FINAL DECISION

TransGrid
Contingent Project

Project EnergyConnect

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AUSTRALIAN
ENERGY
REGULATOR

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Executive Summary

Project EnergyConnect is a proposed new high-voltage power line between 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).

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

TransGrid forecast capital expenditure for the New South Wales component of the project of $1,866.3 million ($2017-18). This component of the project is proposed to be completed by June 2023.

Our role is to determine the incremental revenues that will be added to TransGrid'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 TransGrid'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 New South Wales.

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

Project EnergyConnect	
Incremental revenue to be recovered from customers in 2022-23	$61.5 million
Indicative increase in residential electricity bills in New South Wales in 2022-23	$11
Indicative increase in residential electricity bills in New South Wales between 2023-24 and 2027-28	$22 p.a.
Forecast capital expenditure ($2017-18)	$1,817.9 million
Forecast operating expenditure ($2017-18)	$2.5 million

Source: AER analysis.

TransGrid and ElectraNet have 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 TransGrid's revenue determination for the 2018–23 regulatory control period. This final decision established three necessary conditions that would allow TransGrid to recover the prudent and efficient costs of Project EnergyConnect from customers:

- successful completion of a regulatory investment test for transmission (RIT-T) demonstrating an overall network investment by all parties involved in the interconnector construction that maximises the positive net economic benefits from establishing a new high voltage interconnection from South Australia, and/or that addresses a reliability corrective action
- determination by the AER that the proposed investment satisfies the RIT-T, and
- TransGrid 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 TransGrid 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 SA in the near term, while facilitating the longer-term transition of the energy sector across the National Electricity Market (NEM). As this project involves interconnection with New South Wales, it became a joint project with TransGrid.

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 29 April 2021, the TransGrid 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 key component of TransGrid's application and driver of the incremental revenues that would be recovered from consumers following a contingent project determination is the forecast amount of capital expenditure reasonably required to construct the project.

In September 2020, TransGrid submitted an initial application that proposed $1,894.6 million ($2017-18) in capex to undertake the Project EnergyConnect contingent project. TransGrid reduced this to $1,866.3 million in its April 2021 revised application, following consideration of a preliminary assessment we published in December 2020 as well as further information about its expected project costs.

We have examined TransGrid's proposed capex forecast and consider that a reasonable estimate of prudent and efficient capex required to deliver the project is $1,817.9 million ($2017-18). This is 2.6 per cent less than TransGrid's April 2021 revised proposal.

The majority of TransGrid's forecast capex would be incurred by an efficient and prudent operator to deliver this project. Approximately 77 per cent of the forecast capex has been market tested through a comprehensive and competitive tendering process, and therefore reflects a realistic expectation of actual costs that can be delivered by the market. The proposed project scope reflects refinements in line route, cost-efficient design and construction techniques, and lower costs for large specialist equipment than TransGrid could acquire itself.

We note that TransGrid's forecast capex for transmission lines is higher than comparable benchmarks. This may be explained by the specific line route, line deviations, market conditions, and project specific topographical, geotechnical and other factors. However, we consider it is also likely to be influenced by TransGrid's project delivery model and its proposal to enter into a fixed-price contract with a single supplier to design, procure and construct all of the required works. While not unreasonable, this is a conservative approach to contracting as it transfers the majority of project risk to the contractor.

The remaining components of the project include significant forecast costs for acquiring land and easements and offsetting the environmental impact of the project on biodiversity and endangered species. We consider that TransGrid's revised proposal included reasonable estimates of acquiring land and easements and the expectation of its likely environmental obligations under New South Wales and Commonwealth legislation. This is supported by extensive field surveys, refinements to its project route and construction plans, and feedback from the relevant New South Wales regulator on the expected environmental impacts.

In making a final determination, we have considered further information provided by TransGrid since it submitted its revised proposal, including the impact of further completed biodiversity field survey results and identified route deviations. We have also accounted for more accurate information about some of the cost inputs to the forecast environmental offsets capex, including land valuations.

However, we have not included additional allowances for project risks as proposed by TransGrid, as we consider that our forecast of capex provides for TransGrid's prudent and efficient project costs and TransGrid is best placed to mitigate the likelihood of additional costs being incurred in the delivery of the project.

Next steps

The incremental revenues we have approved in this determination will now be added to TransGrid'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 added to TransGrid's regulated asset base at the beginning of the next regulatory control period.

Contents

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. As this project involves interconnection with New South Wales, it is a joint project with TransGrid.

TransGrid proposes that the construction of the New South Wales component of the interconnector will be completed by June 2023. TransGrid is seeking $63 million in incremental revenues over the 2018–23 regulatory control period to construct its component of the project.[1] The actual project capex would then be added to TransGrid's regulatory asset base (RAB) at the end of the regulatory control period.

TransGrid'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. TransGrid 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 29 June 2020, TransGrid submitted an initial application to the AER seeking an increase in its allowed revenue to construct the New South Wales component of the project. TransGrid applied under the contingent project process set out in clause 6A.8.2 of the NER. TransGrid noted that it was part way through its tender process and its forecast capex for the project at this time was likely to substantially change.

On 23 July 2020, we wrote to TransGrid advising that we could not at that time commence the formal contingent project determination process because TransGrid’s application did not meet the pre-requisites for the decision making process under the NER to commence, as it:

- did not contain a forecast of capital expenditure which TransGrid considered was reasonably required for the purpose of undertaking the contingent project, as required by clause 6A.8.2(b)(3) of the NER, and

[1] This reflects our calculation of the differences in TransGrid's total maximum allowable revenues with and without its proposed forecast capex for Project EnergyConnect, based on the post-tax revenue model submitted as part of TransGrid's April 2021 revised contingent project application.

- was subject to a claim of confidentiality, over its entirety, that meant the application is not capable of being published in accordance with clause 6A.8.2(c) of the NER.

On 30 September 2020, TransGrid submitted an updated application to the AER. ElectraNet also submitted an application for the South Australian component.

On 18 December 2020, we published a preliminary position on TransGrid's contingent project application. This provided our preliminary assessment of TransGrid's proposed capex and opex required for the project. However, we stated that we were not yet able to make a determination to increase TransGrid's allowed revenue so that it can begin recovering the project costs from customers. This was because we were not satisfied that TransGrid's Board has committed to proceed with the project, which was a requirement for the AER to make a determination.

On 30 April 2021, TransGrid submitted a revised contingent project application. This application included a revision to its proposed capex for the project, and an updated resolution from TransGrid's Board committing to proceed with 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, TransGrid 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 $36 million.

We have now made a determination on TransGrid'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 TransGrid 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 June 2023.

We are also required to publish TransGrid's application and invite interested parties to make written submissions.[2] We sought submissions on TransGrid's initial application in October 2020, and on TransGrid's revised application in May 2021. A summary of submissions received and our consideration of the issues raised is included at Attachment A.

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[2] 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 TransGrid'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 TransGrid's application, and additional analysis undertaken for us by Energy Market Consulting associates (EMCa), we do not accept TransGrid'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 TransGrid'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 The conditions required for a determination

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 TransGrid's 2018–23 revenue determination, we set out three elements of an event that would trigger the New South Wales 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 conditions

Condition	Description of condition
1	Successful completion of a regulatory investment test for transmission demonstrating an overall network investment by all parties involved in the interconnector construction that maximises the positive net economic benefits from establishing a new high voltage interconnection from South Australia, and/or that addresses a reliability corrective action.
2	Determination by the AER that the proposed investment satisfies the RIT-T.
3	TransGrid 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 TransGrid'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 TransGrid to recover revenues from consumers to deliver the project, we must be satisfied the three conditions of the trigger event have occurred.

The first condition relates to the regulatory investment test undertaken by ElectraNet. 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 29 April 2021, the TransGrid Board committed to proceed with the NSW section of Project EnergyConnect subject to the AER awarding incremental revenue commensurate with the capital and operating costs of the project as proposed by the company. 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:[3]

> 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.

[3] NER, clause 6A.8.1(b)(2)(iii).

Five per cent the maximum allowed revenue in the first year of TransGrid's 2018–23 regulatory control period is $36 million. This is higher than $30 million and is therefore the applicable threshold for the Project EnergyConnect contingent project.

TransGrid's forecast capex for the contingent project is $1,866.3 million ($2017-18). This exceeds (and therefore meets) the expenditure threshold of $36 million.

4 Prudent and efficient project expenditure

This section outlines our consideration of TransGrid'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 TransGrid may recover in the current regulatory control period. They will also be added to the target capex and opex for TransGrid's expenditure incentive schemes.[4] Any incentive rewards and penalties TransGrid 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 TransGrid's proposed forecast capex (as submitted to us on 30 April 2021) 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
TransGrid's proposal	3.5	23.1	216.4	910.5	712.9	1,866.3
AER estimate	3.4	22.8	214.2	878.4	699.0	1,817.9
Difference (%)	-1.7%	-1.2%	-1%	-3.5%	-2%	-2.6%
Difference ($m)	-0.1	-0.3	-2.2	-32.1	-13.9	-48.4

Source: TransGrid, *Project EnergyConnect - Revised Capex Application*, 30 April 2021, p. 4; AER analysis.

Note: Numbers may not add up due to rounding. Excludes equity raising costs.

TransGrid's revised contingent project application forecasts that the project will require $1,866.3 million ($2017-18) in total capex.[5] This is a reduction of $28.4 million (or 1.5 per cent) from $1,894.6 million in total capex that TransGrid proposed in its September 2020 contingent project application.

Table 4 provides a summary of the components of TransGrid's proposed forecast capex and the changes from its September 2020 application.

[4] The Capital Expenditure Sharing Scheme (CESS) and the Efficiency Benefit Sharing Scheme (EBSS).

[5] TransGrid, *Project EnergyConnect - Revised Capex Application*, 30 April 2021, p. 4.

Table 4 Summary of TransGrid's forecast capex components

Million ($2017-18)	Sept. 2020 proposal	April 2021 proposal	Change
Transmission lines and substation works	1,240.3	1,240.3	0
Large specialist equipment	140.2	140.2	0
Other construction costs and allowances	88.2	70.5	-17.6
TransGrid's project delivery costs	135.8	135.8	0
Environmental offsets (including risk)	165.6	166.7	1.1
Land and easement acquisition	121.5	109.6	-11.8
Real labour cost escalation	3.2	3.2	0
Total	**1,894.6**	**1,866.3**	**-28.4**

Source: AER analysis.

TransGrid'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 included supporting consultant reports.

Overall conclusion on TransGrid's proposed capex

We have examined TransGrid's proposed capex forecast and found that a prudent and efficient estimate of the forecast capex for the New South Wales component of Project EnergyConnect is $1,817.9 million ($2017-18). This is 2.6 per cent less than TransGrid's proposal.

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

- TransGrid's forecast capex for transmission lines, substations and large specialist equipment comprises the majority of forecast project costs. TransGrid has undertaken a comprehensive competitive tendering process, and this process has realised cost savings. While at the higher end of an acceptable range, these are likely to reasonably reflect prudent and efficient expenditure.
- TransGrid has estimated additional construction costs provisions that are contingencies for uncertainty and risks of project delay not borne by the contractor. TransGrid has adopted a reasonably prudent probabilistic risk-based approach to estimating these costs
- TransGrid has reasonably valued the land and easements necessary to locate the new transmission lines and substations.
- TransGrid's internal project delivery costs are reasonably required for a project of the size and complexity of Project EnergyConnect.

- TransGrid's approach to estimating the likely efficient costs required to offset the environmental impact from clearing vegetation and locating powerlines near threatened species, as required under New South Wales and Commonwealth legislation. This is supported by extensive field surveys, feedback from the relevant New South Wales regulators, and the identification of land available to offset the estimated environmental impacts.

However, in making a final determination, we have considered more recent and accurate information provided by TransGrid about its expected environmental offset obligations and the expected efficient costs of meeting these obligations. We have also accounted for more recent information about the expected costs of route deviations. This updated information supported a lower amount of forecast capex than TransGrid proposed in its April 2021 revised application.

Table 5 sets out our assessment of TransGrid's capex components and how we arrived at our alternative estimate of total capex for the project.

Table 5 Assessment of TransGrid's capex components ($m, 2017-18)

Capex component	TransGrid estimate (April 2021)	AER estimate	Difference
Lines and substations	1,240.3	1,240.3	0
Large specialist equipment	140.2	140.2	0
Other construction costs	70.5	63.8	-6.7
Property and easements	135.8	135.8	0
Environmental offset costs (including risk)	166.7	125.0	-41.6
Project delivery costs	109.6	109.6	0
Real cost escalation	3.2	3.2	0
Total project capex	**1,866.3**	**1,817.9**	**-48.4**
Difference			-2.6%

Source: AER analysis.

Note: Numbers may not add up due to rounding.

We were supported by our consultants, EMCa, which applied its technical and engineering expertise to examine the capex forecast, identify key areas of TransGrid's application that required further analysis, and assess the prudency and efficiency of the forecast.

Our decision has also been informed by submissions from stakeholders and TransGrid'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 we 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 TransGrid's:

- tendered costs for transmission lines and substation works
- other transmission and substation construction cost allowances
- project delivery costs
- land and easement purchase costs, and
- environmental offset costs.

Tendered costs for transmission lines and substation works

TransGrid is outsourcing the design, construction and delivery of the New South Wales component of Project EnergyConnect to a third party engineering contractor. The two tendered components are $1,240.3 million ($2017-18) for transmission lines and substation works, and $140.2 for the purchasing of large specialist equipment. These comprise 74 per cent of the total project costs.

These costs reflect the outcome of a competitive tendering and procurement process TransGrid has been conducting since 2019. As a result of its tendering process, it has chosen a single supplier to undertake all the necessary works (and purchasing of materials and equipment) under a fixed price design, engineering and construct contract. TransGrid is currently finalising the project design and regulatory approvals, and is expecting to execute a fixed price design and construct contract with its preferred contractor shortly, subject to this determination.

We consider that the majority of TransGrid'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:

- TransGrid's forecast capex is the result of a comprehensive and competitive tendering process which means that the materials and construction costs have been market tested and reflect a realistic expectation of costs that can be delivered.
- TransGrid's proposed scope of works that are reflected in the tendered costs is appropriate and reflects refinements in line route, cost-efficient design and construction techniques, and lower costs for large specialist equipment than TransGrid could achieve itself.

Despite this, however, we note that TransGrid's forecast capex for transmission lines (which comprises the majority of the costs) are higher than some comparable benchmarks. Specifically, when we compare TransGrid's forecast capex per kilometre of line, it is higher than ElectraNet's component of Project EnergyConnect and higher than benchmarks from Jacobs' *Transmission Line Cost Review* that it undertook for ElectraNet.

There are likely multiple reasons why TransGrid's costs are higher than comparable benchmarks, including the specific line route, line deviation, topographical and geotechnical issues, construction techniques, and other factors

One potentially important reason is TransGrid's project delivery model and contract it proposes to enter into with the successful tenderer. As noted, TransGrid proposes to enter into a fixed-price contract with a single supplier to design, procure and construct all of the required works. This is effectively a 'turn-key' project in which the contractor will procure all materials and equipment, construct the necessary infrastructure, and deliver the completed product to TransGrid. TransGrid's responsibilities will be limited to high level design, contractual oversight, regulatory approvals, land access, and integration.

This is a conservative approach to contracting as it transfers the majority of risk to the contractor. This will provide cost certainty and reduce delivery risk for both TransGrid and consumers. However, it likely increases tendered costs because the contractor will instead bear procurement and construction risk. Alternative contracting approaches may lower tendered costs but would potentially increase TransGrid's own costs (including overheads and contract management) and risk.

This may be reasonable where it efficiently balances risk such that the party most able to bear a specific risk should incur the costs. For Project EnergyConnect, this contracting model may be appropriate for TransGrid given that it is relatively inexperienced in delivering a project as large and complex as Project EnergyConnect. It may also have reduced TransGrid's own project delivery costs, when compared to alternative project delivery and contracting models.

However, based on the information available to us, we are not able to identify the quantum of project risk held by the contractor and its forecast costs for specific items and responsibilities. This means we cannot effectively assess whether contractor risk is potentially driving higher transmission line costs, and how the quantum of risk is being shared between the contractor and TransGrid.

We recognise that given the contracts were entered into following a competitive tender process, any risk premium included in the contracted prices will at least reflect the lowest efficient amount that the contractors are willing to bear. TransGrid's approach also in large part protects consumers from the risk of project cost overruns due to poor project delivery or unforeseen events. On balance, our view is TransGrid's tendered costs are likely to reasonably reflect the prudent and efficient costs required to deliver the project.

Other transmission and substation construction costs

In addition to the tendered costs for the transmission lines and substation works, TransGrid's April 2021 proposal included $70.5 million in other construction costs that it considers may be incurred in the construction of Project EnergyConnect, but which were not included in the bidder’s proposal. This includes:

- $43.7 million in 'other construction costs'. This includes allowances for construction delays (e.g. Covid-19, extreme weather, unforeseen environmental approval requirements, EIS approval delay, micro-siting alignment issues, track possessions delays and baseline planning conditions), as well as project commissioning and safety and quality assurance program costs.

- $26.8 million as for route deviations. This amount reflects an estimate of the capex to construct transmission lines in a different alignment to those considered in the original tendered costs, based on the need to avoid specific land for environmental, cultural heritage or other concerns.

These costs largely reflect allowances for risk and uncertainty (with the exception of commissioning and safety and quality assurance program costs).

TransGrid accepted our revised estimates of other construction costs

TransGrid's initial application proposed $58.2 million for other construction cost allowances that were not included in the preferred tenderer's bid.

In our December 2020 preliminary assessment, we considered that it was reasonable for TransGrid to include allowances for these types of costs in its forecast. However, these costs largely reflected allowances for risk and uncertainty, and we considered that TransGrid had not quantified these costs in a way that prudently reflects the nature of the risk. In particular, it had not consistently quantified the costs in a probabilistic way by assessing both the cost of the identified consequence and the likelihood of the cost being incurred.

We considered that assigning a probability weighting to these risk costs would result in a more reasonable estimate of prudent and efficient costs. We reviewed the basis for the proposed cost allowances and applied a probabilistic assessment of known risks associated with the proposed costs that reflects the stage of the project in the delivery cycle and complexity of the works involved for this project.

Our alternative estimate was $43.7 million for other construction cost allowances. TransGrid has accepted the approach we adopted in our preliminary assessment and our revised estimates for the other construction cost allowances.

TransGrid provided updated information about expected route deviations

TransGrid's initial application also proposed $30 million for potential route deviations. TransGrid reduced this forecast to $26.8 million in its revised proposal.

TransGrid provided information about actual or expected route deviations that it has identified as it progressed the design and planning of the project with its preferred contractor. Specifically, TransGrid has identified route deviations that are, or are expected to be, required due to community concerns in the more highly populated areas of the route near Wagga-Wagga.

In addition, TransGrid's application stated that there was a risk that route deviations may be required in the preceding sections of the project route. While it did not provide information about expected deviations or community opposition in specific sections of the route, it proposed a general allowance to account for the risk that additional deviations will be required.

In May 2021, TransGrid provided further information about actual route deviations that had been identified on these preceding sections of the line. It identified seven deviations that were required to minimise environmental disturbance or a land use conflict.

We consider that this additional information provides a more accurate picture of the costs that will be required for known and expected deviations on the project route, and we have incorporated this into our forecast capex for the project. Our capex forecast differs from TransGrid's by $6.7 million as it accounts for the most recent estimates of route deviations, as opposed to a general allowance that does not reflect the actual conditions or expected risks.

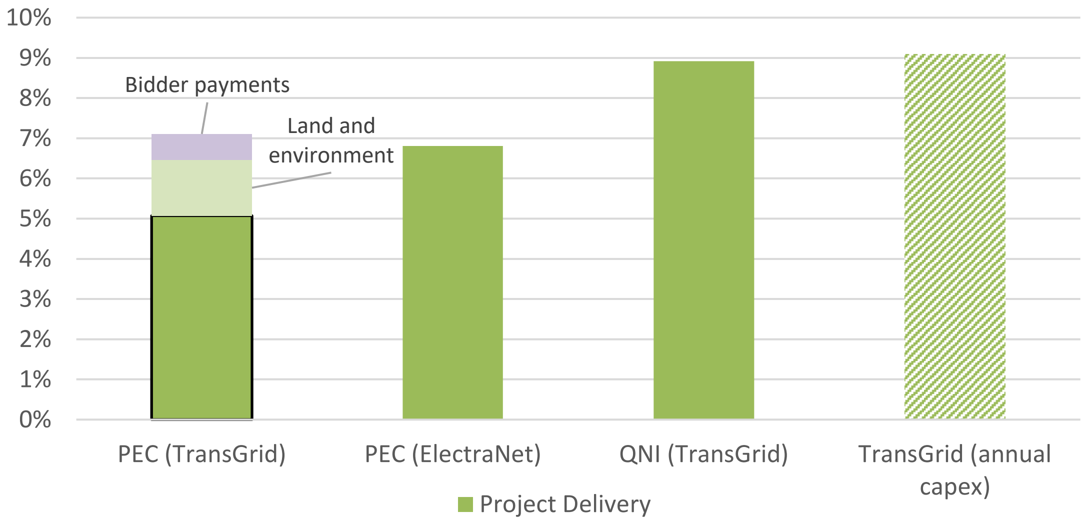
Project delivery costs

TransGrid forecasts $135.6 million ($2017-18) in project delivery overhead costs for its component of Project EnergyConnect. This is comprised of:

- $97 million in forecast staffing for project development and delivery (including actual costs incurred to date for design and procurement)
- $27 million in land and environmental management (including stakeholder engagement)
- $12 million in bidder payments (compensation to unsuccessful tenderers).

We have benchmarked TransGrid's project delivery costs because they are most comparable to TransGrid's overheads on historical projects. As shown in Figure 1, TransGrid's project delivery costs for Project EnergyConnect are significantly less than the forecast project delivery costs on its recent QNI Minor project, as well as its annual capitalised overheads.

Figure 1 Capitalised overheads as proportion of total capex (TransGrid)



Source: TransGrid, ElectraNet, AER analysis.

These results are consistent 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 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 also consistent with ElectraNet's forecast project delivery costs for its component of Project EnergyConnect, which are likely higher than TransGrid's in part due to its smaller total project costs.

We also sought advice from EMCa to examine TransGrid'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 TransGrid's labour and labour-related costs were reasonably estimated. However, it did observe that TransGrid's labour rates appear to be at the higher end of an acceptable range, and that some of its resource profiles may be biased towards overstatement of actual needs.

Land and easement acquisition

TransGrid has forecast $109.6 million ($2017-18) in capex for the purchase of new easements, land for substations, and associated costs relating to compensating landowners along the route between the South Australian border and Wagga-Wagga. This comprises 5.8 per cent of total project forecast capex.

We have reviewed these costs by examining the basis of estimate and the various assumptions. We found that the majority of the easement and land acquisition costs are likely reasonably estimated, and are supported by independent data on land valuations in New South Wales. In particular, TransGrid's estimated market value of land is consistent with land sales in similar regions of New South Wales as contained in the *NSW 2019 Australian Farmland Values* report from the Rural Bank.

In addition to the market value of land, TransGrid's forecast includes a $19.8 million contingency for negotiating with landowners to secure easements at above market rates. This is a reduction from $29.9 million in its September 2020 proposal.

TransGrid's primary reason for including a negotiating allowance is the desire to avoid compulsory acquisition of property along the route. TransGrid considers compulsory acquisition will be detrimental to relationships with landowners and may delay project construction. In the absence of compulsory acquisition, TransGrid will negotiate with landowners on a commercial basis to reach agreement.

TransGrid's negotiating allowance is informed by advice from its property consultant about the average negotiating margin required to secure land and avoid compulsory acquisition. This is informed by case studies from land acquisition costs in other infrastructure projects, as well as the value of land TransGrid has already been able to acquire for the project to date. While TransGrid's proposal is informed by this advice, TransGrid adopts a lower negotiating margin than its consultant.

TransGrid has been able to negotiate acquisition of, or access to, up to 40 per cent of required land and easements for the project to date. This land is primarily in the western sections of the route which TransGrid has prioritised through its early engagement and investigations processes. TransGrid has sought confidentiality over the actual agreed values and as such we will refer to the outcomes in more general terms as relevant.

The majority of the value of the land that TransGrid has negotiated access to was agreed to at rates above estimated market value. However, the negotiated margins above market value were less than half of the margins included in TransGrid's proposal, on average.

In PIAC's submission to TransGrid's revised proposal, it stated:

> PIAC also does not support TransGrid's proposed increased allowance for land and easement costs. We consider a case has not been made to provide an allowance beyond the AER's preliminary position based on the average actual margin of land TransGrid has already acquired along the route.
>
> PIAC agrees with TransGrid that being able to negotiate with landholders to acquire the necessary property and easements for PEC is preferable to compulsory acquisition of property. However, we question whether it is appropriate for NSW consumers to bear costs above market price for such negotiated outcomes given the primary direct beneficiary of this relationship-building approach is TransGrid.

We agree that TransGrid is best placed to negotiate access to property and easements with landowners, and that it should not be compensated for costs above what is prudently required to meet the needs of the project. In our December 2020 preliminary assessment, we considered that a negotiating margin that reflected the actual land agreements obtained to date was appropriate.

However, we recognise that the actual costs of acquiring land will depend on the outcome of the negotiations, and it may be higher than what has been observed to date. If these costs are necessary to prudently avoid compulsory land acquisition, this will be in the interests of consumers as it will avoid project delay.

TransGrid's consultant considered that there are reasons to suggest that the final negotiated land values will be significantly higher than what has been observed to date. Specifically:

- The negotiation margins have increased over time as TransGrid settles more agreements, and the proportion of higher margin settlements has also increased. If the observed trend continued, then the negotiated land values across the entire route may be higher than TransGrid's proposal.
- The remaining sections of the route are closer to the higher value, higher populated and more intensively used sections of the network. It expects to experience higher landowner opposition and therefore higher negotiating premiums to secure land.

- Anecdotal evidence from other infrastructure projects, including transmission network service providers in Australia, suggests that high land values are common to incentivise landowners to enter into timely agreements.

We consider that TransGrid's allowance for land negotiations is likely at the higher end of a reasonable range. The actual agreements obtained to date are lower than TransGrid's proposal. However, there is a reasonable prospect that TransGrid will overall be required to pay higher land values to secure land in a timely fashion and avoid compulsory acquisition or additional route deviations. This will likely benefit consumers where it avoids project delay or additional project costs.

Environmental offsets

TransGrid's forecast includes capex to offset the biodiversity impact arising from the construction of the project. This is required under the *Biodiversity Conservation Act 2016 (NSW),* the *Environment Protection and Biodiversity Conservation Act 1999 (Cth),* and associated regulations.

The environmental impact of the project is determined by a credit system, where credits are generated when land is disturbed. The amount of biodiversity credits will be determined by the New South Wales Department of Planning, Industry and Environment (DPIE) based on an application from TransGrid.

The environmental credit liabilities are resolved when equivalent credit offsets are obtained either through the offsets register, when a protected area of land is established (called a Biodiversity Stewardship Agreement or BSA), and/or through payments into a biodiversity conservation fund.

TransGrid's revised capex forecast includes $148.2 million ($2017-18) for its environmental offset costs. This reflects TransGrid's estimate of the costs to acquire and establish BSA land, as well as payments into the biodiversity conservation fund. TransGrid also proposed an additional $18.5 million for biodiversity risk costs.

We consider that a reasonable estimate of likely costs required for environmental offsets is $125 million ($2017-18). In coming to this position, we have considered the offset information contained in the documents submitted to us by TransGrid in its contingent project application, as well as more recent information and detailed offset estimates provided to us by TransGrid and contained in environmental reports related to this project.

Our capex estimate is lower than what was proposed by TransGrid because:

- we accounted for updated capex estimates we received from TransGrid and its consultant since it submitted its revised proposal, which accounted for the impact of more recent field survey results
- we accounted for more accurate estimates of BSA land values compared to what was adopted by TransGrid in its forecast
- we did not include an allowance for additional environmental offset risk.

We also note that our assessment of required capex is materially higher than our preliminary assessment. Our preliminary assessment was informed by the information available at the time about TransGrid's likely environmental obligations and the likely capex required to meet these obligations. However, the information TransGrid has provided as part of its revised proposal and in response to further information requests provides us with a more accurate representation of its likely regulatory obligations and the efficient estimate of the expected capex.

TransGrid has established the need to offset environmental impacts

The forecast capex for environmental offsets is primarily driven by the need to offset an amount of biodiversity credits generated by the project.

TransGrid's forecast is informed by field surveys undertaken by environmental consultants WSP. They undertook studies that identified a range of scenarios of environmental impact of the project along the proposed route, and their likely impact in terms of the estimated types and amounts of environmental credits.

As noted above, the actual amount of biodiversity credits that TransGrid will need to offset will be determined by the New South Wales DPIE, based on an application from TransGrid. TransGrid and its consultant WSP have adopted a strategy that separates the proposed project into the western and eastern sections of the route, and progressed its environmental studies and regulatory approvals separately. It expects to achieve final regulatory approvals by mid-to-late 2022.

WSP’s initial reports describe its assumptions in relation to clearance impacts and environmental credits as conservative, and intended to be replaced with more accurate estimates as they undertake field work and studies. The forecast estimates of environmental disturbance and credits has been updated over time and now provide a reasonably realistic estimate. In particular:

- In November 2019, WSP conducted an initial desktop study based on a preliminary project route and mapping of expected environmental impacts using established biodiversity databases.
- In October 2020, TransGrid provided the New South Wales DPIE with its draft assessment of the environmental impact on the western section of the route, which reflected completed field surveys and a refined project route. This was contained in a draft Biodiversity Development Assessment Report (BDAR).
- In April 2021, TransGrid submitted an updated BDAR for the western section of the route which accounted for feedback from the New South Wales DPIE, and further refinements to the construction plan. This increased the western credit liability estimates by 30 per cent.
- In its April 2021 revised proposal, TransGrid provided an update on the estimated environmental credit on the eastern section of the route, reflecting the updated information incorporated into the western section. However, it did not account for any further field surveys.

- In May 2021, TransGrid provided the results of updated field survey results on the eastern section of the network. It had completed 70 per cent of the surveys of vegetation ecosystems and 50 per cent of endangered species. These field surveys supported an eastern credit liability that was double the initial desktop surveys.

In our December 2020 preliminary assessment, we noted that the amount of biodiversity that had been verified by field surveys at that time supported a lower estimate of environmental credits. However, the updated information that TransGrid has received has substantially increased the estimate of the likely environmental impact of the project and provides a more accurate representation of the amount of environmental credits it will be required to offset.

We recognise that the actual credit liability that will be established by the New South Wales DPIE is not yet known. However, as TransGrid's May 2021 estimate is informed by significant field surveys and feedback from the DPIE on the draft environmental assessment of the western section of the project, we consider that this estimate provides a reasonable indication of TransGrid's likely regulatory obligation. This conclusion is supported by EMCa's review of this aspect of TransGrid's revised application.[6]

TransGrid adopts a prudent capex strategy

TransGrid's April 2021 proposed forecast for environmental offsets capex is comprised of three separate elements:

- $80.1 million to cover the costs of acquiring and managing land for BSAs
- $46.2 million for payments into the biodiversity conservation fund to cover disturbance to vegetation ecosystems that cannot be offset through land, and
- $21.9 million for payments into the biodiversity conservation fund to cover disturbance to endangered species that cannot be offset through land.

TransGrid's capex is informed by advice from its environmental consultant WSP on the strategy to adopt to offset the expected environmental credits and the costs of doing so. As noted previously, TransGrid has a number of options available to resolve its obligations, including establishing protected areas of land, or paying into a conservation fund, or obtaining offsets from an established register. The costs of paying into the conservation fund is generally the most expensive approach.

We consider that TransGrid has adopted a prudent strategy that attempts to minimise costs by seeking to identify available land to offset its environmental credits, and only pay into the fund where land cannot be identified (or where specific land is otherwise more expensive than the fund payments).

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6 EMCa, *Review of Aspects of Environmental Offset Forecast Capex*, May 2021, p. 8.

TransGrid and WSP have to date identified up to twelve different parcels of land that may be suitable for establishing protected land. Based on WSP's estimate of the specific environmental credits that need to be offset, it then selected four of these land parcels as being appropriate to maximise the use of land to meet its credit liabilities, and minimise the cost of payments into the fund. It has not been able to identify land that would be suitable to offset the entirety of the environmental impact.

The proposed strategy to acquire four parcels of land to meet a large proportion of its estimated offset liability saves up to $135 million in total payments into the fund.[7] This is a significant amount of savings and reflects a prudent strategy.

Furthermore, the specific land that TransGrid and WSP identified is also the land that maximises these savings, as other land options are more expensive or offset fewer environmental credits and therefore require more payments into the fund.[8] This is illustrated in WSP's September 2020 report, which examined the incremental savings from different land options. As shown in Table 6, the addition of two land parcels identified as "12 and 8" maximised the potential savings relative to other land options. These two land options are reflected in the forecast capex.

Table 6 Environmental offset savings from different land options — WSP September 2020 report

Table 4.3 Summary of preferred options for establishing additional candidate BSAs for targeted ecosystem

CANDIDATE BSAS	TOTAL AREA BSA (HA)[3]	TOTAL RESIDUAL CREDIT LIABILITY FOR TARGETED ECOSYSTEMS[1, 2,]	TOTAL BSA COST[4,]	TOTAL COST FOR BSAS FOR TARGETED ECOSYSTEMS	SAVING FROM ALTERNATIVE $110,871,027 PAYMENT TO MEET BCF LIABILITY[5]
5	9,507.99	$19,474,825	$47,539,962	$67,014,787	$43,856,246
4 and 8	15821.96	$4,210,601	$79,109,821.77	$83,320,423	$27,550,610
12 and 8	9632.72	$1,417,446	$48,163,633	$49,581,079	$61,289,954
3 and 8	14522.8	$1,388,879	$72,614,080	$74,002,959	$36,868,074

Source: WSP, *Biodiversity Memo*, September 2020, p. 12.

While TransGrid has proposed a prudent strategy to meet its environmental obligations, we explored further opportunities to reduce forecast capex so that it reflected a reasonably realistic estimate of the expected costs.

In May 2021, we discussed with TransGrid further opportunities to minimise the residual amounts forecast to be paid into the fund based on the findings from the

7 WSP, *Response to AER preliminary position TransGrid Contingent Project EnergyConnect December 2020 – Environmental Offset Costs*, 23 March 2021, p. 21

8 As shown in Table 4.3 of WSP's September 2020 memo, the land options of 12 and 8 maximise the savings from the alternative of paying solely into the fund to meet the credit liability. These land parcels WSP memo 27 August 2020, Table 4.3, p. 12

most recently completed field surveys. In response, TransGrid's consultant reduced its estimate of the fund payments for ecosystem credits, reducing the forecast capex for ecosystem fund payments by $15.2 million. This reduced its forecast environmental offset capex to $134 million ($2017-18).

We also examined the unit costs inputs for land and fund payments.

The forecast costs of paying into a fund were estimated using actual credit prices that are published in the New South Wales biodiversity offset payment calculator, and likely reflect a realistic estimate of the cost of paying into the fund. However, the forecast costs of acquiring and managing land are based on estimated land values.

TransGrid has already negotiated an agreed price for acquiring two of the required land parcels. The price for acquiring the remaining two land parcels is based on an assumed average land price from WSP. While WSP's average price is broadly consistent with the average price of land in that region of New South Wales, we have available more specific estimates of the land values from TransGrid's property consultant (which were originally provided to estimate the land required for easements). The estimated value of the land is lower than the average value estimated by WSP by approximately $9.5 million. This conclusion is supported by EMCa's review of this aspect of TransGrid's revised application.[9]

TransGrid has stated that adopting the estimated costs of acquiring the actual land parcels identified, rather than an average cost, will result in an allowance that will be materially lower than its actual costs. It noted that it has not yet progressed negotiations on the identified land and, at this stage, all of the twelve land options are equally likely to be progressed. The expected average cost of these land options is higher than the preferred parcels that comprise TransGrid's capex forecast. It may also consider alternative options that are further afield of the expected impact sites.

While we accept that TransGrid may not obtain access to its preferred land parcels and its actual costs will be different, this would not necessarily be the prudent outcome. As noted above, the chosen land parcels are those that maximise the savings to consumers as it avoids paying higher costs into the conservation fund. If an alternative average land valuation was adopted instead, TransGrid would also need to consider whether the use of alternative land options would otherwise increase total capex as more payments may be needed into the conservation fund.

We also note that TransGrid's land value costs could be lower than forecast if it identified additional cheaper land options through further field research and/or additional land that has may offset a higher amount of environmental credits.

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9 EMCa, *Review of Aspects of Environmental Offset Forecast Capex*, May 2021, pp. 14-15.

An allowance for biodiversity offset risk is not justified

TransGrid's revised application included $18.5 million capex for biodiversity offset risk. This reflects the risk that TransGrid will not be able to identify and establish suitable protected land for the eastern section of its route and will need to rely wholly on fund payments to meet its credit liabilities. It estimates that there is a 20 per cent likelihood that it will need to pay wholly into the conservation fund.

TransGrid considers its revised capex forecast to be conservative because it is calculated based on one risk only and does not include any risk costs for the western section.[10] TransGrid submitted that its environmental offset costs are beyond its control because the credit liability is determined by the New South Wales DPIE. TransGrid further submitted that it needs to acquire land sites to offset the credit liability, which will depend on the availability of suitable like-for-like sites as well as the willingness of landowners to enter into agreements.

As we noted above, we accept that there is some risk that TransGrid may not be able to establish suitable land agreements, although this this would likely not be a prudent outcome. TransGrid has currently identified the prudent option that maximises the potential cost savings to consumers. TransGrid should only be compensated for the likelihood that these costs will increase where it is outside its control and necessary to meet its regulatory obligations.

The risk that TransGrid will not be able to acquire the land necessary to meet its regulatory obligations prudently is a delivery risk that is within its control. This is acknowledged by a review of TransGrid's capital expenditure by HoustonKemp, which stated:

> TransGrid does have control over its negotiations with landowners to enter into BSAs, which is one of the factors that will determine biodiversity cost outcomes.

TransGrid can mitigate this risk through early engagement with landowners, but has chosen not to do so. The specific land that WSP has identified as optimal to offset the expected environmental disturbance was originally identified in 2019.[11] It appears TransGrid has not taken further actions since this time to engage with the landowners and potentially negotiate options to acquire this land, despite this being a relatively low cost activity that would significantly reduce its expected costs.

Furthermore, we consider there are likely opportunities for TransGrid to reduce, rather than increase, its overall environmental offset capex and this balances the need for any risk allowance. These opportunities include:

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[10] TransGrid, *Project EnergyConnect Contingent Project Application – Revised Capex Application*, 30 April 2021, p. 27.

[11] WSP, *Revised estimate of EnergyConnect Biodiversity Offset Liability and Update to Strategy*, 9 September 2020, p.16.

- Identifying other land options that are lower in costs or provide greater potential to offset environmental credits (as previously noted).
- Maximising the use of identified land to meet credit liabilities that are intended to be paid into the fund.
- Reducing or mitigating its environmental impact such as through the route deviations already identified, and micro-sitting.
- Trading and selling its credits to further reduce costs, and using the existing offsets register, as allowed under the NSW legislation.

4.2 Forecast of operating expenditure

Table 7 sets out our determination of the incremental opex for each year of the 2018–23 regulatory control period. TransGrid's forecast opex for Project EnergyConnect is $2.5 million over the 2018–23 regulatory period.

We have made no adjustment to TransGrid's proposed incremental opex in its application. TransGrid's incremental opex is minimal given that the interconnector will be under construction, and will enter service, at the end of the current regulatory period. Future maintenance and other opex associated with the new assets will be recovered in future regulatory periods.

Table 7 Proposed incremental opex forecast ($m, 2017-18)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Total opex	-	0.0	0.1	0.5	1.9	2.5

Source: TransGrid's contingent project application.

4.3 Application of expenditure incentive schemes

The forecast capex approved in this determination will be added to the target capex for the capital expenditure sharing scheme (CESS) and the target opex for the efficiency benefit sharing scheme (EBSS).

Under the schemes that apply to TransGrid over the 2018–23 regulatory control period, target capex and opex allowances are based on our approved allowance (as determined prior to the start of the regulatory control period), plus any adjustments we allow for contingent projects.[12] Any incentive rewards and penalties TransGrid receives as a result of under or overspending on the project would be applied as additional revenue adjustments in the next regulatory control period.

[12] AER, *Better regulation: Capital expenditure incentive guideline for electricity network service providers*, November 2013, p. 6.

TransGrid's revised proposal requested that the environmental offsets component of projects costs be excluded from the application of the CESS, if the AER were to not apply a risk allowance for environmental offsets in its determination.

We are not able to make a decision on whether and how the CESS will apply as part of the contingent project decision. The scope of contingent project decisions is limited to only varying the revenue determination to the extent necessary to adjust forecast capex, opex and revenue.[13] The decision on the rewards or penalties applied under the CESS as a result of expenditure in the 2018–23 regulatory control period will be made at the time of the next revenue determination.

Our preference is to apply the CESS where possible, and provide for a prudent and efficient forecast of all project costs consistent with the intent of the ex-ante framework, with actual capex rolled into the RAB at the end of the regulatory control period. This is important to maintain incentives on TransGrid to minimise its costs, including on environmental offsets.

13 NER, cl. 6A.8.2(h).

5 Calculation of incremental allowed revenues

This section calculates the incremental revenue that TransGrid 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. TransGrid's application is consistent with this approach.

Table 8 shows that TransGrid is entitled to recover $61.5 million ($ 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 New South Wales will increase by $11 in 2022-23 and by $22 per year for the 2023–28 regulatory control period.

Table 8 Incremental revenue calculation ($m, nominal)

	2018–19	2019–20	2020–21	2021–22	2022–23	Total
Return on capital	0.0	1.3	2.8	16.6	75.4	96.1
Return of capital	0.0	–0.1	–0.7	–6.4	–30.7	–37.8
Straight-line depreciation	0.0	0.4	0.4	0.4	0.5	1.8
Less: inflation indexation on opening RAB	0.0	0.5	1.1	6.9	31.1	39.6
Operating expenditure	0.0	0.0	0.1	0.6	2.2	2.9
Revenue adjustments	0.0	0.0	0.0	0.0	0.0	0.0
Net tax allowance	0.0	–0.6	–0.6	–0.3	0.8	–0.7
Annual building block revenue requirement (unsmoothed)[a]	0.0	0.7	1.6	10.5	47.7	60.5
Annual expected maximum allowable revenue (smoothed)	0.0	0.0	0.0	0.0	61.5	61.5
Increase to annual expected MAR (smoothed) (%)	0.0%	0.0%	0.0%	0.0%	7.2%	1.6%

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.

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 due to increased 2018-19 equity raising costs. The inflation indexation on opening RAB increases from 2019-20 due to the as-incurred PEC capex which begins to enter the RAB from the end of 2018-19.

Table 9 shows the effect of the resultant incremental increase in revenues on TransGrid'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 9 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)	734.3	776.4	786.8	817.2	876.5	3,991.2
Annual expected MAR (smoothed)	734.3	759.5	779.5	809.1	913.4	3,995.8
X-factors	–0.5%	–1.0%	–0.2%	–1.3%	–10.2%	n/a

Source: AER analysis.

Other issues: Asset lives and VNI Minor Capex

Standard asset life for 'Equity raising costs' asset class

We have applied an updated standard asset life of 40.3 years to the 'Equity raising costs' asset class for regulatory depreciation purposes. This reflects our approach from the preliminary position which TransGrid adopted for its revised proposal. Using this approach TransGrid calculated a standard asset life of 40.4 years in its revised proposal. TransGrid's revised proposal also adopted a slight amendment we made in our preliminary position to the weighted average calculation.

We calculate the standard asset life of equity raising costs by taking 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 reflects the lives of the mix of assets making up the forecast net capex, because the equity raising cost benchmark is associated with that forecast. While TransGrid applied this approach in its revised proposal, we recalculate the standard asset life because our final assessment of forecast capex is different to TransGrid's revised proposal.

Standard tax asset life for 'Synchronous condensers' asset class

Our final decision is to apply a standard tax asset life of 30 years for the new 'Synchronous condensers' asset class consistent with our preliminary position. TransGrid's revised proposal adopted our preliminary position amendment for this standard tax asset life.

In the preliminary position we amended the tax asset life to 30 years from TransGrid's proposed standard tax asset life of 40 years. We consider 30 years is consistent with the effective life for condensing assets for tax purposes as determined by the ATO.[14] We consider that the standard tax asset life for the purpose of calculating the corporate income tax building block should be consistent with the relevant tax ruling for depreciating assets, which may be different to the economic life for regulatory depreciation purposes.

Expenditure for VNI Minor contingent project

In TransGrid's revised proposal PTRM, the incremental capex and opex for PEC were added to expenditure previously approved for the 2018–23 regulatory control period. However, while this previously approved expenditure reflected updates for the QNI minor contingent project it did not reflect updates for the more recently approved VNI Minor contingent project. We note that while this adjustment does not materially impact the incremental revenue, we consider it appropriate to include the approved expenditure for the VNI Minor contingent project to calculate the correct total forecast revenue. We have therefore amended the relevant inputs to include the VNI Minor contingent project expenditure in TransGrid's PTRM for this final decision.

[14] ATO, Taxation Ruling TR2020/3– Income tax: effective life of depreciating assets (applicable from 1 July 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 10 provides a summary of the key issues raised in the submissions received and responses to those issues.

Table 10 Summary of submissions to contingent project applications

Issue	AER consideration
Project scope not consistent with RIT -T *Sam Trinca* TransGrid's contingent project application is not consistent with the preferred Option C3, as identified in the RIT -T as it involves a new substation at Dinawan and does not connect to Darlington Point. The benefit of the original route included providing grid access to solar farms and avoiding the implementation of TransGrid's western grid stability project. The AER should conclude that the relevant 'trigger event' for Project EnergyConnect has not occurred, given the new option was not identified and developed during the RIT-T process.	We consider that the overall route option presented remains consistent with that assessed in the RIT-T, being a 330 kV transmission line from Robertstown in SA to Wagga-Wagga in NSW, with a 220 kV spur line to Red Cliffs in Victoria. The specific line route was not determined at the time of publication of the RIT-T project assessment conclusions report. Detailed route planning and selection is a matter for TransGrid, subject to delivering the identified need of the project The route refinement through Dinawan is considered by TransGrid to be necessary to secure the transmission line corridor and of equivalent cost. Bypassing Darlington Point involves a shorter line route and is less complex in terms of project delivery risk. The line route realignment through Dinawan does not materially affect the level of benefits of the Project assessed in the RIT-T. The scope and cost of the proposed solution remains consistent with that required to deliver the requirements of the project. Addressing network constraints in South Western NSW was not an identified need of the South Australian Energy Transformation RIT-T. TransGrid has initiated a separate RIT-T process to address these constraints. As set out in section 2, we are satisfied that all elements of the trigger event have occurred.
NSW and South Australia costs and benefits *Sam Trinca* 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. *Public Interest Advocacy Centre* PIAC recommends revisiting the current inter-regional transmission cost allocation to more fairly share costs between NSW and SA consumers from Project EnergyConnect. 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	The RIT-T assesses net benefits to the market, not only consumers, or consumers in particular regions. The NER do not currently provide for the recovery of project costs from generators or other parties. 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. 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.

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.

Benefits of the project

Major Energy Users

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.

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.

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.

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.

Public Interest Advocacy Centre

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.

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

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.

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.

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 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 TransGrid's proposed forecast capex and have estimated a different forecast which we consider reasonably reflects prudent and efficient costs. Our forecast is approximately 2.6 per cent lower than TransGrid's estimate.

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	
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.
Biodiversity risk costs *ENGIE* ENGIE is interested to understand the appropriateness of TransGrid's claim for "biodiversity risk costs" and ElectraNet's for "project risk".	As discussed in section 4.1, we assessed the prudent and efficient costs TransGrid requires for environmental offset costs. We considered further information provided by TransGrid since it submitted its revised proposal, including the impact of further completed biodiversity field survey results. We have also accounted for more accurate information about some of the cost inputs for environmental offsets, including land valuations. However, we have not included any additional allowances for project risks for environmental offsets, as we consider that our forecast of capex provides for TransGrid's prudent and efficient project costs and TransGrid is best placed to mitigate the likelihood of additional costs being incurred in project delivery.
Land and easement purchase costs *Public Interest Advocacy Centre* PIAC does not support TransGrid's proposed increased allowance for land and easement costs. It considered that a case has not been made to provide an allowance	As discussed in section 4.1, we consider that TransGrid's allowance for land and easement purchase is likely at the higher end of a reasonable range. The actual agreements it has obtained to date are lower than TransGrid's proposal. However, there is a reasonable prospect that TransGrid will be required to pay higher land values to secure land in a timely fashion and avoid

beyond the average actual margin of land TransGrid has already acquired along the route. PIAC agrees with TransGrid that being able to negotiate with landholders to acquire the necessary property and easements for PEC is preferable to compulsory acquisition of property. However, it questions whether it is appropriate for NSW consumers to bear costs above market price for such negotiated outcomes given the primary direct beneficiary of this relationship-building approach is TransGrid.	compulsory acquisition or additional route deviations. This will likely benefit consumers where it avoids project delay or additional project costs.
Real input escalators *ENGIE* TransGrid's claim for "real input escalators" also requires closer scrutiny, especially when ElectraNet does not appear to have sought similar.	TransGrid has applied real cost escalation to its expenditure forecasts to capture costs expected to rise faster than inflation. TransGrid's claim for "real input escalators" includes: • Zero real input cost escalation to materials. • Application of the AER's approved real labour input cost escalators to labour. • Total forecast capex for real input cost escalation of \$3.2 million (\$2017-18). We consider TransGrid's application of real labour cost escalation is consistent with its revenue determination.
Upgrade of line sections to 500kV *Reach Solar* Reach supports the project as an important part of the ISP as an 'actionable' project. Reach supports an upgrade of key sections to 500kV to future proof the project, which would complement HumeLink, which is planned at 500kV.	TransGrid has not proposed to build sections of the line at 500kV. The scope of the proposed solution remains consistent with that required to deliver on the requirements of the project identified in the RIT-T. We expect that any incremental costs required to construct sections of the line with a higher capacity to complement the HumeLink project would require justification and funding through the regulatory process for that project.