line (2037/38). Option 5 and Option 6 each combine series reactors as power flow controllers on the existing 330 kV network with a new 500 kV line delivered in different timeframes. Option 6 has been included to test the value of power flow control as a possible net beneficial addition when a new transmission line is planned for earliest in-service commissioning.

Several additional network options have also been considered over the course of preparing this PADR. These additional options and the reasons they have not progressed are summarised in the body of the PADR.

[12] Compared with Option 2, the cost of delivering the South Creek 500/330kV substation in Option 4 includes additional scope to accommodate power flows from the 500 kV transmission line that would be delivered in Stage 2.

## Cost estimates are based on the latest available information but are early stage and will undergo further detailed analysis as the project develops

Previous experience demonstrates that transmission cost estimates can increase as projects move beyond early concept as community expectations, scope, constructability and market conditions became clearer.

When assessing cost estimates for Sydney Ring South options, we have drawn on recent experience to enhance our approach to costing options at this stage of development. Estimates have been prepared using a first principles methodology supported by independent estimating specialists and have been benchmarked against major transmission projects at more advanced stages of delivery. Cost estimates for Sydney Ring South also include consideration of social licence, property and constructability constraints.

Transgrid acknowledges that costs presented in this PADR could increase or decrease as the project advances. Key elements include understanding corridor, routes and feasible design, engineering and constructability assessments, targeted community and stakeholder engagement to reduce scope and property risk, market testing through early contractor involvement, and procurement planning for long-lead equipment. Commencement of early works and engagement would help improve the accuracy of cost estimates for this project.

## At this early stage of development, the project corridor, route and preferred technology are yet to be identified

For all options involving a new 500 kV transmission line, the costs presented in this PADR are primarily based on an overhead transmission design, which is typically the lower-cost design that addresses requirements in the *National Electricity Rules*[13] and the RIT-T economic assessment process for Transgrid to deliver economically-efficient investment.

Transgrid acknowledges that identifying an appropriate project corridor and preferred route for the proposed transmission line would require extensive community consultation and engagement, resulting in social licence considerations that may influence the length, location and design of the transmission line, including, if feasible, the potential for partial undergrounding . While this work has not yet commenced, Section 4 sets out our proposed approach, which is also outlined in more detail on the project website.

Transgrid acknowledges that identifying an appropriate project corridor and preferred route for the proposed transmission line would require extensive community consultation and engagement, resulting in social licence considerations that may influence the length, location and design of the transmission line, including, if feasible, the potential for partial undergrounding. This work has not yet commenced.

Recognising community and stakeholder interest in undergrounding transmission infrastructure, Transgrid has considered a range of possible route lengths and design options to inform the cost estimates for the options presented in this PADR. This includes preliminary assessment of a concept that reduces community impact, including partial undergrounding up to 20 km of the line, which is based on preliminary costings would increase costs by up to $2,700 million (nominal).

Noting the specific corridor, terrain, and geotechnical factors that will be key contributing factors to this figure are not yet determined, in general, undergrounding as a construction technique results in a higher-cost position attributed to greater construction complexity, longer delivery timeframes and higher property acquisition costs.

Our analysis is consistent with the *2025 Electricity Network Options Report* (ENOR) which notes that the cost of undergrounding a 500 kV AC transmission line is approximately three to seven times more expensive than an equivalent capacity overhead design.[14]

Transgrid anticipates feedback on social licence from a broad range of stakeholders, including consumers, government, community and regulators as the project develops; including questions and comments about the feasibility, cost and value of undergrounding. These considerations will be further addressed in the PACR.

[13] National Electricity Rules (v. 247) | AEMC.
[14] AEMO 2025 Electricity Network Options Report.

## Non-network options were considered for the project

On 26 June 2024, AEMO sought submissions from providers of potential non-network solutions that may be capable of addressing or partially addressing the identified need.[15] Submissions closed on 18 September 2024, and AEMO received two submissions from proponents of prospective storage projects in the Greater Sydney Region (both of whom requested confidentiality).

Both proponents described prospective storage projects that could connect within the Greater Sydney region, but did not identify the network support services proposed to meet the identified need that extend beyond the standard market operation of grid-connected storage facilities, which are considered by default through the approach adopted for the PADR.

Analysis in this PADR highlights that a significant number of grid-scale storage projects are required within the Sydney, Newcastle, and Wollongong region, even if the Sydney Ring South Project is developed. If they progress, the submitters' proposed storage projects would play an important role in the energy system, but on their own, storage projects at this scale would not be a sufficient alternative to the Sydney Ring South Project.

Transgrid reviewed the submissions and concluded that neither submitter proposed a credible non-network option that would meet the identified need and warrant assessment in the PADR. We notified submitters that should a non-network option emerge for which their projects may be able to provide network services, Transgrid would re-engage to seek detailed information to assess technical and commercial feasibility of all potential service providers.

## Early delivery of the 500 kV transmission line delivers the highest net market benefits

This PADR finds that at this stage of the RIT-T, Option 6 is the 'preferred option': planning a 500 kV transmission line from Bannaby in the Southern Tablelands to South Western Sydney in 2033/34, coupled with the installation of series reactors as power flow controllers on the 330 kV network in 2030/31. Option 6 represents the same infrastructure scope included in the *Draft ISP 2026* Optimal Development Path (ODP), except the 2033/34 timing brings the transmission line forward to the earliest in-service date.

This option delivers the greatest expected net market benefit of all options considered, and performs well across a range of plausible scenarios, particularly those involving strong growth in electricity demand. It is the top-ranked option on a scenario-weighted basis (and under the Accelerated Transition scenario). Overall, it is estimated to deliver approximately $3,200 million of (present value) net market benefits over the assessment period on a scenario-weighted basis.

For energy consumers, this means that on a probability-weighted basis, building and operating the top-ranked option for the Sydney Ring South Project (Option 6) would cost $3,200 million less than building and operating an alternative (or counterfactual) energy system that instead only relies on a mix of generation and storage investments that would otherwise be required within the Sydney Basin to meet their long-term needs.

The higher cost of this more expensive, alternative system would inevitably be passed on to energy consumers through higher bills for homes and businesses and would not represent the long-term interests of NSW energy consumers.

On a probability-weighted basis, the top-ranked option for the Sydney Ring South Project is Option 6. This involves planning a 500 kV transmission line between Bannaby in the Southern Tablelands to South Western Sydney in 2033/34, coupled with the installation of series reactors as power flow controllers on the 330 kV network in 2030/31. This would cost $3,200 million less than building and operating an alternative energy system that would instead rely on a mix of generation and storage investments in the Sydney Basin to meet long-term consumer needs.

[15] See: "Call for non-network options - 2024 Integrated System Plan" | AEMO.

Additionally, uncoordinated, market-driven investment carries a higher risk to reliability of supply for NSW energy consumers. It therefore represents a less prudent and efficient response to the identified need than the Sydney Ring South Project, which enables the transfer of abundant, lower-cost renewable energy generated across regional NSW.

Transgrid highlights that all options that plan the delivery of a new high-capacity transmission line achieve the highest market benefits. We note that Option 3, Option 4, and Option 5 have estimated net benefits that are within 4.5 per cent of those estimated for Option 6 on a scenario-weighted basis; and are therefore effectively ranked equal.

At their core, these options share a common foundational basis: the development of a high-capacity transmission line with relatively minor variances in the scope and staging of infrastructure. Option 3 involves the staged delivery of a high-capacity transmission line initially operated at 330 kV, plus a South Creek 330 kV switching station by 2033/34. This would allow for capital investment in the 500 kV switchyard at the South Creek substation to be deferred by approximately seven years.

Alternatively, Option 4 involves the delivery of the 500 kV transmission line in 2033/34 without power flow controllers; and Option 5 delays the in-service commissioning of the transmission line to 2037/38, following the installation of power flow controllers in 2030/31.

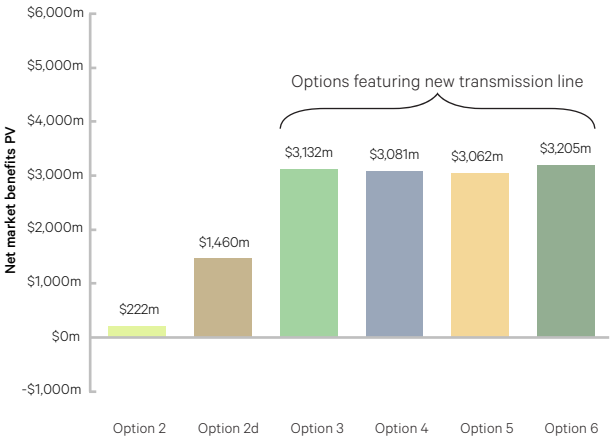
At this stage of the RIT-T, Option 6 is preferred as the top-ranked option on a scenario-weighted basis.

While the assessment indicates that series reactors as power flow controllers on the 330 kV network will deliver the energy system incremental value when a 500 kV transmission line is planned for 2033/34, Transgrid intends to undertake further analysis to determine the potential option value of proceeding with a power flow control solution. This analysis will be undertaken for the PACR and confirm whether this investment can be avoided, or whether it is indeed net-beneficial when combined with a longer-term, high-capacity transmission line solution.

In addition, given the closeness of the results, Transgrid intends to further investigate (and confirm in the PACR) the optimal timing of the transmission line under each scenario for the staged options (Option 3 and Option 5) to compare them to Option 6 and Option 4. A proportionate approach has been taken in this PADR where the timing of the second stage of these options has been fixed in all scenarios.

The option to deliver the South Creek substation work alone (Option 2) is not proposed to be assessed further as part of this RIT-T, given the PADR finds that it generates negligible net market benefits on a weighted basis (and net costs in the Step Change and Slower Growth scenarios).

**Figure E.2:** Cost benefit assessment and ranking of PADR options, weighted results across ISP scenarios ($2024/25)




| Ranking | Option | Net benefit ($ millons PV) | Difference from first ranked |
|---|---|---|---|
| 1 | Option 6 | 3,205 | |
| 2 | Option 3 | 3,132 | -2.3% |
| 3 | Option 4 | 3,081 | -3.9% |
| 4 | Option 5 | 3,062 | -4.5% |
| 5 | Option 2d | 1,460 | -54.5% |
| 6 | Option 2 | 222 | -93.1% |

| | |
|---|---|
| Option 2 | New South Creek 500/330 kV substation in 2030/31 |
| Option 2d | Series reactors as power flow controllers in existing 330 kV network in 2030/31 |
| Option 3 | Staged delivery of 500 kV transmission line from Bannaby to South Western Sydney, initially operated at 330 kV from 2033/34 |
| Option 4 | Staged delivery of 500 kV transmission line from Bannaby to South Western Sydney, in service 2033/34 |
| Option 5 | Series reactors as power flow controllers in 2030/31, followed by 500 kV transmission line from Bannaby to South Western Sydney in 2037/38 |
| Option 6 | Series reactors as power flow controllers in 2030/31 followed by 500 kV transmission line from Bannaby to South Western Sydney in 2033/34 |

*Option numbering in this PADR aligns with the Draft 2026 ISP. Option 1 is not considered as it is progressing separately as the Hunter Transmission Project, and Options 2a, 2b and 2c were considered in previous ISPs, but are no longer being assessed.*
*The cost-benefit of each option is assessed against the counterfactual scenario where no Sydney Ring South infrastructure is developed*

## Sensitivity testing confirms the ranking and the strong expected net benefits from the preferred option

We have investigated a range of sensitivities that reflect credible trajectories of the NSW energy transition over the coming decades. Table E.2 illustrates the impact of each of these sensitivities on the estimated net market benefit of the preferred option at this stage of the RIT-T. The sensitivities also demonstrate that the delivery of a new 500 kV transmission line (Option 6, Option 3, Option 4 and Option 5) provide the greatest expected net market benefits.

Option 6 provides particularly high benefits in scenarios and sensitivities featuring strong growth in electricity demand, including rapid electrification and decarbonisation (Accelerated Transition); and if data centre growth materially exceeds forecasts included in the *Draft 2026 ISP*. Under these conditions, the energy system supplying Greater Sydney would become increasingly strained without the Sydney Ring South Project.

Even under sensitivities for a higher adoption of consumer and distribution-connected solar and storage resources, or lower growth in data centres, the analysis shows that a new high-capacity transmission line planned for 2033/34 will maximise net benefits in the long-term interests of consumers.

**Table E.2:** Net market benefits for preferred option (Option 6) under select sensitivities, Step Change scenario ($2024/25)

| Sensitivity | Net market benefits PV |
|---|---|
| **Alignment with NSW Electricity Infrastructure Roadmap development**<br>*Inclusion of generation projects that have been awarded Access Rights in South West and Central West Orana REZs, and Stage 2 of the New England REZ transmission project, which were not included in the Draft 2026 ISP.* | $4,100 million<br>*+ $700 million to core Step Change scenario* |
| **Constrained use of diesel as a back-up fuel**<br>*Constrained use of diesel as a back-up fuel at gas power stations in the Newcastle and Central Coast regions, consistent with environmental license conditions.* | $3,600 million<br>*+ $200 million to core Step Change scenario* |
| **NSW Electricity Infrastructure Roadmap aligned development & constrained use of diesel as a back-up fuel** | $4,600 million<br>*+ $1,200 million to core Step Change scenario* |
| **Very high data centre growth**<br>*Data centre demand forecast for Greater Sydney increased by 2 GW above the Draft 2026 ISP Step Change scenario, resulting in an approximate demand forecast of 2.3 GW by 2035, 3.2 GW by 2040 and 4.1 GW by 2050* | $9,800 million<br>*+ $6,400 million to core Step Change scenario* |
| **High data centre growth**<br>*Data centre demand forecast for Greater Sydney increased by 1 GW above the Draft 2026 ISP Step Change scenario, resulting in an approximate demand forecast of 1.9 GW by 2035, 2.5 GW by 2040 and 3.1 GW by 2050* | $7,300 million<br>*+ $3,900 million to core Step Change scenario* |
| **Low data centre growth**<br>*New development of large data centres within the Greater Sydney region assumed not to progress, resulting in lower demand than forecast in the Draft 2026 ISP Step Change scenario. This sensitivity allows for the isolation of new data centre growth as a driver of Sydney Ring South net market benefits* | $900 million<br>*- $2,500 million to core Step Change scenario* |
| **Higher adoption of distributed and consumer energy resources**<br>*Increase year-on-year uptake of behind-the-meter storage by approximately 50% for 10 years to 2035/36, resulting in an additional 760 MW and 1,490 MWh of behind the meter storage installed in the Sydney, Newcastle, and Wollongong region, and increased generation hosting capacity of distribution networks in the Sydney, Newcastle, and Wollongong region from 0.89 GW to 5.31 GW* | $2,000 million<br>*- $1,400 million to core Step Change scenario* |
| **Higher capital cost**<br>*Capital cost of the 500 kV transmission line increased by 100%, reflecting the upper uncertainty limit of capital cost estimates (on weighted results)* | $2,200 million<br>*- $1,000 million to weighted results* |

We also find the preferred option (Option 6) and Option 3 are robust to sensitivities relating to the commercial discount rate and an alternative approach to annualising and discounting option costs.

All sensitivity tests will be reassessed in the PACR and take account of the two key intended updates to the options assessment; specifically further consideration of proceeding with a power flow control solution, and further investigation into the optimal timing of the staged transmission line options (Option 3 and Option 5) under each scenario.

## A 500 kV transmission line delivers for NSW consumers and the economy

The PADR also demonstrates that a Sydney Ring South 500 kV transmission line provides NSW energy consumers, the NSW economy, and market participants significant benefits outside the market benefits we are required to test under the RIT-T. The timely delivery of these benefits is critical to the long-term interests of NSW energy consumers, and reflects the *National Electricity Objectives*[16] of delivering long-term energy security, affordability and reliability by:

- increasing consumers' long-term access to the cheapest available energy
- lowering and stabilising wholesale prices over time (the largest component of consumer bills)
- securing a long-term reliable supply as energy sources powering the grid change
- meeting NSW energy consumers' long-term needs with the most efficient investment, at the least cost and with the lowest risk of untimely delivery.

## Securing access to lower-cost renewable generation for our largest cities and growing economies

A new high-capacity transmission line between Bannaby and South Western Sydney would more than double the capacity of the southern transmission corridor into Sydney, securing reliable access to lower-cost renewable energy for consumers in our largest cities and fastest growing economies.

We estimate that during its first decade of full operation, the Sydney Ring South Project will deliver a net saving of $51 per year for an average NSW household, and a net saving of $110 per year for an average small business.

## Overcoming network bottlenecks sooner will place downward pressure on bills

By removing a known bottleneck, a Sydney Ring South 500 kV line reduces exposure to local supply constraints and extreme price risks as coal-fired generation exits the system, placing downward pressure on wholesale electricity prices (the largest component of electricity bills) over time. Although price spikes occur relatively infrequently, they have a disproportionate impact on average wholesale prices because retailers must manage the financial risk associated with these events when setting the prices charged to homes and businesses.

Modelling by Endgame Analytics for Transgrid indicates that bringing forward the commissioning of the transmission line by four years to 2033/34 would immediately place downward pressure on NSW wholesale electricity prices by significantly reducing the frequency of extreme price events.

We estimate that during its first decade of full operation, the Sydney Ring South Project will deliver a net saving of $51 per year for an average NSW household, and a net saving of $110 per year for an average small business (real $2024/25).

## Strengthening the ring creates a more resilient energy backbone, securing supply to growing cities

By linking Sydney and the Illawarra with the 500 kV backbone at Bannaby in the Southern Tablelands, the Sydney Ring South Project boosts capacity on a constrained network corridor. This improves the ability of market operator to draw on a broader, more competitive pool of lower-cost generation across the NEM, rather than being limited by a network bottleneck.

This flexibility makes the system more resilient to disturbances like localised periods of low renewable generation in the New England REZ and Central West Orana REZ, by increasing access to power from energy storage, diversified renewables in the South West REZ, and interstate from South Australia and Victoria via the interconnectors.

[16] National Electricity Objectives | AEMC.

Strengthening the Sydney Ring also hardens the network against shocks that would otherwise challenge system security, such as outages on the northern 500 kV ring triggered by events like bushfires or lightning strikes. A resilient network backbone is critical for reliable and affordable energy supply as our cities grow.

## New capacity will boost confidence for investment

The Sydney Ring South 500 kV transmission line will increase investor confidence in the security and affordability of energy to support the growth of industries such as advanced manufacturing, logistics, health, education and digital services across Greater Western Sydney.

Sydney Ring South provides a step towards the electrification of heavy industry in the Illawarra and underpins the productivity of major investments in the new City of Bradfield and Western Sydney International Airport, while also supporting the growth of energy intensive digital industries, boosting productivity, creating high-value jobs, and delivering long-term economic growth across Greater Western Sydney and the Illawarra.

Transgrid recognises that energy policymakers in NSW and nationally are progressing regulatory reforms to ensure that the data centres underpinning digital industries meaningfully contribute to network investments that support their connection. This growth in demand would amplify the need for Sydney Ring South, and Transgrid will work with all stakeholders to implement timely reforms that protect the broader consumer base from higher network costs.

Sydney Ring South provides a step towards the electrification of heavy industry in the Illawarra and underpins the productivity of major investments in the new City of Bradfield and Western Sydney International Airport, while also supporting the growth of energy intensive digital industries, boosting productivity, creating high-value jobs, and delivering long-term economic growth across Greater Western Sydney and the Illawarra.

Additionally, the Sydney Ring South 500 kV transmission line will send an important signal to energy investors that new generation and firming projects located in regional NSW will have reliable access to the state's largest electricity market. Removing the southern bottleneck into Sydney improves the ability of renewable energy projects in Southern NSW to deliver electricity to customers, reducing curtailment risks that create hurdles for project bankability, and encouraging the timely development of new renewable capacity, consistent with least-cost system outcomes.

## Proposed re-opening triggers for this RIT-T

Under the *National Electricity Rules* (NER) relating to a Material Change in Circumstance (MCC), Transgrid is required to include the re-opening triggers for this RIT-T in the PADR and consult with stakeholders on them before they are confirmed in the PACR.

Consistent with these requirements and drawing on the results of the sensitivity testing in this PADR, Transgrid has considered the impact of changes in key underlying assumptions to identify reopening triggers. Specifically, we consider that the following are expected to form re-opening triggers for this RIT-T:

- Real total capital cost increases of more than the amount determined in the PACR threshold tests for making Option 2d become preferred[17]
- Commercial discount rates or regulated transmission WACC, as determined by AEMO in a future draft or final ISP or IASR, being above the amount determined in the PACR threshold test for making Option 2d become preferred.

Should any of these events occur, Transgrid will update its analysis to identify whether the preferred option in this RIT-T has changed or is no longer expected to provide positive net market benefits and will propose a course of action to the AER. Additionally, if the *2026 ISP* includes any change to the ODP from the *Draft 2026 ISP*, Transgrid will reflect this change (which does not constitute an MCC) in the PACR.

[17] We have not included this proposed percentage (nor the equivalent for the commercial discount rate trigger) in the proposed re-opening trigger in this PADR given the uncertainty affecting the assessment of the preferred option for this RIT-T. We propose to provide these percentages in the PACR.

## Submissions and next steps

We are seeking your views early, before decisions are made. Transgrid welcomes written submissions from stakeholders on the analysis and conclusion presented in this PADR. We encourage you to participate, make a submission, challenge assumptions and help inform the future of the electricity system for NSW.

Stakeholders will have extended time to provide submissions given the scale and complexity of the project. Submissions are due on or before 28 August 2026 and should be emailed to srs@transgrid.com.au. Unless clearly requested otherwise at the time of lodgement, submissions will be published on the Sydney Ring South Project page on Transgrid's website, and on AEMO's website.

To provide stakeholders the opportunity to address questions to Transgrid prior to the close of submissions, a series of stakeholder briefings and webinars will be held in early July 2026. Information on the program of stakeholder engagement activities and additional information regarding the submission process is contained in Section 4 and has also been published on the Sydney Ring South Project page on Transgrid's website.[18]

The publication of a PACR represents the next formal stage of this RIT-T. The PACR will address submissions and feedback received on the PADR and determine the final preferred option. The PACR will also consider any updated analysis contained in AEMO's final *2026 ISP*, due to be published in June 2026.

For more information on this PADR or our engagement program, or to make a submission, please contact srs@transgrid.com.au or call 1800 222 537.

Transgrid acknowledges that while the RIT-T framework focuses on the economic assessment of net market benefits, consumer concerns about energy affordability, reliability and equitable access to the benefits of the energy transition, as well as environmental, social, cultural, and community matters remain important. Stakeholder feedback on any project-related matters is welcome.

[18] Sydney Ring South Project page | Transgrid.

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## Contact details

For all inquiries regarding the Sydney Ring South Project, contact srs@transgrid.com.au



transgrid.com.au