



FINAL DECISION

ElectraNet
Contingent Project

Project EnergyConnect

May 2021

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Executive Summary

Project EnergyConnect is a proposed new high-voltage power line connecting South Australia at Robertstown and New South Wales at Wagga Wagga, together with a spur line linking to Victoria at Red Cliffs. It will be jointly constructed and operated by ElectraNet (South Australia) and TransGrid (New South Wales).

ElectraNet has applied to the Australian Energy Regulator (AER) to increase its revenue allowance to fund construction of the South Australian component of the project. This is the final step in the process before ElectraNet is entitled to begin recovering the costs of the project from customers.

ElectraNet forecast capital expenditure for the South Australian component of the project of \$468.6 million (\$2017-18). This component of the project is proposed to be completed by March 2023.

Our role is to determine the incremental revenues that will be added to ElectraNet's revenue allowance, and the forecast prudent and efficient capital expenditure and operating expenditure required to deliver the project.

Table 1 sets out the incremental revenues that will be added to ElectraNet's revenue allowance, the forecast prudent and efficient capital expenditure and operating expenditure required to deliver the project, and the estimated impact on the transmission component of residential customer electricity bills in South Australia.

Table 1 Project EnergyConnect contingent project — assessment of forecast expenditure, revenues and bill impact — South Australia

	Determination
Incremental revenue to be recovered from customers in 2022-23	\$10.2 million
Indicative increase in residential electricity bills in South Australia in 2022-23	\$6
Indicative increase in residential electricity bills in South Australia between 2023-24 and 2027-28	\$17 p.a.
Forecast capital expenditure (\$2017-18)	\$457.4 million
Forecast operating expenditure (\$2017-18)	\$0.5 million

Source: AER analysis.

ElectraNet has demonstrated the project will proceed

Contingent projects are significant network augmentation projects that may arise during a regulatory control period but the need and or timing is uncertain. While the expenditures for such projects do not form part of the total forecast expenditure in a normal revenue determination, the project costs may ultimately be recovered from customers if certain conditions are met (also called a 'trigger event').

On 30 April 2018, we released our final decision on ElectraNet's revenue determination for the 2018–23 regulatory control period. This final decision established three necessary conditions that would allow ElectraNet to recover the prudent and efficient costs of Project EnergyConnect from customers:

- successful completion of the *South Australian Energy Transformation* regulatory investment test for transmission (RIT-T) with the identification of a preferred option or options: (i) demonstrating positive net economic benefits; and/or (ii) addressing a reliability corrective action
- determination by the AER that the proposed investment satisfies the RIT-T, and
- ElectraNet Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

We are satisfied that all three conditions have been met and as such ElectraNet is now entitled to recover revenues from consumers to deliver the project.

In February 2019, ElectraNet completed the *South Australia Energy Transformation* RIT-T demonstrating that a new SA-NSW interconnector was the preferred option that maximised net economic benefits. This process was undertaken by ElectraNet to explore options for reducing the cost of providing secure and reliable electricity to South Australia in the near term, while facilitating the longer-term transition of the energy sector across the National Electricity Market (NEM).

On 24 January 2020, we determined under clause 5.16.6 of the NER that the preferred option identified by ElectraNet's RIT-T satisfies the RIT-T requirements.

Under the NER, ElectraNet is required to re-apply the RIT-T if, in its reasonable opinion, Project EnergyConnect is no longer the preferred option that maximises the net economic benefits (unless the AER determines otherwise).

In September 2020, ElectraNet published an updated cost benefit analysis that accounted for revised project costs, and inputs and assumptions from the Australian Energy Market Operator's 2020 Integrated System Plan. This updated analysis indicated that the net benefits of the project are likely to be positive and that the project remains the preferred option. Therefore, ElectraNet concluded that there is no need to reapply the RIT-T for this project.

On 28 September 2020, we advised ElectraNet that its updated cost benefit analysis provided a not unreasonable basis for its opinion that the project remains the preferred option.

On 31 March 2021, ElectraNet published a review of whether recent market developments could result in a material change of circumstances that may lead to the project no longer being the preferred option. ElectraNet's assessment concluded that the announcements were likely to have an overall positive impact on the modelled net benefits of the project, and that it is not reasonably likely that there has been a material change of circumstances. This was supported by further analysis undertaken by AEMO.

On 30 March 2021, the ElectraNet Board made a resolution committing to proceed with the project subject to the AER amending its revenue determination.

The forecast costs of Project EnergyConnect

The forecast costs that are reasonably required to deliver the project is the key driver of the incremental revenues that would be recovered from consumers.

ElectraNet's application proposed \$468.6 million (\$2017-18) in capex to undertake the Project EnergyConnect contingent project. We have examined ElectraNet's proposed capex forecast and our view is that a reasonable estimate of prudent and efficient capex required to deliver the project is \$457.4 million (\$2017-18). This is 2.3 per cent less than ElectraNet's proposal.

The majority of ElectraNet's forecast capex would be incurred by an efficient and prudent operator to deliver this project. Approximately 78 per cent of the forecast capex has been market tested through a competitive tendering process. While this process is ongoing, ElectraNet's forecast capex is likely, in large part, to reflect a realistic expectation of actual costs that can be delivered by the market. The proposed scope of the project that is reflected in the tendered costs is consistent with the necessary works to construct and install new transmission lines and deliver the identified needs of the project.

While the tendering process has been competitive and has assisted in determining a reasonable estimate of costs, we consider that there remains scope for ElectraNet to lower overall project costs as it finalises both the tender process and the project design. In particular, there remain opportunities for ElectraNet to find further cost savings and efficiencies in transmission design and construction methods.

We also consider that ElectraNet has overstated project risk. ElectraNet has adopted a reasonably transparent and prudent probabilistic approach to identifying and quantifying project risks. However, in our December 2020 preliminary assessment, we identified some specific concerns with ElectraNet's approach to quantifying the likelihood of risks occurring. In response to our preliminary assessment, ElectraNet acknowledged our concerns that its approach overstated the likelihood of risks occurring and provided additional information to support the calculation of project risk costs.

Next steps

The incremental revenues we have approved in this determination will now be added to ElectraNet's total maximum allowed revenues for the 2018–23 regulatory control period. This follows the process set out in clause 6A.8.2 of the NER.

The increase in allowed revenues will be reflected in customer bills in 2022-23, the final year of the regulatory control period. The actual project costs will be added to ElectraNet's regulated asset base at the beginning of the next regulatory control period.

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1 Project EnergyConnect contingent project

Project EnergyConnect is a proposed \$2.3 billion (\$2017-18) contingent project to construct a new high voltage power line over a route of approximately 860 km connecting the electricity networks of South Australia at Robertstown and New South Wales at Wagga Wagga.

Project EnergyConnect is the preferred option identified in the *South Australia Energy Transformation* Regulatory Investment Test for Transmission (RIT-T) process. This process has been undertaken by ElectraNet to explore options for reducing the cost of providing secure and reliable electricity to SA in the near term, while facilitating the longer-term transition of the energy sector across the NEM.

ElectraNet proposes that the construction of the South Australian component of the interconnector will be completed by March 2023. ElectraNet is seeking \$14 million in incremental revenues over the 2018–23 regulatory control period to construct its component of the project. The actual project capex would then be added to ElectraNet's regulatory asset base (RAB) at the end of the regulatory control period.

ElectraNet's allowed revenues for the 2018–23 regulatory control period did not include funding for the delivery of this project. This project involved a significant augmentation to the network, but the need, cost and timing of the project was uncertain. ElectraNet was allowed to apply to the AER to seek an increase in its allowed revenue when the need, timing and cost of the project was more certain.

On 30 September 2020, ElectraNet submitted an application to the AER under the contingent project process set out in clause 6A.8.2 of the NER, seeking an increase in its allowed revenue to construct the South Australian component of the project. TransGrid also submitted a contingent project application for the New South Wales component of the project.

On 18 December 2020, we published a preliminary position on ElectraNet's contingent project application. This provided our preliminary assessment of ElectraNet's proposed expenditure required for the project. However, at that time we were not yet able to make a determination to increase ElectraNet's allowed revenue so that it could begin recovering the project costs from customers. This was because we were not satisfied that ElectraNet's Board had committed to proceed with the project, which was a requirement for us to make a determination.

In March and April 2021, ElectraNet provided responses to our preliminary position, including additional supporting information about its forecast capex and an updated resolution from ElectraNet's Board committing to proceed with the project. ElectraNet did not submit a full revised application.

On 30 April 2021, TransGrid submitted a revised contingent project application for the New South Wales component of the project.

2 Our contingent project determination

Contingent projects are significant network augmentation projects that may arise during a regulatory control period, but the need and or timing of the project is uncertain. As such, project costs are not provided for in expenditure forecasts as part of the revenue determination for a regulatory control period. In this context, consumers should not be charged for new significant projects until the cost is reasonably known and it is certain the project will proceed.

Under clause 6A.8.2 of the NER, ElectraNet may apply to amend its existing revenue determination to increase allowed revenues for a contingent project. However, we are only required to determine the incremental revenues required to deliver the contingent project if we are satisfied that a specific trigger event has occurred, and the project exceeds a cost threshold.

As set out in section 3, the Project EnergyConnect contingent project application meets the conditions required for us to make a determination because:

- we are satisfied that each element of the trigger event for this project has occurred
- we are satisfied that the capex amount sought exceeds the applicable materiality threshold of \$30 million.

We have now made a determination on ElectraNet's contingent project application in accordance with clause 6A.8.2 of the NER, which specifies the process we must undertake and the determination we must make on a contingent project application.

In accordance with clause 6A.8.2(e) of the NER, we have determined:

- the total capex that is reasonably required for the project and the amount of capex for each remaining year of the regulatory control period (see section 4.1)
- the incremental opex for each remaining year of the regulatory control period (section 4.2)
- the incremental revenue which is likely to be required by ElectraNet for each remaining regulatory year as a result of the efficient capex and opex for the contingent project (see section 5), and
- that the project has commenced and is likely to be completed by March 2023.

We are also required to publish ElectraNet's application and invite interested parties to make written submissions.¹ We sought submissions on ElectraNet's initial application in October 2020, and on ElectraNet's response to our preliminary position in May 2021. A summary of submissions received and our consideration of the issues raised is included at Attachment A.

¹ NER, cl. 6A.8.2(c).

In making our determination, we were required under clause 6A.8.2(f) to consider whether we can accept ElectraNet's proposed revenues and project expenditure included in its application. This includes considering if its proposed project costs are prudent and efficient. If we are not satisfied that we can accept ElectraNet's forecast revenues and project costs, we can determine a different forecast.

Based on our review of ElectraNet's application, and additional analysis undertaken for us by Energy Market Consulting associates (EMCa), we do not accept ElectraNet's forecast capex for the project. We have determined a different capex forecast that reflects the prudent and efficient costs that we consider are reasonably required for delivering the project. Our reasoning is set out in section 4.1.

We have now amended ElectraNet's 2018–23 revenue determination to add these additional allowed revenues and costs. This is accompanied by a supporting post-tax revenue model on our website that sets out the calculation of ElectraNet's annual revenues, including the contingent project allowance.

3 Project trigger and expenditure threshold

Under clause 6A.8.2 of the NER, we are only required to determine the incremental revenues required to deliver the contingent project if we are satisfied that a specific trigger event has occurred, and the project exceeds a cost threshold.

The project trigger for Project EnergyConnect

In our final decision on ElectraNet's 2018–23 revenue determination, we set out three elements of an event that would trigger the South Australian component of the Project EnergyConnect contingent project. These conditions ensured that the need and timing for the project is reasonably certain. Table 2 outlines these conditions.

Table 2 Project EnergyConnect contingent project trigger elements

Condition	Description of trigger element
1	Successful completion of the South Australian Energy Transformation RIT-T with the identification of a preferred option or options: (i) demonstrating positive net economic benefits, and/or (ii) addressing a reliability corrective action.
2	Determination by the AER that the proposed investment satisfies the RIT-T.
3	ElectraNet Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.
4	Clauses 1 and 2 do not apply if a change in the law occurs that allows the inclusion of the proposed investment in ElectraNet's maximum allowed revenue under this revenue determination even if a RIT-T is not carried out.

Source: AER, *ElectraNet transmission revenue determination, Attachment 6 - Capital expenditure*, May 2018.

Before we can make a determination to allow ElectraNet to recover revenues from consumers to deliver the project, we must be satisfied the three conditions of the trigger event have occurred.

The process undertaken by ElectraNet, as described below, has satisfied the first condition to trigger the contingent project.

In February 2019, ElectraNet published its final report from the *South Australian Energy Transformation* RIT-T process. This report identified a new SA-NSW interconnector as the preferred option that maximised the net economic benefits. As this project involves interconnection with New South Wales, it is a joint project with TransGrid. At this time, the total project cost was estimated at \$1.5 billion.

On 24 January 2020, we determined under clause 5.16.6 of the NER that the preferred option identified by ElectraNet's RIT-T satisfies the RIT-T. This satisfied the second condition to trigger the contingent project.

Under the NER, ElectraNet (as the project proponent) is required to re-apply the RIT-T if, in its reasonable opinion, the project is no longer the preferred option that maximises the net economic benefits (unless the AER determines otherwise).

In our January 2020 determination, we stated that if updated costs and benefits of the project differ materially from the analysis in the RIT-T, ElectraNet should consider whether there has been a material change in circumstances such that the preferred option may no longer maximise the positive net economic benefits.

On 29 June 2020, TransGrid provided an initial contingent project application for its component of the project. This application proposed a significantly higher estimate of capital costs for the New South Wales component than assumed in the RIT-T. In July 2020, the Australian Energy Market Operator (AEMO) published its final 2020 Integrated System Plan (ISP) that identified this project as an 'actionable project'.

ElectraNet conducted an updated cost benefit analysis using the updated 2020 ISP inputs and assumptions and took into account the revised capital costs for the project. This updated analysis indicated that the net benefits of the project are likely to be positive. ElectraNet provided this updated analysis to us seeking our confirmation that the project remained the preferred option and therefore there is no need to reapply the RIT-T.

On 28 September 2020, we advised ElectraNet that its updated cost benefit analysis, which relied on AEMO inputs and assumptions from the 2020 ISP, provided a not unreasonable basis for ElectraNet's opinion that Project EnergyConnect remained the preferred option. However, we highlighted that the net benefits remain finely balanced and there is a significant zone of uncertainty associated with the benefits.

In our preliminary position paper in December 2020, we noted that there have been a number of recent developments in the NEM that potentially impact on the net benefits from Project EnergyConnect. These included:

- The Australian Government's commitment to finance up to 1,000MW of gas generation in the Hunter Valley by April 2021.
- The New South Wales Government's legislation (referred to as the *NSW Electricity Infrastructure Investment Act 2020*) targeting 12GW of renewable energy across a number of designated renewable energy zones with associated transmission upgrades and 2GW of long duration storage by 2030 as well as facilitating the installation of dispatchable capacity.
- The Victorian Government's budget announcements about the creation of new renewable energy zones and completion of tendering for the System Integrity Protection Scheme (i.e. a new battery service).
- Legislation for the Tasmanian Renewable Energy Target to double Tasmania's renewable generation to 200 per cent of current needs by 2040.
- The announcement by AGL on its intention to build a 250MW battery at Torrens Island in South Australia by 2024.

ElectraNet and AEMO subsequently identified additional developments, including:

- The South Australian Government publishing its Climate Change Action Plan 2021-25 which included the objective of accelerating renewable energy.
- AEMO's December 2020 consultation on updated gas prices for its 2022 ISP.
- The March 2021 announcement of the early closure of Yallourn power station.

On 23 February 2021, AEMO published a letter setting out its assessment of the impact of a number of these policy announcements, as well as the impact of assumptions on the requirements for synchronous generating units in South Australia. AEMO considered that the market appears to be developing more in line with the Fast Change scenario modelled in the 2020 ISP than the Central scenario, but that the net benefits of PEC remain similar under both scenarios. AEMO's letter therefore concluded that the project is still expected to deliver net market benefits.

On 31 March 2021, ElectraNet published a review of whether the recent developments could result in a material change of circumstances under the NER that may lead to the project no longer being the preferred option. The review assessed the direction and quantum of impact that each market development could have on the benefits of Project EnergyConnect. ElectraNet's assessment concluded that the announcements were likely to have an overall positive impact on the modelled net benefits of the project, and that it is therefore not reasonably likely that there has been a material change of circumstances.

On 30 March 2021, the ElectraNet Board resolved to commit to proceed with the South Australian component of Project EnergyConnect, subject to the AER awarding incremental regulated revenue commensurate with the capital and operating costs of the project. This satisfied the third and final condition to trigger the contingent project.

Expenditure threshold

The expenditure threshold applicable to the forecast capex for the project is:²

either \$30 million or 5% of the value of the maximum allowed revenue for the relevant Transmission Network Service Provider for the first year of the relevant regulatory control period whichever is the larger amount.

Five per cent the maximum allowed revenue in the first year of ElectraNet's 2018–23 regulatory control period is \$15.2 million. Therefore the applicable threshold for the Project EnergyConnect contingent project is \$30 million.

ElectraNet's forecast capex for the contingent project is \$468.6 million (\$2017-18). This exceeds (and therefore meets) the expenditure threshold of \$30 million.

² NER, clause 6A.8.1(b)(2)(iii).

4 Prudent and efficient project expenditure

This section outlines our assessment of ElectraNet's proposed forecast capex and opex for Project EnergyConnect, and our determination on the prudent and efficient expenditure reasonably necessary to undertake the project.

These forecasts of capex and opex are building block inputs to determine the incremental revenue ElectraNet may recover in the current regulatory control period. They will also be added to the target capex and opex for ElectraNet's expenditure incentive schemes.³ Any incentive rewards and penalties ElectraNet receives as a result of under or overspending on the project will be applied as additional revenue adjustments in the next regulatory control period.

4.1 Forecast of capital expenditure

Table 3 sets out our determination on the total capex required for the project and the capex for each year of the 2018–23 regulatory control period based on our analysis to date. We have not accepted ElectraNet's proposed forecast capex, and have substituted a different forecast.

Table 3 AER determination of forecast capex (\$m, 2017-18)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
ElectraNet's proposal	5.0	4.1	30.6	175.1	253.8	468.6
AER estimate	5.0	4.1	30.2	171.4	246.7	457.4
Difference (%)	0.0%	0.0%	-1.4%	-2.1%	-2.8%	-2.4%
Difference (\$m)	-	-	-0.4	-3.7	-7.1	-11.2

Source: AER analysis; ElectraNet. *Project EnergyConnect contingent project application - update*, 24 November 2020,

Note: ElectraNet's initial application proposed \$471 million (\$2017-18) in forecast capex. On 24 November 2020, ElectraNet advised that as a result of the change in the timing of the capital expenditure and revenue required to deliver the project and other minor adjustments, the updated forecast capital expenditure for the purpose of the application is slightly reduced at \$468.6 million (\$2017-18).

Numbers may not add up due to rounding.

ElectraNet's contingent project application forecasts that the project will require \$468.6 million (\$2017-18) in capex. This forecast is comprised of:⁴

³ The Capital Expenditure Sharing Scheme (CESS) and the Efficiency Benefit Sharing Scheme (EBSS).

⁴ ElectraNet. *Project EnergyConnect contingent project application - update*, 24 November 2020, p. 3.

- \$366.7 million in new transmission lines and substation upgrades, which is being outsourced to an external contractor or contractors via competitive tender processes
- \$31.9 million in ElectraNet's project overheads to oversee the contractor(s) and ensure overall project delivery
- \$18.9 million for a special protection scheme to manage electricity imports and exports across the interconnector
- \$16.8 million for project risk allowance
- \$13.9 million for internetwork testing
- \$11.1 million for land and easement acquisition
- \$7.2 million for stakeholder and cultural heritage engagement
- \$3.0 million for environmental offsets.

ElectraNet's contingent project application included a range of supporting documents. This includes a detailed scope of work document, a summary of its procurement process and a detailed break-down of the project cost elements. It also provided a 'risk register' that sets out the detailed information supporting the calculation of the project risk allowance.

Overall conclusion on ElectraNet's proposed capex

We have examined ElectraNet's proposed capex forecast and found based on our analysis of the information available that a prudent and efficient estimate of the forecast capex for the South Australian component of Project EnergyConnect is \$457.4 million (\$2017-18). This is 2.4 per cent less than ElectraNet's initial proposal.

The majority of ElectraNet's capex forecast would reasonably likely be incurred by an efficient and prudent operator to deliver this project. In particular:

- The competitive tender process ElectraNet has undertaken to date means that the estimated costs for transmission lines and substation works reasonably reflect a competitive market outcome for the scope of the project as specified by ElectraNet in its procurement process.
- The proposed scope of the project that is reflected in the tendered costs reflects the necessary works to construct and install new transmission lines and deliver the needs of the project.
- ElectraNet's project delivery costs are reasonably required for a project of the size and complexity of Project EnergyConnect.
- ElectraNet has reasonably estimated the land and easements necessary to locate the new transmission lines and substations, and the environmental offsets required along the route.
- ElectraNet's forecast costs for its special protection system and internetwork testing are reasonably estimated.

However, there are two aspects of ElectraNet's proposed capex that do not reasonably reflect the likely prudent and efficient costs of delivering the project.

First, ElectraNet has not fully accounted for likely opportunities for cost savings in project design and construction. ElectraNet has not yet concluded its market tendering for the transmission lines and substation works. The forecast capex in its contingent project application reflects a weighted average of several tendered bids received. While the tendering process has to this point been comprehensive and competitive, we consider that there remains scope for ElectraNet to lower overall project costs as it finalises both the tender process and the project design. In particular, there remain opportunities to find further cost savings and efficiencies in transmission design and construction methods compared to those proposed by ElectraNet. This view is supported by our technical consultant, EMCa.

Second, ElectraNet has overstated project risk. ElectraNet has adopted a reasonably transparent and prudent probabilistic approach to identifying and quantifying project risks that are relevant to the project. However, in its initial proposal ElectraNet had systematically overstated the likelihood of risks occurring.

In our December 2020 preliminary assessment, we calculated an alternative estimate of project risk. In response to our preliminary assessment, ElectraNet acknowledged our concerns that its approach overstated the likelihood of risks occurring and provided additional information to support the calculation of specific risks. We have taken this information into account in finalising our determination.

Table 4 sets out our assessment of ElectraNet's capex components and how we arrived at our estimate of total capex for the project.

Table 4 Assessment of capex components (\$m, 2017-18)

Capex component	ElectraNet estimate	AER estimate	Adjustment
Transmission lines	258.4	248.0	-10.4
Substations	108.3	108.3	0.0
Property and easements	11.1	11.1	0.0
Environmental	10.2	10.2	0.0
Project delivery costs	31.9	31.9	0.0
Special Protection Scheme	18.9	18.9	0.0
Internetwork testing	13.4	13.4	0.0
Project risk	16.3	15.5	-0.8
Total project capex	468.6	457.4	-11.2
Difference			-2.4%

Source: AER analysis, *ElectraNet. Project EnergyConnect contingent project application - update*, 24 November 2020, p. 3.

Note: Numbers may not add up due to rounding.

To make our decision we were supported by our consultant, EMCa, which applied its technical and engineering expertise to examine the capex forecast, identify key areas of ElectraNet's application that required further analysis, and assess the prudence and efficiency of the forecast.

Our decision has also been informed by submissions from stakeholders and ElectraNet's engagement with us over the process. This has included responding to our information requests and providing further information in response to the preliminary assessment published in December 2020. This process has ensured we have all the necessary information to make a fully informed decision.

The remainder of this section sets out our findings in more detail about ElectraNet's:

- tendered costs for transmission lines and substation works
- opportunities for cost savings in transmission line design and construction costs
- project delivery costs, and
- project risk allowance.

Tendered costs for transmission lines and substation works

The largest components of ElectraNet's forecast capex for Project EnergyConnect are \$258.4 million for designing, constructing and installing the new transmission towers and conductors, and \$108.3 million for upgrades to ElectraNet's substations. Together these costs comprise 78 per cent of the total project costs.

ElectraNet is proposing to outsource the design, construction and delivery of the transmission lines and substation works to multiple third party contractors. It has estimated the costs for these works through a competitive tendering and procurement process it has been conducting since early 2019.⁵ ElectraNet has substantially progressed its procurement process, but it does not have firm contract prices on which to base the cost estimate. The estimated capex for its transmission lines reflects the weighted average of bids from shortlisted tenderers (transmission lines) and the initial market bids it has received to date (substations).⁶

ElectraNet is expecting to execute fixed price design-and-construct contracts with contractors in 2021. These contracts will include the final allocation of risk between ElectraNet and the contractors. Nonetheless, ElectraNet considers that its capex forecast represents a prudent and efficient estimate of the project costs based on

⁵ ElectraNet, *Project EnergyConnect Cost Estimates Report PUBLIC*, 30 September 2020, p. 9.

⁶ ElectraNet, *Project EnergyConnect Cost Estimates Report PUBLIC*, 30 September 2020, pp. 15-19. The weighted average methodology is set out in the confidential version of ElectraNet's report.

the information available at this point in time. Its risk mitigation activities, weighted average pricing methodology, the procurement process to date and the next steps of competitive tendering together with its detailed risk assessment combine to provide a high level of confidence in the capex forecast.⁷

We consider that the majority of ElectraNet's forecast capex for transmission lines and substations is likely to reasonably reflect the efficient costs that would be incurred by a prudent operator. This is because:

- ElectraNet's competitive tendering process means that the materials and construction costs have been market tested and reflect a realistic expectation of costs that can be delivered. This competitive process is expected to continue throughout the remainder of the procurement process.
- ElectraNet's approach in applying a weighted average of the market bids received to date should reflect a more reasonable estimate of the likely project cost than simply taking an average, or using a lower weighting factor.
- ElectraNet's proposed scope of the project that is reflected in the tendered costs reflects the necessary works to construct and install new transmission lines and deliver the identified needs of the project.

We also consider that ElectraNet's choice of project delivery model should provide opportunities for ElectraNet and the contractors to identify efficiencies in design as they finalise the contracting process, and each efficiently allocate their design and delivery risk. While there is likely to be a risk associated with dealing with multiple contractors, the benefit in delivery of an efficient design and costs are expected to outweigh the additional costs and risks.

As set out below, we consider that ElectraNet can do more to identify and capture potential further cost savings in the delivery of the project in its capex forecast.

Allowance for savings opportunities in the delivery of the project

The tendered costs for transmission lines largely reflect ElectraNet's standard design for transmission towers and overhead line construction. This is consistent with Australian design and construction standards. However, there are different transmission structure designs which may be deployed to prudently reduce cost.

ElectraNet's initial capex proposal identified and quantified approximately \$6 million in cost savings that may be realised in the final tendered amounts. It included these potential cost savings as negative adjustments within its forecast capex.

These cost savings relate to design optimisation and construction efficiencies in:

- the design, through tower heights, span lengths, and/or the use of structures other than free standing towers for the transmission line (e.g. guyed towers)

⁷ ElectraNet, *Project EnergyConnect Cost Estimates Report PUBLIC*, 30 September 2020, p. 17.

- the use of spoil from tower foundations as fill on the substation site
- the use of third party telecommunication assets to provide a radio path.

ElectraNet's proposed cost savings were contained within its project risk register. As for its project risks, ElectraNet's methodology to determine potential savings involved a detailed evaluation and probabilistic assessment (likelihood of saving being realised x consequence cost) of known opportunities that reflect the stage of the project in the delivery cycle and complexity of the works involved. We consider the remainder of the project risks in the section below.

We consider that ElectraNet has adopted a prudent approach in attempting to measure and capture potential cost savings opportunities in its capex forecast. However, we consider that the likelihood that ElectraNet's contractors will be able to realise these specific opportunities is greater than ElectraNet has proposed.

In arriving at our estimate, we have adopted ElectraNet's methodology to quantify cost savings opportunities, including the specific types of technical efficiencies and unit costs. However, we have applied a higher likelihood that these savings will be achieved to estimate the probable efficiency benefits that ElectraNet should be able to realise through its ongoing tender process.

ElectraNet applied a relatively low likelihood of achieving its identified opportunities for cost savings. We consider that ElectraNet is likely to achieve the identified savings, and have applied a likelihood rating consistent with the midpoint of ElectraNet's probability range for 'likely' risks to estimate the probability weighted savings. This increases the total estimate of cost savings. This is consistent with our approach to assessing project risks, as discussed further below.

Our view is informed by EMCA which used its expert engineering judgement and expertise to evaluate the basis for each savings opportunity and the likely probability of occurrence and the financial impact. It stated that:⁸

Based on our understanding of the outcomes from TransGrid's procurement process, design and construction efficiencies could reasonably be expected to be achieved for the SA component of PEC from the balance of ElectraNet's competitive procurement process. These options could include tower spacing, tower height, tower design, type of structure used, tower construction, line construction and line stringing, along with other aspects of design and construction such as footing type and design.

We recognise that the same efficiencies may not be present for a range of factors given the status of design, local conditions etc and therefore all efficiencies gained by TransGrid may not be realised to the same magnitude by ElectraNet. However, the assumptions included by ElectraNet in the risk

⁸ EMCA, *Project EnergyConnect - Review of Aspects of ElectraNet's Contingent Project Application*, December 2020, p. 26.

register are likely to under-estimate the level of design and construction efficiency for transmission lines that may be achieved.

As part of its analysis, EMCa reviewed information provided by ElectraNet which suggested that ElectraNet's forecast capex for transmission lines benchmarked well when compared against TransGrid's tendered costs for transmission lines for Project EnergyConnect. ElectraNet stated that, given its comprehensive tendering process, TransGrid's market pricing represents the current benchmark for the delivery of large scale 330kV transmission line assets in Australia.⁹

EMCa reviewed the information and noted that, whilst it expected that the economies of scale for the New South Wales component would result in a lower line construction cost per kilometre than evident from ElectraNet's cost estimate for the SA component, other cost factors were present in TransGrid's costs that may not have been present in ElectraNet's costs. This included potentially greater risk margin in the tendered costs, the specific economic and labour conditions in New South Wales compared to South Australia, and differences in tower spans.

We outlined this position in our December 2020 preliminary assessment. ElectraNet disagreed with the likely extent of the opportunity for cost savings we identified and provided additional information in relation to several specific potential saving opportunities. ElectraNet maintains that its original assessment of the likelihood that these cost savings will be realised is reasonable. We have considered ElectraNet's response to our preliminary position. However, we consider that ElectraNet has not provided new or persuasive information that we and EMCa did not previously consider in forming our view on the likelihood that cost savings will be realised.

We also note that there are potentially additional opportunities for further line design and construction efficiencies that may be available to ElectraNet, over and above those already identified. These include:

- screw piles or micro-piles which are less environmentally intrusive and materially less expensive than concrete foundations due to the speed of installation and no curing time, batching plants, major excavation work or waste water management
- aerial construction methods and aerial stringing which are faster and reduce construction time and hence costs despite the offsetting costs of helicopter use, particularly on long line constructions; and
- tower design choices which are still available to ElectraNet (spacing, height, material sizing versus cost, insulator material and construction).

While we have not formed a view on the quantum of these further opportunities based on the information available to us, we encourage ElectraNet to fully explore remaining opportunities to reduce project costs to the extent possible in finalising its contracting process. Where ElectraNet and the contractor are able to identify design

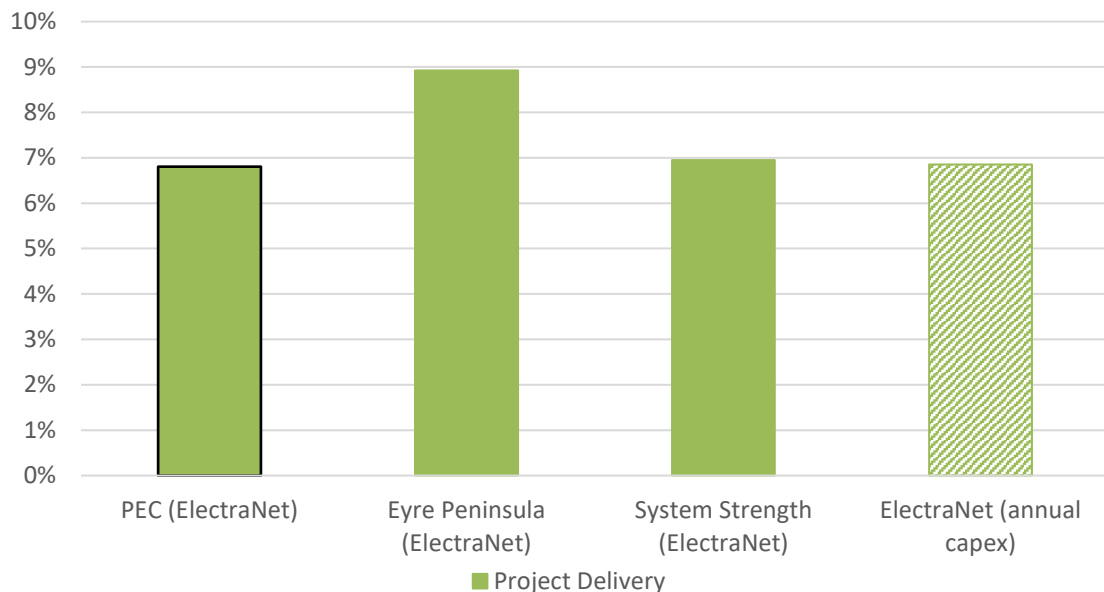
and/or construction techniques that lower the overall project costs, these costs savings should be reflected in the final contract price. The majority of these lower costs will then be passed through to consumers when project costs are added to the RAB at the start of the next regulatory control period.

Project delivery costs

ElectraNet forecast \$31.9 million (\$2017-18) in project delivery overhead costs for its component of Project EnergyConnect. This forecast is based on a bottom-up build of additional staff required to deliver the project, such as project management, planning and engineering.¹⁰ It also includes costs that have been incurred to date.

We have benchmarked ElectraNet's project delivery costs against other historical projects and its annual capital expenditure between 2009 and 2019. As shown in Figure 1, ElectraNet's project delivery costs, as a proportion of total project costs, for Project EnergyConnect are significantly less than the recent Eyre Peninsula Reinforcement contingent project and similar to the Main Grid System Strength project. It is also similar to its annual capitalised overheads.¹¹

Figure 1 Capitalised overheads as proportion of total capex



Source: ElectraNet, AER analysis.

¹⁰ ElectraNet, *Project EnergyConnect Cost Estimates Report PUBLIC*, 30 September 2020, pp. 20-25

¹¹ We note that ElectraNet has stated that the network and corporate overhead information reported in its annual RINs relates to only a portion of the total overhead cost which is allocated to internal labour costs, and excludes other overheads, labour on costs and salary costs. ElectraNet states that the full project delivery cost on average across delivered projects over this period is therefore significantly higher than this figure (typically over 15%) reflecting the relatively large number of small scale and complex projects undertaken over this period, which increases the proportion of efficient delivery costs required on each project. Source: ElectraNet, *Response to AER information request received 18 October 2020*, 4 November 2020, p. 4

Note: ElectraNet's project delivery costs for Project EnergyConnect and the Eyre Peninsula Reinforcement do not include costs related to land purchase, environmental offsets management, and stakeholder and community engagement related to land and environment. This ensures we can compare project delivery costs on a like-for-like basis with the other brownfields projects.

These results align with our expectations of forecast project delivery costs from a prudent operator in these circumstances. While the project is more complex than a typical brownfields project (such as the Main Grid System Strength project) in terms of planning and project management, this is offset by the size of the project and the ability to spread fixed costs over a larger amount of material and contracting costs. This is supported by EMCa, which noted:

We consider that the top-down benchmarks of project delivery costs suggest to us that ElectraNet has proposed a project delivery cost at a level that is lower than its historical performance, and this is in part due to the likely economies of scale of a large project.

Importantly, ElectraNet has proposed lower project delivery costs than its allowance for the Eyre Peninsula Reinforcement project (8.9 per cent), and significantly below its forecast project delivery costs in its contingent project application for that project (10 per cent). These two projects are similar as they involve the construction of new transmission lines and towers and are similar in length. The primary reason that ElectraNet's forecast capex for Project EnergyConnect is higher is due to the inclusion of capex for a new substation.

We also sought advice from EMCa to examine ElectraNet's assumptions about project staffing, forecast unit costs (e.g. wages and corporate overheads) and its project delivery plan. This supported our top-down benchmarks by reviewing the forecast from a bottom-up perspective.

EMCa found that ElectraNet's forecast is likely to be reasonable when considering the performance from a top-down perspective and the estimating accuracy associated with forecasting project delivery costs. However, it did identify some high cost elements of ElectraNet's forecast. In particular:

- ElectraNet has generally forecast salaries for the project, and corporate overhead allocation that is at the higher end of the range typically applied by electricity companies in Australia.
- ElectraNet's proposed resourcing for its final project testing phase is likely more than is reasonably required to undertake the work.

Allowance for project risk

ElectraNet's initial forecast capex included \$16.3 million (\$2017-18) in allowance for project risk costs.¹² The project risk allowance reflected the potential impact of 21 individual risks. ElectraNet categorised these as risks that relate to a realistic latent condition with the site(s) and risks associated with the actions or requirements of a third party that are not under contractual arrangement with ElectraNet and hence the risk is not able to be addressed through enforcement of contract terms.¹³

ElectraNet's methodology and process for calculating its risk allowance is transparent, logical and well documented, and its use of probabilistic calculations should, depending on the inputs and assumptions applied, result in an overall allowance that reasonably reflects the likelihood of the project risks occurring. We also considered that the risks proposed by ElectraNet, except the risk related to adverse exchange rate movements, are appropriate and reasonable to be included in a risk allowance for a project of this nature.

However, while we accept all but one of ElectraNet's identified risks, we found that ElectraNet's risk assessment overstates the likelihood of each risk occurring. ElectraNet applied the upper bound of the likelihood range assigned to each risk to calculate the risk cost (likelihood x consequence) for each risk item. This systematically overstates the probabilities that the risks will occur and therefore overstates the calculation of overall risk costs.

In our December 2020 preliminary position, we stated that applying the mid-point of ElectraNet's likelihood range is more likely to result in a reasonable and unbiased estimate of prudent and efficient risk costs for the project. This resulted in an indicative estimate of \$14.9 million (\$2017-18) in total project risk cost. This amount did not include opportunities to realise potential savings and efficiencies in the delivery of the project, which we accounted for separately.

ElectraNet's response to our preliminary assessment acknowledged our concerns that its approach overstated the likelihood of risks occurring and accepted our proposed position to apply the midpoint of assessed likelihood ranges to calculate project risk costs. ElectraNet also accepted the removal of exchange rate movements as a symmetrical risk.

However, ElectraNet also submitted that the likelihood of two specific risks occurring had increased since our preliminary position such that these risks had effectively been realised and should be assigned a 100 per cent probability of occurring. ElectraNet submitted confidential information about these specific risks.

¹² This amount included both potential risk costs that add costs and potential opportunities for cost savings that reduce costs. Excluding the offsetting opportunities for savings, ElectraNet's proposed total project risk cost is approximately \$22.1 million.

¹³ ElectraNet, *Project Energy Connect Cost Estimate Report (public)*, 30 September 2020, p. 30.

We have reviewed the additional information provided by ElectraNet to support its claim that the likelihood of the two specific risks occurring has increased. In response to this new information we have increased our alternative estimate of project risk by \$0.6 million.

Our estimate of total project risk is \$15.4 million (\$2017-18).

4.2 Forecast of operating expenditure

Table 5 sets out our determination of the incremental opex for each year of the 2018–23 regulatory control period.

We have made no adjustment to ElectraNet's proposed opex. ElectraNet expects to incur minor incremental operating expenditure in advance of the commissioning of the project. The project will lead to higher maintenance expenditure once commissioned, but the incremental costs associated with maintenance are not expected to occur until the next regulatory control period.¹⁴

Table 5 Proposed incremental opex forecast (\$m, 2017-18)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Total opex	0.0	0.0	0.0	0.1	0.3	0.5

Source: ElectraNet, *Project EnergyConnect, Contingent Project Application - Update, 24 November 2020*, p. 4.

¹⁴ ElectraNet, *Project EnergyConnect Contingent Project Application*, 30 September 2020 p. 26.

5 Calculation of incremental allowed revenues

This section calculates the incremental revenue that ElectraNet would recover from customers to account for our determination of efficient project costs. We have applied an annual building block revenue approach, in accordance with clause 6A.8.2(h) of the NER. ElectraNet's application is consistent with this approach.

Table 6 shows that ElectraNet is entitled to recover \$10.2 million (\$ nominal) in additional revenues from customers over the 2018–23 regulatory control period.

As a result of recovering these revenues, we estimate that the transmission component of average residential electricity bills in South Australia will increase by \$6 in 2022–23 and by \$17 per year for the 2023–28 regulatory control period.

Table 6 Incremental revenue calculation (\$m, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Return on capital	0.0	0.5	0.7	2.5	13.1	16.8
Return of capital	0.0	–0.1	–0.2	–1.1	–5.8	–7.3
Straight-line depreciation	0.0	0.1	0.1	0.1	0.1	0.3
Less: inflation indexation on opening RAB	0.0	0.2	0.3	1.1	5.9	7.6
Operating expenditure	0.0	0.0	0.0	0.2	0.4	0.6
Revenue adjustments	0.0	0.0	0.0	0.0	0.0	0.0
Net tax allowance	0.0	–0.1	–0.1	–0.1	0.2	–0.1
Annual building block revenue requirement (unsmoothed) ^a	0.0	0.2	0.4	1.5	7.8	10.0
Annual expected maximum allowable revenue (smoothed)	0.0	0.0	0.0	0.0	10.2	10.2
Increase to annual expected MAR (smoothed) (%)	0.0%	0.0%	0.0%	0.0%	2.9%	0.6%

Source: AER analysis.

Note: The incremental revenue requirements for 2019–20, 2020–21 and 2021–22 do not flow into the expected MAR for these years and are instead smoothed into the expected MAR for 2022–23.

Numbers may not add up due to rounding.

The return of capital or regulatory depreciation is equal to the straight-line depreciation less the inflation indexation on the opening RAB.

The straight-line depreciation increases from 2019–20 and is due to the triggering of 2018–19 equity raising costs.

The inflation indexation on opening RAB increases from 2019–20 and is due to the as-incurred PEC capex which begins to enter the RAB from the end of 2018–19.

Table 7 shows the effect of the resultant incremental increase in revenues on ElectraNet's total annual building block revenue requirement (unsmoothed), expected maximum allowable revenues and the X-factor for each regulatory year of the remainder of the regulatory control period.

Table 7 Annual building block revenue requirement, expected MAR and X-factors (\$m, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Annual building block revenue requirement (unsmoothed)	286.1	314.8	327.3	347.0	358.2	1,633.5
Annual expected MAR (smoothed)	305.3	312.5	322.3	332.7	357.7	1,630.6
X-factors	n/a	0.1%	–0.7%	–0.7%	–4.9%	n/a

Source: AER analysis.

Other issues: Asset lives for 'Equity raising costs' asset class and update for 2021–22 return on debt

Asset lives for 'Equity raising costs' asset class

For this final decision we have applied a standard asset life of 43.1 years to the 'Equity raising costs' asset class for regulatory depreciation purposes consistent with our preliminary position.¹⁵ This reflects the weighted average (by forecast net capex) of the standard asset lives for each depreciating asset class over the 2018–23 regulatory control period. This approach is also consistent with our previous regulatory determinations.

We have also applied a standard tax asset life of 5 years to the 'Equity raising costs' asset class for tax depreciation purposes consistent with the ATO tax rules.¹⁶ This approach is also consistent with our preliminary position and previous regulatory determinations.

ElectraNet did not provide an updated PTRM for its revised proposal. In our preliminary position, we assigned a standard asset life and standard tax asset life to

¹⁵ The standard asset life for the final decision is consistent with the preliminary assessment rounded to 2 decimal places. In comparing the unrounded values there is a slight difference due to minor differences in the forecast capex.

¹⁶ ATO, Taxation Ruling TR2020/3– Income tax: effective life of depreciating assets (applicable from 1 July 2020).

the 'Equity raising costs' asset class because although ElectraNet's contingent project application forecast equity raising costs for the 2018–23 regulatory control period, it did not include a standard asset life or standard tax asset life.¹⁷

Return on debt update for 2021–22

Subsequent to our preliminary position, the update for the 2021–22 return on debt has become available. We have therefore updated ElectraNet's PTRM for this final decision with this updated return on debt input and 2021–22 X factor.

¹⁷ ElectraNet, *ElectraNet_Project EnergyConnect Contingent Project_PTRM - PUBLIC - Nov2020 - Draft*, received 24 November 2020.

A Submissions

Interested parties were invited to provide submissions on TransGrid and ElectraNet's initial contingent project applications by 30 October 2020, and on the businesses' revised contingent project applications by 17 May 2021. We have considered these submissions in the course of our assessment of ElectraNet's contingent project application. Table 8 provides a summary of the key issues raised in the submissions received and responses to those issues.

Table 8 Summary of submissions to contingent project applications

Issue	AER consideration
<p>NSW and South Australia costs and benefits</p> <p><i>Sam Trinca</i></p> <p>A majority of the benefits of Project EnergyConnect accrue to South Australia. However, given that the majority of the length of the proposed line lies in NSW, a disproportionate share of the costs will ultimately be borne by the NSW consumer.</p> <p><i>Public Interest Advocacy Centre</i></p> <p>PIAC recommends revisiting the current inter-regional transmission cost allocation to more fairly share costs between NSW and SA consumers from Project EnergyConnect.</p> <p>There is a misalignment between who pays and who benefits. Recovering costs from parties on a beneficiary-pays basis, and ensuring all groups of consumers exposed to costs receive a material net benefit, must be required for large transmission projects. PIAC supports urgent regulatory reforms to this end, and delaying approval of PEC if needed.</p>	<p>The RIT-T assesses net benefits to the market, not only consumers, or consumers in particular regions.</p> <p>The NER do not currently provide for the recovery of project costs from generators or other parties.</p> <p>Currently, the NER allocate the costs of inter-regional transmission investments geographically. We note that inter-regional transmission charging and cost recovery arrangements continue to be subject to review, however amending these arrangements is not within the scope of the AER's review of contingent project applications.</p> <p>We note that TransGrid and ElectraNet's modelling of customer bill impacts identify a net benefit from the project for consumers in both SA and NSW.</p>
<p>Benefits of the project</p> <p><i>Major Energy Users</i></p> <p>While supportive in principle, the MEU has concerns about the latest information used to justify the long term benefits of the project given the current costs.</p> <p>It considers that the AER needs to investigate the project more fully and get formal stakeholder input into whether the project does deliver the net benefits claimed, and remains concerned over key inputs such as gas prices and discount rates.</p> <p>Considers the net benefits of the project are overstated and uncertain, and have not been subject to sufficient stakeholder review as costs have increased from the RIT-T stage.</p> <p>AEMO has not completed work reviewing the two unit constraint as part of the PSFRR. The absence of this review casts doubt on the net benefit of the project.</p> <p><i>Public Interest Advocacy Centre</i></p> <p>PIAC is concerned that the project does not present a reasonable "return on investment" for consumers under the current regulatory framework. The most recent modelling paints a picture of a project with high costs and comparatively small net benefits.</p>	<p>If a material change in circumstances occurs which, in ElectraNet's reasonable opinion as the project proponent, means that Project EnergyConnect is no longer the preferred option, then the NER requires ElectraNet to reapply the RIT-T unless the AER determines otherwise.</p> <p>On 23 February 2021, AEMO published a letter setting out its assessment of the impact of a number of recent policy announcements, as well as the impact of assumptions on the requirements for synchronous generating units in South Australia. AEMO's letter concluded that the project is still expected to deliver net markets benefits.</p> <p>On 31 March 2021, ElectraNet published a review of whether the recent developments could result in a material change of circumstances under the NER that may lead to the project no longer being the preferred option. ElectraNet's</p>

ENGIE

The latest costs appear to exceed the value of the net benefits determined by the AER in the RIT-T. The proponents have also claimed additional benefits, with TransGrid submitting a report from FTI Consulting that assessed so-called "wider benefits". ENGIE is concerned over the sharp rise in costs on the project and urges the AER to do whatever it can within its powers to impose appropriate cost discipline on the proponents and ensure only efficient costs are allowed.

Origin

Capital costs have risen and the net benefits of the project are now marginal at \$148 million in the central scenario, with the breakeven cost of the project being \$2.7 billion. This implies that an 11% increase in costs would make the interconnector uneconomic.

It is important that the AER is confident that the latest cost estimates are robust and reasonable given the updated analysis was not carried out under the full robustness of the RIT-T process.

Reach Solar

Continues to support PEC and the assessment of continued net benefits of the project, which it considers are likely to be understated.

Acciona

Strongly supports Project EnergyConnect and considers that its timely approval and construction is key to unlocking future renewable energy projects in NSW and SA, including the South-West REZ where Acciona has a proposed 1.5GW hybrid renewable energy project.

The ability to progress the South-West REZ renewables project is constrained by the lack of certainty on the timeframe for delivery of Project EnergyConnect, and Acciona would welcome its timely approval.

Business SA

Supportive of the project proceeding on the basis of benefits of greater sharing of resources across the NEM and additional capacity for renewable generation connections

assessment concluded that the announcements were likely to have an overall positive impact on the modelled net benefits of the project, and that it is not reasonably likely that there has been a material change of circumstances.

We have reviewed the prudent and efficient costs of delivering the project in accordance with the contingent project assessment process under the NER. We do not accept ElectraNet's proposed forecast capex and have estimated a different forecast which we consider reasonably reflects prudent and efficient costs. Our forecast is approximately 2.4 per cent lower than ElectraNet's estimate.

Risk and cost sharing

Public Interest Advocacy Centre

PIAC recommends examining alternative options for risk and cost allocation for the project in order to allocate risks to parties better able to manage them and to recover costs on a more beneficiary-pays basis.

Consumers are not well-placed to manage the risk of cost increases or the failure to deliver the modelled benefits of Project EnergyConnect. An alternative could include PIAC's risk and cost sharing model for Renewable Energy Zones to recover some costs from connecting generators as Project EnergyConnect is expected to enable new renewable generation connection along its path.

Major Energy Users

Considers the Capital Expenditure Sharing Scheme should be applied to PEC, but independently such that underspends in other areas cannot be used to 'hide' overspends on PEC.

Energy Users' Association of Australia

The AER should ensure the proponents bear their appropriate share of the project's risk. Consumers have no ability to mitigate those risks and are left with paying the increased costs from poor project management.

We note that there is currently no provision for the recovery of the costs of the project from generators or other parties under the rules applicable to our determination on the Project EnergyConnect contingent project.

The CESS will apply to expenditure by the businesses on Project EnergyConnect, in accordance with their current revenue determinations and version 1 of the CESS. It is not open to the AER to apply version 1 of the CESS in the manner proposed by the MEU. The CESS is intended to balance incentives for businesses to achieve efficiencies across a regulatory control period, and encourage efficient expenditure within the overall total capex allowance. The CESS is able to account for proposals for material capex deferrals across regulatory periods to help ensure businesses are not rewarded for efficiencies not achieved.