FINAL DECISION

TasNetworks
Transmission Determination
2019 to 2024

Attachment 5
Capital expenditure

April 2019

AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

Tel: 1300 585 165
Email: AERInquiry@aer.gov.au

AER reference: 60153

Note

This attachment forms part of the AER's final decision on TasNetworks' 2019–24 transmission determination. It should be read with all other parts of the final decision.

The final decision includes the following attachments:

Overview

TasNetworks transmission determination 2019–24

Attachment 1 – Maximum allowed revenue

Attachment 2 – Regulatory asset base

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 7 – Corporate income tax

Attachment 9 – Capital expenditure sharing scheme

Attachment 10 – Service target performance incentive scheme

Attachment A – Pricing methodology

Contents

Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CCP 13	Consumer Challenge Panel, sub panel 13
CESS	capital expenditure sharing scheme
CPI	consumer price index
DRP	debt risk premium
DMIAM	demand management innovation allowance (mechanism)
DMIS	demand management incentive scheme
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
F&A	framework and approach
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider
opex	operating expenditure
PTRM	post-tax revenue model

Shortened form	Extended form
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

5 Capital expenditure

Capital expenditure (capex) refers to the investment made in the transmission network to provide prescribed transmission services. This investment mostly relates to assets with long lives (30–50 years is typical) and these costs are recovered from customers over several regulatory periods.

On an annual basis, the financing and depreciation costs associated with these assets are recovered (return of and on capital) as part of the building blocks that form TasNetworks' total revenue requirement.[1]

This attachment sets out our final decision on TasNetworks' total transmission capex forecast. Further detailed analysis is provided in the following appendices:

- Appendix A – Assessment techniques
- Appendix B – Assessment of capex drivers
- Appendix C – Engagement and information-gathering process
- Appendix D – Contingent projects

5.1 Final decision

In assessing forecast capital expenditure, we are guided by the National Electricity Objective and underpinning capex criteria and objectives set out in the NER. We must accept a business's capex forecast if we are satisfied that the total forecast for the regulatory control period reasonably reflects the capex criteria.[2]

These criteria outline that a business's capex forecast must reasonably reflect the efficient costs of achieving the capex objectives, the costs that a prudent operator would require to achieve the capex objectives, and a realistic expectation of the demand forecast and cost inputs required to achieve the capex objectives.[3]

The capex objectives relate to a business's ability to comply with regulatory obligations and maintain the quality, reliability and security of supply of prescribed services and the reliability and security of the transmission system.[4]

Where a business is unable to demonstrate that its proposal complies with the capex criteria and objectives, the NER requires us to set out a substitute estimate of total capex that we are satisfied reasonably reflects the capex criteria, taking into account the capex factors.[5]

---

1 NER, cl. 6A.6.7(c)
2 NER, cl. 6A.6.7(c).
3 NER, cl. 6A.6.7(c).
4 NER, cl. 6A.6.7(a).
5 NER, cl. 6A.14.1(3)(ii). The capex factors are set out at cl. 6A.6.7(e).

TasNetworks has not justified that its revised total capex forecast of $260.4 million ($2018–19) reasonably reflects the capex criteria. We have included an amount of $241.4 million ($2018-19) in our substitute estimate of total capex. We are satisfied that our substitute estimate reasonably reflects the capex criteria. Table 5-1 outlines TasNetworks' revised total capex forecast and our final decision.

Table 5-1 – Final decision on TasNetworks transmission total net capex forecast ($2018–19, million)

	2019–20	2020–21	2021–22	2022–23	2023–24	Total
TasNetworks' revised proposal	57.8	58.4	55.4	46.7	42.0	260.4
AER final decision	56.1	54.0	50.7	42.8	37.9	241.4
Difference	-1.7	-4.4	-4.7	-3.9	-4.1	-19.0
Percentage difference	-2.9%	-7.5%	-8.5%	-8.4%	-9.8%	-7.3%

Source: TasNetworks' revised PTRM and AER analysis.

Note: Numbers may not add up due to rounding.

Table 5-2 summarises our findings and the reasons for our final decision by 'capex driver' (e.g. augmentation, replacement and connections). This reflects the way we have assessed TasNetworks' total capex forecast.

Our findings on the capex drivers are part of our broader analysis and should not be considered in isolation. We do not approve an amount of forecast expenditure for each individual capex driver. However, we use our findings on the different capex drivers to assess a business's proposal as a whole and arrive at a substitute estimate for total capex where necessary.

Our assessment highlighted that TasNetworks has not demonstrated that its revised total capex forecast reasonably reflects the capex criteria, taking into account the capex factors and the revenue and pricing principles.[6] As set out in appendix B, TasNetworks has not demonstrated that its revised total capex forecast forms part of an overall transmission determination that will contribute to achieving the National Electricity Objective to the greatest degree.

Table 5-2 – Summary of AER findings and reasons

Issue	Reasons and findings
Total capex forecast	TasNetworks proposed a total capex forecast of $260.4 million ($2018–19) in its revised proposal. TasNetworks has not demonstrated that its revised proposal reasonably reflects the capex criteria. We are satisfied that our substitute estimate of $241.4 million ($2018–19) reasonably reflects the capex criteria. Our substitute estimate is 7 per cent lower than TasNetworks' revised proposal. The reasons for

6 NER, cll. 6A.6.7(c); 6A.6.7(e) and NEL, ss.7A, 16(2).

	this decision are summarised in this table and detailed in the remainder of this attachment.
Forecasting methodology, key assumptions and past capex performance	We consider TasNetworks' investment governance processes are not implemented consistently. While TasNetworks has improved its approach to risk quantification and analysis through this determination process, for this final decision we have found that TasNetworks has applied some conservative input assumptions and approaches in its cost-benefit analysis models which has the effect of overstating risks and capex requirements.
Augmentation capex	We accept TasNetworks' revised augex forecast of $21.5 million ($2018–19, excluding overheads). TasNetworks has sufficiently demonstrated that its forecast augex would form part of a total capex forecast that reasonably reflects the capex criteria. It is consistent with the drivers of expenditure in this category, including continuing flat or declining maximum demand in the forecast period.
Customer connections capex	We accept TasNetworks' revised customer connections capex forecast of $7.6 million ($2018–19, excluding overheads). TasNetworks provided information to support its revised connections capex, which explained the benefits of proposed strategic easement and land acquisitions and the basis of estimation for these additional costs of $3.6 million ($2018-19, excluding overheads) above our draft decision.
Replacement capex (repex)	We do not accept TasNetworks' revised repex forecast of $147.8 million ($2018–19, excluding overheads). We have included an amount of $135.1 million ($2018–19, excluding overheads) in our substitute estimate of total forecast capex. TasNetworks has not justified that its repex forecast is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the required expenditure for this driver. We conducted a bottom-up review of the proposed repex programs and found that TasNetworks has applied conservative input assumptions in its cost-benefit analysis models, which overstates the risks associated with its replacement programs. Therefore, we are not satisfied that TasNetworks has adequately justified the full repex forecast for some of its proactive replacement programs. Our substitute estimate adjusts for TasNetworks' conservative input assumptions, and prudently defers expenditure where allowed by asset condition.
Non-network capex	We do not accept TasNetworks' revised non-network (including asset management systems) capex forecast of $33.3 million ($2018–19, excluding overheads). We have included an amount of $28.7 million ($2018–19, excluding overheads) in our substitute estimate of total capex. TasNetworks has not demonstrated that its forecast asset management systems capex is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria. Our final decision provides for a lower estimate of required capex for the asset management information system project, in line with TasNetworks' initial proposal and our draft decision.
Capitalised overheads	We do not accept TasNetworks' revised capitalised overheads forecast of $50.7 million ($2018–19). We have included an amount of $50.2 million ($2018–19) in our substitute estimate of total capex. We have reduced TasNetworks' capitalised overheads forecast by $0.5 million due to our direct capex adjustments to repex and non-network capex at the program and project level.
Modelling adjustments	We have updated the inflation and real price escalation assumptions in TasNetworks' underlying revised capex model. Overall, these adjustments have reduced TasNetworks' total net capex forecast by $1.6 million ($2018–19). More information can be found in our final decision capex model, which has been published in conjunction with this final decision.

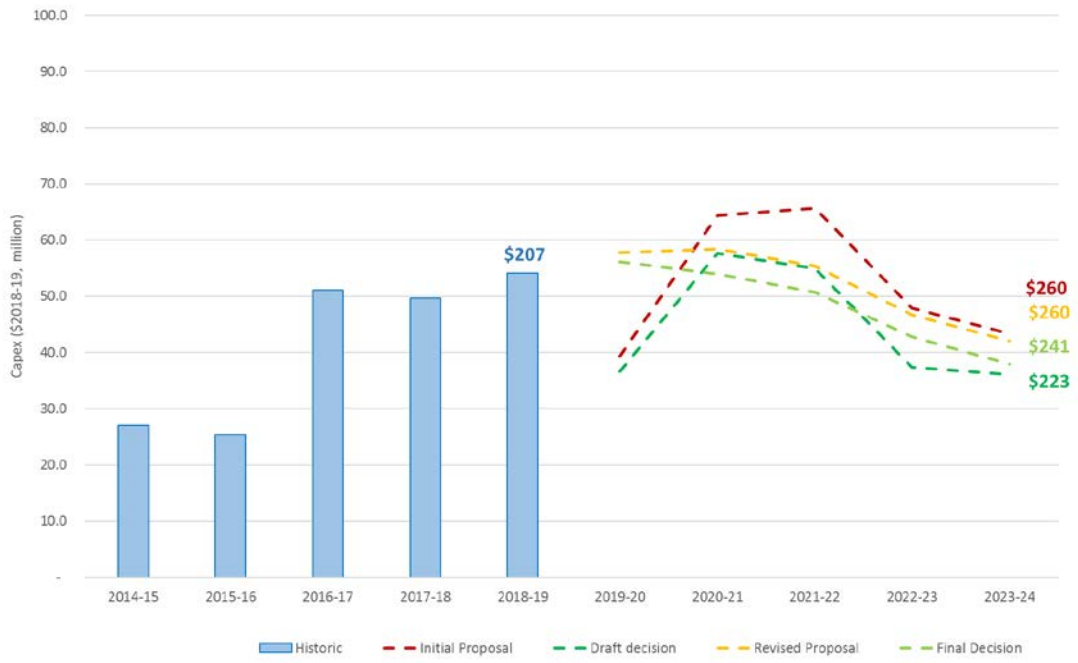
Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

5.2 TasNetworks' revised proposal

In its revised proposal, TasNetworks proposed total forecast net capex of $260.4 million ($2018–19) for the 2019–24 regulatory control period. TasNetworks' capex forecast for the 2019–24 regulatory control period is $53.1 million (26 per cent) higher than its actual and estimated capex of $207.3 million over the 2014-19 period.

TasNetworks' revised total capex forecast is effectively the same as its initial total capex forecast of $260.6 million ($2018–19). Figure 5-1 outlines TasNetworks' historical capex trend, its initial and revised forecasts for the 2019–24 regulatory control period, and our draft and final decisions.

Figure 5-1 – TasNetworks' historical vs forecast transmission capex ($2018–19, million)



Source: AER analysis.

5.2.1 Background

The key drivers of TasNetworks' revised capex proposal are:

- Augmentation – $21.4 million (8 per cent)
- Customer connections – $7.6 million (3 per cent)
- Replacement – $147.8 million (57 per cent)
- Non-network capex (including asset management systems) – $33.3 million (13 per cent)
- Capitalised overheads – $50.7 million (19 per cent)

The reasons for our final decision, including a summary of these capex drivers, are outlined in section 5.4. Appendix B provides a more detailed analysis of each of these drivers.

5.3 Assessment approach

In determining whether TasNetworks' proposal reasonably reflects the capex criteria, we use various qualitative and quantitative assessment techniques to assess the different elements of TasNetworks' proposal. We have also had regard to all capex factors, as required by the rules and have noted where we have given particular weight to one of the factors as part of our assessment.

More broadly, we must take into account the revenue and pricing principles set out in the NEL.[7] In particular, we take into account whether our overall capex forecast provides TasNetworks with a reasonable opportunity to recover at least the efficient costs it incurs in:

- providing direct control network services; and
- complying with its regulatory obligations and requirements.[8]

When assessing capex forecasts, we also consider that:

- the efficiency criteria and the prudency criteria in the NER are complementary. Prudent and efficient expenditure reflects the lowest long-term cost to consumers for the most appropriate investment activity required to achieve the expenditure objectives
- past expenditure was sufficient for the business to manage and operate its network in previous periods, in a manner that achieved the capex objectives.[9]

5.3.1 Considerations in applying our assessment techniques

Appendix A outlines our assessment approach and appendix B details how we came to our position on TasNetworks' revised capex forecast. In summary, some of these assessment techniques focus on total capex, while others focus on high-level, standardised sub-categories of capex. Importantly, while we may consider certain programs and projects in forming a view on the total capex forecast, we do not determine which programs or projects a business should or should not undertake or the timing of these projects within the period.

This is consistent with our ex-ante incentive based regulatory framework. Our approach is based on approving an overall ex-ante revenue requirement that includes

---

7 NEL, ss. 7A, 16(2).

8 NEL, s. 7A.

9 AER, *Better regulation: Expenditure forecast assessment guideline for electricity transmission*, November 2013, p. 9.

an assessment of what we find to be a prudent and efficient total capex forecast.[10] Once the ex-ante allowance is established, businesses are incentivised to provide services at the lowest possible cost because their returns are determined by the actual costs of providing services. If businesses reduce their costs to below the estimate of efficient costs, the savings are shared with consumers in future regulatory periods.

This ex-ante incentive-based regulatory framework recognises that the business should have the flexibility to prioritise its capex program given its circumstances over the course of the regulatory control period. The business may need to undertake programs or projects that it did not anticipate during the transmission determination process. The business may also not need to complete some of the programs or projects it proposed during the forecast regulatory control period if circumstances change. We consider a prudent and efficient business would consider the changing environment throughout the regulatory control period and make decisions accordingly.

Therefore, recognising the interplay between the broader incentive framework, and program and project investment considerations, when reviewing a capex forecast we use a combination of bottom-up and top-down assessment techniques. Assessment of the bottom-up build of forecasts including underlying assumptions is an informative way to establish whether the forecast capex at the program or project level is prudent and efficient. Many of the techniques we apply at this level encompass the capex factors that we are required to consider. However, we are also mindful that a narrow focus on only a bottom-up assessment may not itself provide sufficient evidence that the forecast is prudent and efficient. Bottom-up approaches tend to overstate required allowances, as they do not adequately account for interrelationships and synergies between programs, projects or areas of work.

Thus, we also review the prudency and efficiency of aggregate expenditure areas or the total capex forecast.[11] Top-down analysis provides us with assurance that the entire expenditure program is prudent and efficient, and allows us to consider a business' total capex forecast. We use holistic assessment approaches that include a suite of techniques such as trend analysis, predictive modelling and detailed technical reviews. Consistent with our holistic approach, we take into account the various interrelationships between the total capex forecast and other components of a business' transmission determination, such as forecast opex and STPIS interactions.[12]

In the event we are not satisfied a business' proposed capex forecast reasonably reflects the capex criteria, we are required to determine a substitute estimate. We do so by applying our various assessment techniques. We then use our judgement to

---

10 AEMC, *Final rule determination: National electricity amendment (Economic regulation of network service providers) Rule 2012*, 29 November 2012, p. vii.

11 For example, see AER, *Draft decision: Ergon Energy determination 2015−16 to 2019−20: Attachment 6 − Capital expenditure*, October 2015, p. 21; AER, *Draft decision: SA Power Networks determination 2015−16 to 2019−20: Attachment 6 − Capital expenditure*, October 2015, pp. 20–21.

12 NEL, s. 16(1)(c).

weight the results these techniques case-by-case, in light of all the relevant information available to us.

Broadly, we give greater weight to techniques that we consider are more robust in the particular circumstances of the assessment. By relying on several techniques, we ensure we consider a wide variety of information and take a holistic approach to assessing the business' capex forecast. Where our techniques involve the use of a consultant, their reports are considered when we form our final decision position on total forecast capex.

Importantly, our decision on the total capex forecast does not limit a business' actual spending. We set the forecast at the level where the business has a reasonable opportunity to recover their efficient costs. As noted previously, a business may spend more or less on capex than the total forecast amount specified in our decision in response to unanticipated expenditure needs or changes.

The regulatory framework has a number of mechanisms to deal with these circumstances. Importantly, a business does not bear the full cost where unexpected events lead to an overspend of the approved capex forecast. Rather, the business bears 30 per cent of this cost if the expenditure is subsequently found to be prudent and efficient. Further, the pass through provisions provide a means for a business to pass on significant, unexpected capex to customers, where appropriate.[13]

Similarly, a business may spend less than the capex forecast because it has operated at a more efficient level than expected. In this case, the business will keep on average 30 per cent of this reduction over time, with the remaining benefits shared with its customers.

5.3.1 Safety and reliability considerations

Our position in this final decision is that our approved capex forecast will provide for a prudent and efficient service provider in TasNetworks' circumstances to maintain performance at the targets set out in the STPIS. Therefore, it is appropriate to apply the STPIS, as set out in attachment 10. The STPIS provides incentives to businesses to further improve the reliability of supply only where customers are willing to pay for these improvements.

Our analysis in appendix B outlines, where relevant, how our assessment techniques factor in network safety and reliability. We consider our substitute estimate will allow TasNetworks to maintain the safety, service quality and reliability of its network, consistent with its legislative obligations.

[13] NER, cll. 6A.6.9; 6A.7

5.3.2 Interrelationships

Consistent with our holistic approach, we take into account the various interrelationships between a business' total capex forecast and other components of its transmission determination, such as forecast opex, forecast demand, the Capital Expenditure Sharing Scheme (CESS) and STPIS interactions.

5.4 Reasons for final decision

We applied the assessment approach set out in section 5.3 and appendix A to TasNetworks. Table 5-3 below sets out the capex amounts by driver that we are satisfied reasonably reflect the capex criteria. Our findings and reasons for each capex driver are summarised below.

In its revised proposal, TasNetworks proposed total forecast net capex of $260.4 million ($2018–19) for the 2019–24 regulatory control period. TasNetworks' revised total capex forecast is $0.2 million (0.1 per cent) lower than its initial total capex forecast of $260.6 million ($2018–19), and $53.1 million (26 per cent) higher than its actual and estimated capex of $207.3 million over the 2014–19 period.

TasNetworks has not demonstrated that its revised total capex forecast of $260.4 million ($2018–19) reasonably reflects the capex criteria. We have included an amount of $241.4 million ($2018–19) in our substitute estimate of total capex. We are satisfied that our substitute estimate reasonably reflects the capex criteria. Table 5-3 below outlines our final decision. Our reasons are discussed below.

Table 5-3 – Assessment of required capex by driver 2019–24 ($2018–19, million)

Driver	2019–20	2020–21	2021–22	2022–23	2023–24	Total
Augmentation	$6.9	$11.3	$3.3	$0.0	$0.0	$21.5
Connections	$0.0	$1.1	$1.8	$4.1	$0.5	$7.6
Replacement	$31.8	$24.1	$30.4	$24.6	$24.1	$135.1
Non-network	$7.5	$7.7	$5.5	$4.4	$3.7	$28.7
Capitalised overheads	$10.3	$10.1	$10.0	$9.9	$9.9	$50.1
Modelling adjustments	-$0.4	-$0.4	-$0.3	-$0.3	-$0.2	-$1.6
Total capex	$56.1	$54.0	$50.7	$42.8	$37.9	$241.4

Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

Notes: Numbers may not add due to rounding.

The reasons for our alternative capex forecast of $241.4 million are as follows:

Augmentation capex:

- we are satisfied that TasNetworks' revised augmentation capex of $25.4 million ($2018-19) would form part of a total capex forecast that reasonably reflects the capex criteria
- based on our review of the information provided by TasNetworks' in support of its revised augex proposal, including responses to our information requests, we are satisfied that TasNetworks' forecast augex is a reasonable estimate of prudent and efficient capex requirements in this category.

Customer connections capex:

- we are satisfied that TasNetworks' revised connections capex of $7.6 million ($2018-19) would form part of a total capex forecast that reasonably reflects the capex criteria.
- TasNetworks provided additional information to support its revised connections capex forecast, which explained the benefits of strategic easement and land acquisitions and provided a breakdown of the list of projects for assessment and the basis of estimation for acquisition costs driving the $3.6 million ($2018-19, excluding overheads) increase from our draft decision.

Replacement capex:

- TasNetworks' revised repex of $147.7 million ($2018-19, excluding overheads) is not in our view a reasonable estimate of the prudent and efficient costs required for this capex category. TasNetworks has not justified that its repex forecast would form part of a total capex forecast that reasonably reflects the capex criteria. We have included an amount of $135.1 million ($2018-19, excluding overheads) in our substitute estimate of total capex. In coming to this position, we found that:
    - for two transformer replacement projects, recent asset condition reports suggest that the transformers are in acceptable electrical condition and a suitable spare is available, such that the transformer replacement can be deferred beyond the forecast regulatory control period
    - for the 'Sprecher and Schuh' circuit breaker replacement project, the condition assessment report indicates the circuit breakers are in acceptable condition. Based on known asset condition, we propose to reduce the scope of the proposed replacement program by 50 per cent; and
    - for the George Town to TEMCO transmission line replacement project, refurbishment and maintenance would provide the most economically efficient solution.

Non-network capex:

- TasNetworks' revised non-network (including asset management systems) capex of $33.3 million ($2018–19) is not in our view a reasonable estimate of the prudent and efficient costs required for this capex category. TasNetworks has not demonstrated that this non-network capex forecast would form part of a total capex forecast that reasonably reflects the capex criteria. We have included an amount of $28.7 million ($2018–19) in our substitute estimate of total capex.

- Specifically, we have not accepted TasNetworks' revised proposal forecast transmission asset management systems (AMS), a component of the operational support systems category, capex of $10.1 million ($2018-19). We have included an amount of $5.9 million ($2018–19) for AMS capex in our substitute estimate, in line with our draft decision. TasNetworks has not justified the increase in forecast AMS capex above the level initially proposed and accepted in our draft decision.

Capitalised overheads:

- We have reduced TasNetworks' capitalised overheads forecast of $50.7 million ($2018–19) by $0.5 million as a consequence of our direct capex adjustments to repex and non-network capex. We have included an amount of $50.2 million ($2018–19) in our substitute estimate of total capex.

Modelling adjustments:

- We have updated the inflation and real price escalation assumptions in TasNetworks' underlying revised capex model. Overall, these adjustments have reduced TasNetworks' total net capex forecast by $1.6 million ($2018–19). More information can be found in our final decision capex model, which has been published in conjunction with this final decision.

Demand forecast:

- TasNetworks has relied upon AEMO's Tasmanian connection point demand forecasts for the 2019–24 regulatory control period. As outlined in our draft decision, we consider TasNetworks' demand forecasts are likely to reflect a reasonable expectation of forecast demand due to the following factors:
    - AEMO's independent demand forecast is likely to be unbiased and reflect a reasonable demand forecasting methodology
    - maximum demand forecasts across Tasmania are forecast to be flat, trending slightly upwards over the 2019–24 period
    - maximum demand is not a significant driver of forecast capex in the 2019–24 regulatory control period.

A Assessment techniques

This appendix describes the approaches we applied in assessing whether TasNetworks' total capex forecast reasonably reflects the capex criteria. Appendix B sets out in detail the extent to which we relied on each of these assessment techniques.

The assessment techniques that we apply in capex are necessarily different from those we apply when assessing opex. This is reflective of differences in the nature of the expenditure that we are assessing. We therefore use some assessment techniques in our capex assessment that are not suitable for assessing opex and vice versa. We outline this in the Expenditure Assessment Guideline (the Guideline).[14]

Below we outline the assessment techniques we used to assess TasNetworks' capex forecast.

A.1 Trend analysis

We consider past trends in actual and forecast capex as this is one of the capex factors under the NER.[15] We also consider trends at the asset category level to inform our view on the prudency and efficiency of a business' capex forecast.

Trend analysis involves comparing a business' forecast capex and volumes against historical levels. Where forecast capex and volumes are materially different to historical levels, we seek to understand the reasons for these differences. In doing so, we consider the reasons the business provides in its initial proposal, as well as any potential changing circumstances.

In considering whether the total capex forecast reasonably reflects the capex criteria, we need to consider whether the forecast will allow the business to meet expected demand and comply with relevant regulatory obligations.[16] Demand and regulatory obligations (specifically, service standards) are key capex drivers. More onerous standards or growth in maximum demand will increase capex. Conversely, reduced service obligations or a decline demand will likely cause a reduction in the amount of capex the business requires.

Maximum demand is a key driver of augmentation or demand-driven expenditure. Augmentation expenditure (augex) often needs to occur prior to demand growth being realised. Forecast demand, rather than actual demand, is therefore most relevant when a business is deciding the augmentation projects it will require in the forecast regulatory control period. However, to the extent that actual demand differs from forecast demand, a business should reassess project needs. Growth in a business'

---

14 AER, *Better regulation: Expenditure forecast assessment guideline for electricity transmission*, November 2013, p. 8.

15 NER, cl. 6A.6.7(e)(5).

16 NER, cl. 6A.6.7(a).

network will also drive connections related capex. For these reasons, it is important to consider how capex trends, particularly for augex and connections, compare with trends in demand and customer numbers.

For service standards, there is generally a lag between when capex is undertaken (or not) and when the service improves (or declines). This is important when considering the expected impact of an increase or decrease in capex on service levels. It is also relevant to consider when service standards have changed and how this has affected the business' capex requirements.

We analysed capex trends across a range of levels including at the total capex level and the category level, (e.g. augex, connections and repex). We also compared these with demand trends and any relevant changes in service standards.

A.2 Category analysis

Expenditure category analysis allows us to compare expenditure across NSPs, and over time, for various levels of capex. Our analysis includes:

- overall costs within each category of capex;
- unit costs across a range of activities;
- volumes across a range of activities; and
- expected asset lives across a range of repex asset categories.

Using standardised reporting templates, we collect data on augex, repex, connections, non-network capex, overheads and demand forecast for all TNSPs in the NEM. Using standardised category data allows us to make direct comparisons across TNSPs. Standardised category data also allows us to identify and scrutinise different operating and environmental factors that affect the amount and cost of works that TNSPs incur and how these factors may change over time.

A.3 Assessment of bottom-up and top-down methodologies

In assessing whether TasNetworks' capex forecast is prudent and efficient, we examined the forecasting methodology and underlying assumptions used to derive their forecast. In particular, some of the evidence that we can use to justify the prudency and efficiency of a bottom-up forecast at the program or project level is:

- identifying and quantifying all reasonable options in a cost-benefit analysis, including deferral or ‘do nothing’ scenarios;
- cost-benefit analysis that incorporates a proper quantified risk assessment, where the most beneficial program or project is selected, or clear and justified reasoning as to why another option was chosen; and
- reasons to support the expenditure timing for the forecast regulatory control period, particularly if the expenditure may have been deferred in previous regulatory control periods.

In addition to a bottom-up build, a holistic and strategic consideration or assessment of the entire forecast capex portfolio would be evidence that some discipline has been applied at the top-down level. In particular, a top-down challenge would give us confidence that:

- the bottom-up builds have been subject to overall checks against business governance and risk management arrangements;
- synergies between programs or projects have been identified, which may reduce the need for, scope or cost of some programs or projects over the forecast regulatory control period;
- subjectivity from the bottom-up forecasts has been addressed; and
- the timing and prioritisation of capital programs and projects have been determined over both the short and long term, such that delivery strategy has been considered.

A.4 Economic benchmarking

Economic benchmarking is one of the key outputs of our annual benchmarking report.[17] The NER requires us to consider the annual benchmarking report, as it is one of the capex factors.[18] Economic benchmarking applies economic theory to measure the efficiency of a TNSP's use of inputs to produce outputs, having regard to environmental factors.[19]

Economic benchmarking allows us to compare the performance of a business against its own past performance and the performance of other TNSPs. It also helps to assess whether a business' capex forecast represents efficient costs.[20] The AEMC stated:

“Benchmarking is a critical exercise in assessing the efficiency of an NSP”.[21] Several economic benchmarks from the annual benchmarking report are relevant to our capex assessment. These include measures of total cost efficiency and overall capex efficiency. In general, these measures calculate a business' efficiency with consideration given to its inputs, outputs and its operating environment.

We consider each business' operating environment in so far as there are factors outside of a distributor’s control that affects its ability to convert inputs into outputs.[22] Once these exogenous factors are taken into account, we expect TNSPs to operate at

---

17 AER, *Annual benchmarking report: Electricity transmission network service providers*, December 2017.

18 NER, cl. 6A.6.7(e)(4).

19 AER, *Better regulation: Explanatory statement: Expenditure forecasting assessment guidelines*, November 2013, p. 78.

20 NER, cl. 6A.6.7(c).

21 AEMC, *Final rule determination: National electricity amendment (Economic regulation of network service providers) Rule 2012*, 29 November 2012, p. 25.

22 AEMC, *Final rule determination: National electricity amendment (Economic regulation of network service providers) Rule 2012*, 29 November 2012, p. 113. Exogenous factors could include geographic factors, customer factors, network factors and jurisdictional factors.

similar efficiency levels. One example of an exogenous factor we consider is customer density.

A.5 Other assessment factors

We considered several other factors when assessing TasNetworks' total capex forecast. These factors included:

- safety and reliability statistics (SAIDI and SAIFI);
- internal technical and engineering review;
- external consultant review of TasNetworks' initial proposal;
- submissions made by various stakeholders; and
- other information provided by TasNetworks.

B Assessment of capex drivers

This appendix outlines our detailed analysis of the categories of TasNetworks' capex forecast for the 2019–24 regulatory control period. These categories are augmentation expenditure (augex), customer connections capex, replacement expenditure (repex), capitalised overheads and non-network capex.

As we discuss in the capex attachment, TasNetworks has not demonstrated that its revised total capex forecast reasonably reflects the capex criteria. In this appendix, we set out further analysis in support of this view. This further analysis also explains the basis for our substitute estimate of TasNetworks' capex forecast, which we are satisfied reasonably reflects the capex criteria.

This appendix sets out our findings and views on each capex category. The structure of this appendix is:

- Section B.1: substitute estimate
- Section B.2: forecast augex
- Section B.3: forecast customer connections capex
- Section B.4: forecast repex
- Section B.5: forecast non-network capex
- Section B.6: forecast capitalised overheads.

In each of these sections, we explain why we are satisfied the amount of capex that we have included in our substitute estimate reasonably reflects the capex criteria.

B.1 Substitute estimate

Our substitute estimate of TasNetworks' total capex forecast for the 2019–24 regulatory control period is $241.4 million ($2018–19). We analysed TasNetworks' revised proposal, and determined that it had not justified that its forecast reasonably reflects the capex criteria.

Table B.1.1 below outlines our final decision on total forecast capex.

Table B.1.1 – Final decision on TasNetworks' total net capex forecast ($2018–19, million)

	2019–20	2020–21	2021–22	2022–23	2023–24	Total
TasNetworks' revised proposal	57.8	58.4	55.4	46.7	42.0	260.4
AER final decision	56.1	54.0	50.7	42.8	37.9	241.4
Difference	-1.7	-4.4	-4.7	-3.9	-4.1	-19.0
Percentage difference	-2.9%	-7.5%	-8.5%	-8.4%	-9.8%	-7.3%

Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

Note: Numbers may not add due to rounding.

We are satisfied that our substitute estimate of total capex reasonably reflects the capex criteria, taking into account the capital expenditure factors.[23] Our substitute estimate is based on our assessment techniques, explained in section 5.3 and appendix A.

B.2 Forecast augex

Augmentation expenditure (augex) is typically triggered by the need to build or upgrade the network to address changes in demand and network utilisation. However, it can also be triggered by the need to upgrade the network to comply with quality, safety, reliability and security of supply requirements.

B.2.1 TasNetworks' revised proposal

TasNetworks revised proposal included augex of $25.4 million ($2018-19, including overheads) for the 2019–24 regulatory control period ($21.5 million, excluding overheads).[24] This compares to a proposed augex of $21.2 million in TasNetworks' initial proposal. TasNetworks submitted that the increased augex in its revised proposal reflected our draft decision, which did not accept the following two network capability priority projects as part of a STPIS requirement to facilitate improvements in the capability of transmission assets:[25]

- Waratah Tee Switching Station disconnector motorisation; and
- Farrell Substation 220 kV second bus coupler installation, the costs of which TasNetworks updated to reflect the latest available information.

In its revised proposal, TasNetworks has transferred these projects to the augex category on the basis that these projects deliver reliability benefits rather than increasing network capacity.[26]

TasNetworks augex forecast is still largely driven by a single project to install a new static var compensator (STATCOM) at the George Town substation. This project accounts for approximately $15.1 million or 60 per cent of TasNetworks' proposed augex. This project is subject to a RIT-T process in accordance with the NER.[27]

B.2.2 Final decision position

We are satisfied that TasNetworks' forecast augex of $21.5 million ($2018–19, excluding overheads) is prudent and efficient, and would form part of a total capex

---

23 NER, cl. 6A.6.7(e).

24 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 32.

25 AER, *Draft decision, TasNetworks Transmission - Attachment 10 Service target performance incentive scheme*, September 2018, p. 10-15.

26 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 31.

27 TasNetworks, *Regulatory Proposal 2019–2024*, 31 January 2018, p. 87; NER, cl. 5.16.

forecast that reasonably reflects the capex criteria. We have therefore included this amount in our estimate of total forecast capex for the 2019–24 regulatory control period.

This conclusion reflects our assessment of the information available to us in making this final decision, including further information we sought in relation to the two network capability priority projects which were not included as part of TasNetworks' proposed augex in its initial revenue proposal. TasNetworks has now commenced the RIT-T for the George Town project and intends to progress the RIT-T in the coming months. All costs and benefits of this project will be assessed through this process, which will provide additional transparency to stakeholders, including evidence of the range of reasonable options assessed and the potential net economic benefits.

B.2.3 Reasons for our position

We have applied several assessment techniques to assess TasNetworks' proposed augex forecast against the capex criteria. In reaching our position, and similar to our draft decision, we:

- assessed trends comparing historical actual and forecast augex as well as trends in maximum demand and connection point utilisation
- reviewed TasNetworks' expenditure forecasting methodology, including a review of key inputs and assumptions and the project documentation supporting TasNetworks' proposal.

Trend analysis

Trend analysis allows us to draw general observations about how a business is performing. In addition, one capex factor that we must have regard to is the actual and expected capital expenditure during any preceding regulatory control period.[28]

Our use of trend analysis is to gauge how TasNetworks' actual augex compares to forecast augex for the 2019–24 regulatory control period. Where past expenditure was sufficient to achieve the capex objectives, this can be a reasonable indicator of whether an amount of forecast augex is likely to be efficient and prudent, and therefore contributes to a forecast of total capex that reasonably reflects the capex criteria.[29]

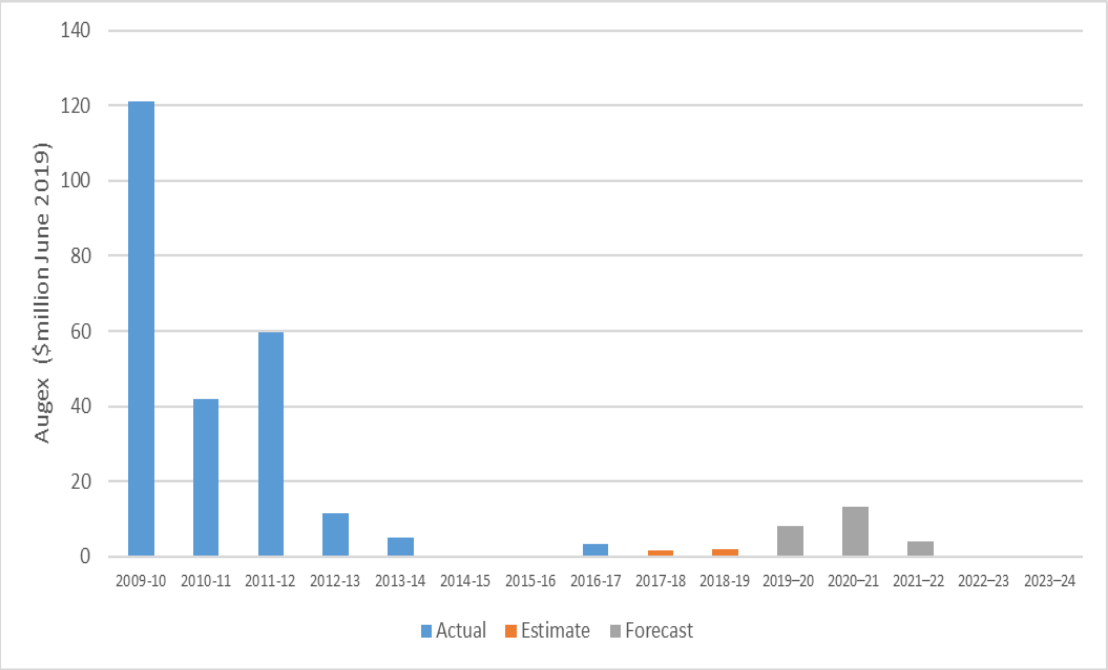
Figure 5.2 shows TasNetworks' actual and estimated augex since 2009–10 and its forecast augex for the 2019–24 regulatory control period. This shows a forecast augex remaining at historically low levels, but higher than the current regulatory control period in specific years due to the proposed George Town substation project.

---

[28] NER, cl. 6A.6.7(e)(5).

[29] AER, *Expenditure Forecast Assessment Guideline for Electricity Distribution*, November 2013, pp. 7–9.

Figure 5.2 TasNetworks historical and forecast transmission augex ($2018-19)



Source: TasNetworks, *Revenue Proposal 2019/20-2023/24*, 31 January 2018, p. 86 and *Tasmanian Transmission and Distribution Revised Revenue Proposal 2019-24*, 29 November 2018, p. 32.

We consider that our analysis of historical trends is useful in confirming that the underlying requirement for augex remains low and is consistent with the overall trends in maximum demand and utilisation. However, localised areas of demand growth and the need to address compliance with network technical requirements can drive the need for specific projects, such as the George Town substation project and the projects previously proposed as network capability priority projects.

George Town substation augmentation project

In our draft decision, we concluded that the George Town STATCOM project appears likely to be justified by the need for regulatory compliance with voltage requirements, and by the benefits to market participants from alleviating the need for ancillary services to resolve existing Basslink constraint issues. We made no adjustment to TasNetworks proposed augex in relation to the George Town project, which based on the information available, we were satisfied was prudent and efficient.[30]

In its revised proposal, TasNetworks submitted that its most recent analysis of the business case for the STATCOM installation at George Town indicated that the project is unlikely to be economic if its proposed contingent project for Project Marinus

[30] AER, *Draft decision, TasNetworks Transmission - Attachment 5 Capital expenditure draft decision*, September 2018, p. 25.

proceeds before 2030. TasNetworks considered that if the Project Marinus contingent project triggers are met we may take account of any savings in relation to the deferral or avoidance of the STATCOM project in determining the allowed capital expenditure for Project Marinus. On that basis, TasNetworks submitted that it is appropriate to continue to include the George Town STATCOM project in its revised proposal, consistent with its initial proposal and our draft decision.[31]

For the reasons outlined above and in our draft decision, we have included the forecast capex for the George Town STATCOM project in our estimate of TasNetworks' total forecast capex for the 2019-24 regulatory control. However, consistent with TasNetworks' revised proposal, we also consider it appropriate that if the Marinus Link contingent project triggers are met within the 2019–24 regulatory control period, any savings in relation to the deferral or avoidance of the STATCOM project be deducted from the allowed costs for the Marinus Link project. This is a matter for our assessment of any future contingent project application relating to the Project Marinus contingent project, should it be triggered in the 2019–24 regulatory control period.

Network capability priority projects and works in progress

In our draft decision, we did not accept two projects in TasNetworks' Network Capability Incentive Parameter Action Plan (NCIPAP) as part of a STPIS requirement to facilitate improvements in the capability of transmission assets, because these projects deliver reliability benefits rather than increase network capacity.[32] In its revised proposal, TasNetworks has therefore transferred these projects the augex category.[33]

We requested TasNetworks to provide further details of the two former NCIPAP projects, and to otherwise account for the variation in forecast augex between its initial and revised proposals aside from the inclusion of the two NCIPAP projects. In response, TasNetworks stated that its proposed augex for the Waratah Tee Switching Station disconnector motorisation project was $0.57 million ($2017) and for the Farrell Substation 220 kV second bus coupler installation project $1.76 million ($2017). TasNetworks also identified a new augex category for works in progress ($4.2 million ($2017)), which it had not included in its initial proposal. TasNetworks also advised that the Strategic Easement and Land Acquisitions ($2.8m ($Jun17)) augex included in its initial proposal had been recategorised from transmission augex to transmission connection capex.[34]

We sought further information from TasNetworks in regard to its additional forecast augex for works in progress. TasNetworks stated that the works in progress amount of

---

31 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 31.

32 AER, *Draft decision, TasNetworks Transmission - Attachment 10 Service target performance incentive scheme*, September 2018, p. 10-15.

33 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 31.

34 TasNetworks, *Response to AER Information request #41*, 29 January 2019, p. 7.

$4.2 million ($2017) is driven by delays caused by severe weather events in May and August 2018, and that the works will not be completed in the current financial year. We are satisfied that the weather events described by TasNetworks that occurred in May and August 2018 are likely to have caused delays to a number of TasNetworks' augex projects. We consider TasNetworks' forecast capex of $4.2 million to complete works in progress prudent and efficient, and would form part of a total capex forecast for the 2019–24 regulatory control period that reasonably reflects the capex criteria.

The Waratah Tee Switching Station disconnector motorisation project involves replacing manually operated disconnectors at the Waratah Tee Switching Station with remotely operated, motorised disconnectors. It also involves the installation of AC and DC supplies and telecommunications to Waratah Tee Switching Station. AEMO identified that the benefit from this project should be reduced unserved energy (USE).[35]

The Farrell Substation 220 kV second bus coupler installation project involves the installation of a second 220 kV bus coupler in series with the existing bus coupler and modifying protection and control schemes at the substation. Similarly, AEMO considered that the benefit of this project should be reduced USE.[36] We consider that these projects are justified as they will improve local reliability and provide net benefits from reduced USE. On this basis, we are satisfied that the total forecast augex of $2.4 million for these two projects is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria.

B.3 Forecast connections capex

Connections capex relates to costs incurred in relation to the connection of new customers, or changes to existing connections. Generation connections are negotiated transmission services, and therefore outside the scope of this final decision.

B.3.1 TasNetworks' revised proposal

In our draft decision, we accepted TasNetworks' forecast capex of $3.0 million ($2018–19, including overheads) for connections capex ($2.4 million excluding overheads).

In its revised proposal, TasNetworks recategorised strategic easement and land acquisition (SELA) capex as connections capex instead of augex. This recategorisation had the effect of increasing forecast connections capex to $4.0 million ($2018–19, excluding overheads).[37] TasNetworks also increased its forecast SELA capex, resulting in revised forecast connections capex of $7.6 million ($2018–19, excluding

---

35 AEMO, *AEMO review of TasNetworks' Network Capability Incentive Parameter Action Plan (NCIPAP) for 1 July 2019 to 30 June 2024*, 18 December 2017, p. 2

36 AER, *Draft decision, TasNetworks Transmission - Attachment 10 Service target performance incentive scheme*, September 2018, p. 10-15.

37 TasNetworks, *Revised Proposal Capex Model,* 29 November 2018.

overheads) over the 2019–24 regulatory control period.[38] This equates to $11.2 million in connections capex once overheads are included.[39]

B.3.2 Final decision position

Based on the information provided, TasNetworks has justified that its forecast connections capex of $7.6 million ($2018–19, excluding overheads) is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria. We have therefore included this amount in our estimate of total forecast capex for the 2019–24 regulatory control period.

B.3.3 Reasons for our position

In line with our approach for our draft decision, we assessed TasNetworks' revised forecast connections capex through project specific reviews. As part of this review, we sought additional evidence from TasNetworks to support the need, timing and costs of the proposed connections projects in the 2019–24 regulatory control period.

Specifically, we sought more detailed information in relation to the strategic land acquisition component of this capex as TasNetworks had not provided an explanation for the proposed increase in expenditure from its initial proposal. We note that the TSBC submitted that TasNetworks' revised proposal had not provided information to justify the revised total connections capex.[40]

TasNetworks provided a detailed response to our information request, including supporting documentation relating to its SELA cost estimation methodology and the economic benefits of strategic land and easement acquisitions.[41] TasNetworks explained that the connections capex increase was the result of an increased probability of a requirement for it to acquire land associated with the Palmerston to Sheffield and Sheffield to Burnie 220 kV transmission corridors.[42]

We assessed TasNetworks' additional supporting information for its connections capex. This documentation explained the benefits of strategic easement and land acquisitions and provided a breakdown of the list of potential land and easement acquisition projects, including the probability weighted acquisition costs driving the increased SELA capex in TasNetworks' revised proposal.[43]

Based on the information available, we are satisfied that TasNetworks' methodology for estimating forecast capex for strategic land and easement acquisitions is reasonable. This methodology incorporates a high-level analysis of project costs and

---

38 TasNetworks, *Revised Proposal Capex Model,* 29 November 2018.

39 TasNetworks, *Transmission and Distribution Revised Regulatory Proposals 2019-2024*, 29 November 2018, p. 32.

40 TSBC, *Submission - TasNetworks – Response to T&D and DD revised proposal*, 11 Jan 2019, p. 24.

41 TasNetworks, *Response to AER Information request #47*, 12 February 2019.

42 TasNetworks, *Response to AER Information request #47*, 12 February 2019, p. 32.

43 TasNetworks, *Response to AER Information request #47*, 12 February 2019.

relates that analysis to an estimation of the probability of each project ultimately warranting strategic acquisitions in the 2019–24 regulatory control period. We are satisfied that the costing methodology and the assumptions applied to the strategic easement and land acquisitions capex appear reasonable.

We have therefore included TasNetworks' revised forecast connections capex of $7.6 million ($2018–19, excluding overheads) in our substitute estimate of total forecast net capex for the 2019–24 regulatory control period.

B.4 Forecast repex

Replacement expenditure (repex) must be set at a level that allows a business to meet the capex objectives. Replacement can occur for a variety of reasons, including when:

- an asset fails while in service or presents a real risk of imminent failure
- a condition assessment of the asset determines that it is likely to fail soon (or degrade in performance, such that it does not meet its service requirement) and replacement is the most economic option[44]
- the asset does not meet the relevant jurisdictional safety regulations and can no longer be safely operated on the network; and
- the risk of using the asset exceeds the benefit of continuing to operate the network.

The majority of network assets will remain in efficient use for far longer than a single regulatory control period (many network assets have economic lives of 50 years or more). As a result, a business will only need to replace a portion of its network assets in each regulatory control period. Our assessment of repex seeks to establish the proportion of TasNetworks' assets that will likely require replacement over the 2019–24 regulatory control period and the associated capital expenditure.

B.4.1 TasNetworks' revised proposal

TasNetworks proposed revised forecast repex of $186.4 million ($2018–19, including overheads) or $147.7 million excluding overheads.[45] In its revised proposal, TasNetworks accepted our draft decision position for seven of the 13 major repex projects for which TasNetworks had not satisfied us that its investment analysis and asset condition information justified the prudency or efficiency of the proposed capex.

TasNetworks' revised forecast total repex over the 2019–24 regulatory control period is $18.1 million, or nine per cent, lower than its initial proposal of $204.5 million ($2018-

[44] A condition assessment may relate to assessment of a single asset or a population of similar assets. High value/low volume assets are more likely to be monitored on an individual basis, while low value/high volume assets are more likely to be considered from an asset category wide perspective.

[45] TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 36.

19, including overheads).[46] TasNetworks submitted that its revised proposal is necessary in order to maintain current performance and to manage network safety and reliability risk prudently and efficiently.[47]

B.4.2 Final decision position

We do not accept TasNetworks' proposed repex of $147.7 million ($2018–19, excluding overheads). TasNetworks has not demonstrated that its repex forecast is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria. In coming to this position, we found that:

- for two transformer replacement projects, asset condition reports suggest that the transformers are in acceptable electrical condition and a suitable spare is available, and therefore the replacement transformers can be deferred beyond the forecast regulatory control period
- for the Sprechur and Schuh circuit breaker replacement project, the condition assessment report indicates the circuit breakers are in acceptable condition, there have been no reported major failures and no significant oil leaks noted in the most recent switchyard inspections. Based on known asset condition, we consider the scope of the proposed replacement program can be reduced by 50 per cent
- for the George Town to TEMCO transmission line replacement project, refurbishment and maintenance would provide the most economically efficient solution.

Based on our further economic analysis and engineering review of the six repex projects for which TasNetworks did not accept our draft decision position, we have included a forecast repex amount of $135.1 million ($2018–19, excluding overheads) in our substitute estimate of total capex. This represents a nine per cent reduction, resulting from full or partial deferral of four proposed projects. We consider that our substitute estimate reflects the costs that a prudent operator would require to maintain the quality, reliability, security and safety of supply of TasNetworks' prescribed transmission services.[48] We also consider that our substitute estimate is sufficient to meet or manage the expected demand for TasNetworks' prescribed transmission services during the 2019–24 regulatory control period.[49] We are satisfied that our substitute estimate of repex is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria, taking into account the capex factors.

---

46 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 36.

47 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 36.

48 NER, cl. 6A.6.7(a)(3) and cl. 6A.6.7(a)(4).

49 NER, cl. 6A.6.7(a)(1).

B.4.3 Submissions

We received a number of submissions on our draft decision and TasNetworks' revised proposal on forecast repex in the 2019–24 regulatory control period. Table B.4.1 shows a summary of these submissions. The NER requires us to have regard to the concerns of electricity consumers when assessing the prudency and efficiency of proposed capex.[50]

Table B.4.1 Submissions on TasNetworks proposed transmission repex

Stakeholder	Issue
Consumer Challenge Panel 13 (CCP13)	CCP13 undertook a detailed review of two proposed repex projects in TasNetworks' initial proposal and identified concerns that the analysis was not sufficient to justify the investments proposed.[51] For TasNetworks' revised proposal, CCP13 revisited one of these, the Chapel Street 11kV HV Switchgear Replacement Project and reached a similar conclusion. CCP13 considered that:[52] • quantification of the untreated risk (i.e. the base case) showed that a single risk category makes up over 85 per cent of the 'Total Quantified Risk'. Lower values change the ranking of the preferred option to deferral until the 2024-29 regulatory control period. • a further review of the NPV calculations revealed an apparent double counting of both the reduction in risk and the reduction in the value of unserved energy in each option. Risk is treated as a cost in each option and then the reduction in risk (following implementation of the option) is also added to the 'Benefits' of each option. When comparing the options with the base case, the reduction in risk is counted twice and overstates the benefits of options 1 and 2. CCP13 had not sought to interrogate other repex projects but recommended the AER pay close attention to other projects justified using the same model.[53]
Tasmanian Small Business Council (TSBC)	The TSBC submitted that given that TasNetworks had over-invested capex in the past and with corresponding low utilization rates, the TSBC expects TasNetworks to take every opportunity to reduce replacement expenditure and increase asset utilization. The TSBC considered that it expects TasNetworks to adopt less conservative assumptions when calculating, for example, the net present values that influence the timing of replacements.[54] The TSBC was particularly concerned that different assumptions for the value of customer reliability and different net present value calculations lead to differing time frames for investment, with TasNetworks opting for those values that require earlier investment. The TSBC submitted that given past overinvestment arising primarily because of excessive demand forecasts, assigning values for assumption parameters that are at the less conservative end of possible options would result in lower prices. The TSBC therefore did not accept the arguments proposed by TasNetworks to increase its repex allowance for the 2019-24 regulatory control period beyond our draft decision.[55]

50 NER, cl. 6A.6.7(e)(5A).

51 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, p. 13.

52 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, pp. 13–14.

53 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, p. 14.

54 Tasmanian Small Business Council, *Submission on AER draft decision and TasNetworks' revised proposal*, January 2019, p. 25.

55 Tasmanian Small Business Council, *Submission on AER draft decision and TasNetworks' revised proposal*, January 2019, pp. 25–26.

Tasmanian Minerals and Energy Council (TMEC)	The TMEC submitted that TasNetworks has in some cases made imprudent decisions with regard to its network investments in the current regulatory control period, and therefore lacks credibility in arguing the soundness of its proposed investments. TMEC was also concerned that after a number of years of relatively realistic repex, TasNetworks' proposed repex will double and trend towards the spend profile of the "gold plated era".[56]

Source: AER analysis.

B.4.4 Reasons for our position

We have applied the following assessment techniques to assess TasNetworks' proposed repex forecast, as well as considering stakeholder submissions. These techniques include:

- trend analysis; and
- bottom-up engineering review and top-down considerations.

Trend analysis

Trend analysis of a business's past expenditure allows us to make general observations about how a business is performing. This is consistent with the capex factor that requires us to have regard to the actual and expected capital expenditure during any preceding regulatory control period.[57]

Where past expenditure was sufficient to achieve the capex objectives, this can be a reasonable indicator of whether an amount of forecast repex is prudent and efficient, and whether we would be satisfied this amount forms part of a total capex forecast that reasonably reflects the capex criteria.

In coming to our position, we had regard to the following trends:

- TasNetworks' proposed revised repex forecast for the 2019–24 regulatory control period relative to its actual and forecast spend in the current regulatory control period; and
- historical vs forecast repex and replacement volume trends at both the asset group and asset category level.

TasNetworks' revised forecast transmission renewal capital expenditure for the five years commencing 1 July 2019 is $186.4 million ($2018–19, including overheads) compared to expenditure of $150.8 million ($2018–19, including overheads) for the preceding five year regulatory period.[58] This represents a 24 per cent increase. TasNetworks' forecast repex is, however, substantially below actual capex in the 2009–14 regulatory control period.

---

56 Tasmanian Minerals and Energy Council, *Submission on AER draft decision and TasNetworks' revised proposal*, January 2019, p. 2.

57 NER, cl. 6A.6.7(e)(5).

58 TasNetworks, *Tasmanian Transmission and Distribution Revised Proposals 2019–2024,* November 2018, p. 36.

As we stated in our draft decision, the apparent variation in actual/expected transmission repex across the previous, current and forecast regulatory control periods demonstrates that this type of expenditure can be lumpy in nature, particularly relative to distribution repex. Therefore, we cannot solely rely on trend analysis to determine whether forecast repex is prudent and efficient.[59]

Bottom-up engineering review

TasNetworks noted in its initial proposal that its repex forecasts had been developed through a careful 'bottom-up' evaluation of investment requirements for each asset class, combined with a top-down discipline to optimise program synergies ensuring optimal timing of any proposed expenditure.

In our draft decision, we reviewed TasNetworks' portfolio of proposed transmission repex programs and projects, and undertook a detailed assessment of a sample of these programs and projects. This sample was based on several of the highest value programs and projects in TasNetworks' repex proposal. Our analysis indicated that TasNetworks had applied several conservative assumptions in its underlying cost-benefit analysis.[60]

Our substitute estimate was derived by adjusting the input assumptions in the underlying cost-benefit analysis for 13 programs and projects. In its revised proposal, TasNetworks addressed the concerns raised by our consultant, Arup, and us and revised its NPV analysis and associated quantified risk assessment for these 13 repex projects.[61] TasNetworks also provided investment evaluation summaries in support of the projects where these had not been previously provided with TasNetworks' initial revenue proposal.

TasNetworks accepted our draft decision position for seven projects, but maintained or revised its position for six projects. Our final decision builds on the work done for the draft decision, and TasNetworks' response through its revised proposal, to focus on the six major repex projects for which TasNetworks maintained or revised its initial proposal.

We reviewed TasNetworks' revised investment evaluation summaries, cost-benefit analyses and information request responses in order to determine the prudent and efficient investment option and appropriate level of capex for each of the six transmission repex projects.

Based on this review, we identified concerns in relation to TasNetworks' modelling approaches, conservative asset failure and consequence inputs, and the double counting of benefits. These are the same concerns as we discuss in relation to

---

59 AER, *Draft decision, TasNetworks Transmission - Attachment 5 Capital Expenditure*, September 2005, p. 32.

60 AER, *Draft decision, TasNetworks Transmission - Attachment 5 Capital Expenditure*, September 2005, p. 34.

61 TasNetworks, *Tasmanian Transmission and Distribution Revised Proposals 2019–2024,* November 2018, pp. 33–36.

TasNetworks' NPV analysis modelling for distribution repex (refer to section B.4.3 in Attachment 5 of our final decision for TasNetworks distribution determination 2019 to 2024). As summarised in Table B.4.1, submissions from CCP13 and the Tasmanian Small Business Council also raised concerns in regards to TasNetworks' conservative risk and consequence input assumptions in it NPV analysis.

Based on these concerns, we do not consider that TasNetworks has justified that its revised forecast repex is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria.

We therefore sought to identify a substitute estimate of forecast repex that is prudent and efficient and reasonably reflects required expenditure for this driver. We derived our substitute estimate of forecast repex by adjusting TasNetworks' conservative risk and consequence input assumptions, and deferring expenditure where allowed by asset condition. Our substitute estimate included an engineering and economic analysis of information provided by TasNetworks in its revised proposal, in particular the project Investment Evaluation Summaries (IES). We evaluated each IES and related material to assess each project's investment need, renewal drivers and asset condition, project objectives, risk evaluation and options analysis. We also consulted with TasNetworks where we needed further information or clarification to enable us to determine a prudent and efficient level of forecast repex. This process provided opportunity for TasNetworks to further support and substantiate its repex forecast.

In summary, our final decision with regards to the programs where TasNetworks did not adopt our draft decision is to accept TasNetworks' revised repex proposal for two projects, reduce the scope and associated capex requirement for two projects, and defer the remaining two projects beyond the 2019–24 regulatory control period. Our proposed final decision position for each of these projects, and the reasons for our position, are summarised in the Table B.4.2 below.

Our substitute estimate is nine per cent lower than TasNetworks' revised repex forecast and is based on our assessment of the cost-benefit analysis and engineering justification for individual major repex projects – these involve a bottom-up review. This is consistent with our draft decision assessment approach, and our general approach to assessing transmission capex proposals, where repex modelling is typically not feasible due to the characteristics of transmission assets and networks.

Table B.4.2: AER final decision on transmission repex projects ($2018–19 million, including overheads)

Repex project	Draft decision	Revised proposal	Final decision	Reasons for final decision
110kV ASEA HLD live tank circuit breakers replacement *(Replace the remaining fleet of 14 ASEA HLD 110 kV live tank circuit breakers which have been experiencing some*	$2.9 million	$5.7 million	$5.7 million	Nineteen circuit breaker defects related to corrosion and leaking gaskets recorded between 2001 to 2017. Preventive maintenance has included replacing oil seals on poles to stop leaks and prevent water ingress. Circuit breakers lack manufacturer support and spares availability. Cost penalty for reactive replacement works with the inherent risk of supply security and increased cost. Risk is increased by

failures, complicated by the lack of manufacturer support and spares availability)				holding removed units as spares as these units may themselves not provide reliable service.[62] Based on the information provided in TasNetworks' revised proposal, the proposed replacement is prudent to address the risks associated with circuit breaker condition.
Chapel St 11kV HV switchgear replacement *(Address the safety and operational constraints presented by the continued operation of indoor metal-clad 11 kV switchgear that has no internal arc containment, is presenting high partial discharge, has limited spares availability and is an aging asset with potential for catastrophic failure)*	$0 million	$2.7 million	$2.7 million	HV switchgear exhibiting high partial discharge levels indicative of insulation breakdown. Failure of HV switchgear has the potential to cause significant harm to personnel near the switchgear and can cause significant disruption to customer supply. Risk assessment on HV switchgear arc flash hazards was completed in 2016 and recommended replacement of switchgear that is not arc flash contained. Assets that do not have arc-fault containment are at greater risk of failure leading to total loss of supply, physical building damage and/or personnel injury.[63] We consider on this basis that replacement is justified in the 2019-24 regulatory control period.
Boyer substation BY-T13 and BY-T14 supply transformers replacement *(Replace existing Boyer supply transformers earlier than typically expected due to their higher service duty resulting from an industrial load and accelerated declining asset condition)*	$0 million	$3.9 million	$0 million	Condition assessment report for Boyer T13 and T14 supply transformers indicates that these transformers are in acceptable condition and that the oil leaks on the T13 transformer are minor.[64] The two transformers are 29 years old. In August 2013, Sinclair Knight Mertz's "Assessment of Proposed Regulatory Asset Lives" report stated that the economic life of a transformer is 45 years. TasNetworks' Power Transformer Asset Management Plan aligns to this Sinclair Knight Mertz report and specifies that the economic life of a transformer is 45 years and service life up to 60 years.[65] Although TasNetworks recorded 29 defects between 2003 and 2017, the majority related to oil leaks that we consider are unlikely to impact on the performance or reliability of the two transformers.[66] Whilst we acknowledge TasNetworks' claim that these transformers experience higher service duty resulting from an industrial load and accelerated declining asset condition, our position is to maintain our draft decision to defer replacement of the two Boyer substation transformers to the following regulatory period. We consider that the transformers are in acceptable electrical condition and a suitable spare is

62 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Replace 110 kV ASEA HLD live tank breakers*, November 2018.

63 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Chapel St 11kV HV switchgear*, November 2018.

64 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Boyer T13 and T14 supply transformers replacement*, November 2018.

65 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Boyer T13 and T14 supply transformers replacement*, November 2018.

66 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Boyer T13 and T14 supply transformers replacement*, November 2018.

				available. We also consider the TasNetworks' revised NPV analysis continues to overstate risk.
Port Latta substation PL-T1 and PL-T2 supply transformers replacement *(Replace existing Port Latta supply transformers as the two transformers have inherent design deficiencies that affect their expected lifespan and usability)*	$1.9 million	$3.8 million	$0 million	Although the age of the two transformers of 51 years exceeds their economic life of 45 years, it does not exceed their serviceable life of 60 years. Further, TasNetworks' condition assessment report stated that the two transformers are in acceptable electrical condition and are expected to be fit for service for at least five years.[67] Having a functional spare transformer available mitigates the risk for keeping these transformers in the 2019-24 period. Although our draft decision allowed for replacement of a single transformer, TasNetworks advised that replacing a single transformer would incur significant costs to integrate with the current transformer.[68] We therefore consider that the prudent and efficient approach is to replace both transformers at the same time, and that the optimal timing for replacement is in the subsequent regulatory control period.
220kV Sprechur and Schuh HPF live tank circuit breakers replacement *(Replace existing circuit breakers that will be 45 years old at time of recommended replacement having reached the end of their economic life)*	$3.4 million	$6.8 million	$3.4 million	TasNetworks provided a condition assessment report which indicated that the six 220 kV Sprechur and Schuh HPF live tank circuit breakers are in acceptable electrical condition, there have been no reported major failures and no significant oil leaks noted in most recent switchyard inspections.[69] Based on the known asset condition of the six circuit breakers, we consider it would be prudent and efficient to reduce the scope of the proposed replacement program by 50 per cent. We also consider that replaced circuit breakers would provide spares for any in service failures.
George Town – TEMCO 110kV transmission line replacement *(Address corrosion issues on the support towers in order to ensure the line remains safe and functional)*	$2.2 million	$4.0 million	$2.2 million	We consider that it would be prudent to maintain our draft decision position that refurbishment and maintenance would provide the most economically efficient solution to maintain the George Town - TEMCO 110kV transmission line. We consider that TasNetworks has not justified that the condition of the line is such that it needs to be replaced. TasNetworks had previously supplied us with an Investment Evaluation Summary for the George Town – TEMCO 110kV transmission line replacement project that we considered for our draft decision.[70]

Source: AER analysis.

67 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Port Latta supply transformers replacement*, November 2018.

68 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Port Latta supply transformers replacement*, November 2018.

69 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Investment Evaluation Summary: Replace 220 kV Sprechur and Schuh HPF live tank circuit breakers*, November 2018.

70 TasNetworks, *Response to AER Information request #004 - Capex*, 9 March 2018.

Top-down considerations

In its initial proposal, TasNetworks 'optimised' its capex proposal by applying a 0.5 per cent ($5.7 million) top-down downwards adjustment to its transmission capex forecast. TasNetworks noted that this was in response to customer concerns regarding affordability.[71]

In our draft decision, we concluded that TasNetworks was unable to identify how these savings will be delivered, as it was unable to identify efficiencies specific to a project or program. In addition, TasNetworks was not able to identify why the optimisation amount was 0.5 per cent instead of a higher or lower amount.[72]

In its revised proposal, TasNetworks accepted our view in our draft decision that TasNetworks' proposed cost savings have not been explicitly calculated.[73] In its revised proposal, TasNetworks stated:

> "We have also revisited our proposed optimisation, which imposes a 'top down' reduction to our total forecast capital expenditure, and highlighted the initiatives that we expect to achieve these savings."[74]

In its revised proposal, TasNetworks identified a number of initiatives that support future improvements in its program delivery. TasNetworks submitted that these initiatives combined with the expected benefits from SAP implementation, will realise cost savings from improved process efficiencies.[75] TasNetworks identified specific expected cost savings from improved process efficiencies relating to:[76]

- pole asset management;
- wood pole rectification timeframes;
- program planning and execution; and
- bushfire mitigation programs.

Although there is still some uncertainty as to why the transmission capex optimisation amount is 0.5 per cent, we consider TasNetworks has identified specific programs and operational measures to generate cost savings and reduce its transmission capex from its initial proposal over the forecast period.

---

71 TasNetworks, *Transmission and Distribution Regulatory Proposal*, January 2018, p. 11.

72 Arup, *Review of TasNetworks' proposed capital expenditure for the 2019-24 regulatory control period,* August 2018, p. 14.

73 TasNetworks, *Tasmanian transmission and distribution revised proposals 2019–2024,* November 2018, p. 60.

74 TasNetworks, *Tasmanian transmission and distribution revised proposals 2019–2024,* November 2018, p. 28.

75 TasNetworks, *Tasmanian transmission and distribution revised proposals 2019–2024,* November 2018, p. 60.

76 TasNetworks, *Tasmanian transmission and distribution revised proposals 2019–2024,* November 2018, p. 60.

B.5 Forecast non-network capex

Non-network capex relates to expenditure on information and communications technology (ICT) assets, fleet, land and buildings. We have also assessed TasNetworks' forecast capex for the AMS component of operational support systems as part of this category.

B.5.1 TasNetworks' revised proposal

TasNetworks' revised proposal included forecast non-network and AMS capex of $33.3 million ($2018-19, excluding overheads).[77]

TasNetworks' revised proposal increased the transmission ICT capex component of non-network capex by $1.1 million ($2018–19) to $15.5 million ($2018–19) over the 2019–24 regulatory control period.[78]

TasNetworks also proposed an increase to its forecast operational support systems capex, which we had accepted in our draft decision. TasNetworks' revised proposal increased the AMS component of operational support systems capex by $4.2 million ($2018-19) to $10.1 million over the 2019–24 regulatory control period. This is a 42 per cent increase from TasNetworks' initial AMS capex proposal, and our draft decision, of $5.9 million.

B.5.2 Final decision position

TasNetworks' revised non-network capex (including AMS capex) forecast is not in our view a reasonable estimate of the efficient costs required for this capex category. TasNetworks has not demonstrated that the AMS capex forecasts would form part of a total capex forecast that reasonably reflects the capex criteria.

We have included an amount of $28.7 million ($2018–19, excluding overheads) in our substitute estimate of total capex. We are satisfied that our substitute estimate would form part of a total capex forecast that reasonably reflects the capex criteria.
Table B.5.1 below outlines our final decision on TasNetworks' non-network (including AMS) capex forecast.

Table B.5.1 – Final decision on TasNetworks' non-network (including AMS) capex forecast ($2018–19, million)

	2019–20	2020–21	2021–22	2022–23	2023–24	Total
TasNetworks' revised proposal	8.7	8.9	6.4	5.4	4.0	33.3
AER final decision	7.5	7.7	5.5	4.4	3.7	28.7

[77] TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.
[78] TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

Difference	-1.2	-1.2	-0.9	-1.0	-0.3	-4.6
Percentage difference	-14%	-13%	-14%	-18%	-6%	-14%

Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

Note: Numbers may not add due to rounding.

B.5.3 Reasons for our decision

Information and Communications Technology (ICT) Capex

In our draft decision, we accepted that TasNetworks' initial transmission ICT capex was efficient and prudent, and would form part of a total forecast capex allowance that reasonably reflects the capex criteria. TasNetworks' forecast transmission ICT capex was declining towards a level that was consistent with longer-term historical trends of expenditure in this category.

However, TasNetworks' revised proposal increased forecast transmission ICT capex by $1.1 million ($2018-19) to $15.5 million ($2018-19) over the 2019–24 regulatory control period.[79] This is an increase of 8 per cent from the draft decision amount of $14.4 million.

Final decision position

We are satisfied that TasNetworks' revised forecast non-network ICT capex is efficient and prudent and would form part of a total forecast capex allowance that reasonably reflects the capex criteria.

Reasons for our decision

We sought further information from TasNetworks to justify the proposed increase in forecast non-network ICT capex above its initial proposal, given this increase was not explained in TasNetworks' revised proposal. The TSBC also expressed concern that TasNetworks revised proposal was $1.1 million ($2018-19, including overheads) more than TasNetworks forecast in its initial proposal.[80]

TasNetworks explained that the $1.1 million variation in its non-network ICT capex forecast related to the allocated transmission component of a shared distribution and transmission IT security initiative.[81] We discuss this IT security initiative in more detail in section B.5 of Attachment 5 of our final decision on TasNetworks' distribution determination for the 2019-24 regulatory control period. In short, we consider that TasNetworks' revised proposal for increased IT security capex is required to meet the capex objectives, and reasonably reflects the capex criteria. Based on the information

[79] TasNetworks, *Revised Proposals 2019 - 2024, Capex Model*, 29 November 2018 and AER analysis.

[80] Tasmanian Small Business Council, *Response to the AER's Draft Decision and TasNetworks' Revised Proposals*, 11 Jan 2019, p. 28.

[81] TasNetworks, *Response to Information Request 41,* 18 January 2019, p. 8.

provided by TasNetworks, we are satisfied this additional capex is required in order to raise TasNetworks' IT security standards towards anticipated AEMO targets in accordance with the Australian Energy Sector Cyber Security Framework.

In making this decision, we recognise concerns expressed by some stakeholders that it can be difficult to identify or quantify specific benefits to customers delivered by some ICT investments. We therefore encourage TasNetworks to conduct post implementation reviews of the ICT capex projects it undertakes in the 2019–24 regulatory control period. This will assist in ensuring that the intended outcomes and benefits of ICT capex programs and projects are achieved and more transparently demonstrated to customers and stakeholders.

Operational support systems

Operational support systems capex relates to network control capex for SCADA and associated operational information systems as well as asset management systems. TasNetworks' requirements for operational support systems are considered across the transmission and distribution networks as a whole.[82] Asset management systems capex, a component of the operational technology category, is included in our assessment of forecast non-network capex. The transmission component of the AMS capex is considered in this section.

Asset Management Systems

In our draft decision, we accepted TasNetworks' forecast capex of $5.9 million ($2018–19, excluding overheads) for AMS as part of our estimate of total forecast capex that reasonably reflects the capex criteria.[83]

In its revised proposal, TasNetworks increased the transmission AMS capex by $4.2 million ($2018-19, excluding overheads) to $10.1 million over the 2019–24 regulatory control period.[84] This is an increase of 42 per cent from TasNetworks' initial capex forecast (and our draft decision) for AMS capex of $5.9 million.

TasNetworks submitted that the increased AMS capex related specifically to its Asset Management Information System (AMIS) and was required to lift its asset management maturity to a level commensurate with industry peers and good industry practice.

Final decision position

We are not satisfied that TasNetworks' revised proposal for AMS capex of $10.1 million ($2018–19, excluding overheads) is prudent and efficient, and would form part of a total capex forecast that reasonably reflects the capex criteria. We have included

---

82 TasNetworks, *Regulatory Proposal 2019-2024*, 31 January 2018, pp. 95–96.

83 TasNetworks' requirements for asset management systems are considered across the transmission and distribution networks as a whole.

84 TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

an amount of $5.9 million ($2018–19, excluding overheads) for AMS capex as part of our substitute estimate of total capex, in line with our draft decision.

Table B.5.2 outlines our final decision on TasNetworks' transmission AMS capex forecast.

Table B.5.2 - AER's final decision on TasNetworks' transmission Asset Management Systems Capex ($2018–19, million, excluding overheads)

	2019-20	2020-21	2021-22	2022-23	2023-24	Total
TasNetworks' revised proposal	2.5	2.4	2.1	2.1	1.0	10.1
AER final decision	1.4	1.2	1.2	1.2	0.8	5.9
Difference	-1.1	-1.1	-0.8	-0.8	-0.3	-4.2
Percentage difference	-46%	-48%	-40%	-40%	-25%	-42%

Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

Notes: Numbers may not add due to rounding.

Reasons for our decision

The full reasons for our decision on TasNetworks' revised forecast AMS capex are set out in section B.5 of Attachment 5 of our final distribution determination for TasNetworks in the 2019–24 regulatory control period.

In summary, we are not satisfied that TasNetworks' proposed increase in forecast AMS capex, above the level initially proposed and accepted in our draft decision, is prudent and efficient. TasNetworks has not sufficiently explained how the underlying drivers and need for the expenditure has changed between its initial and revised proposals. Further, TasNetworks has not justified the basis of its revised cost estimates, or quantified the benefits provided by the additional expenditure.

We have therefore maintained our draft decision in relation to this category of forecast capex. Our substitute estimate of total forecast capex includes $5.9 million ($2018–19, excluding overheads) for the transmission component of AMS capex in the 2019–24 regulatory control period, in line with our draft decision.

Non-network other capex

Non-network other capex includes expenditure on fleet, land and buildings assets.

Our draft decision accepted TasNetworks' forecast $7.3 million ($2018-19, including overheads) for transmission non-network other capex (fleet, and land and buildings).[85]

[85] AER, *TasNetworks 2019–24 - Transmission - Draft Decision - Attachment 5 - Capital Expenditure*, September 2018, public, p. 5-42.

TasNetworks' revised proposal is essentially unchanged, apart from some minor allocative changes between distribution and transmission ($0.3 million).[86]

We are satisfied, for the reasons set out in our draft decision, TasNetworks' forecast non-network other capex of $7.6 million ($2018–19, including overheads) is efficient and prudent and would form part of a total forecast capex allowance that reasonably reflects the capex criteria. We have therefore included this amount in our estimate of total forecast capex for the 2019–24 regulatory control period.

B.6 Forecast capitalised overheads

In our draft decision, we made no specific adjustment to forecast overheads, but rather made a consequential adjustment reflecting the adjustment made to direct capex, specifically repex, based on the fixed and variable components of allocated overheads. We have taken a similar approach for the final decision, that is, any adjustment of forecast overheads will reflect adjustments made to direct capex.

B.6.1 TasNetworks' revised proposal

TasNetworks proposed forecast capitalised overheads of $50.6 million ($2018–19) in its revised proposal.[87] This capitalised overheads forecast is the same as the initial capitalised overheads forecast considered in our draft decision.

In our draft decision, we considered and assessed capitalised overheads in each capex driver, but for the sake of data consistency and clarity, each capex driver has now been presented in direct cost terms and capitalised overheads have been separated from these drivers in our final decision.

Table B.6.1 outlines our final decision on TasNetworks' forecast capitalised overheads.

Table B.6.1 - AER's final decision on TasNetworks' transmission capitalised overheads ($2018–19, million)

	2019-20	2020-21	2021-22	2022-23	2023-24	Total
TasNetworks' revised proposal	10.3	10.2	10.1	10.0	9.9	50.6
AER final decision	10.3	10.1	10	9.9	9.9	50.1
Difference	0.0	-0.1	-0.1	-0.1	0.0	-0.5
Percentage difference	0.2%	-1.3%	-1.3%	-1.2%	-0.3%	-1.0%

Source: TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

B.6.2 Final decision position

[86] TasNetworks, *Response to Information Request 41*, 18 January 2019, p. 13.

[87] TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

In our final decision, we have adjusted the variable component of forecast capitalised overheads to reflect adjustments made to direct capex.

We do not accept TasNetworks' revised capitalised overheads forecast of $50.6 million ($2018-19). We have included an amount of $50.1 million ($2018-19) in our substitute estimate of total capex.[88]

B.6.3 Reasons for our decision

We have reduced TasNetworks' capitalised overheads forecast by $0.5 million as a consequential adjustment to the variable component of forecast capitalised overheads due to our direct capex adjustments to repex and non-network capex at the program and project level.

[88] TasNetworks, *Revised Proposal Capex Model,* 29 November 2018 and AER analysis.

C Engagement process

C.1 Engagement with TasNetworks

Information requests

TasNetworks submitted its revised proposal on 29 November 2018. Throughout our assessment of TasNetworks' revised proposal, we requested further information via a series of information requests.

These questions aimed to test our understanding of the revised material provided and to clarify capex-related issues, including seeking further supporting information as necessary. These information requests covered all categories of TasNetworks' revised transmission capex forecast.

Engagement

We have engaged with TasNetworks on numerous occasions throughout our assessment of TasNetworks' revised proposal. The key interactions are summarised below:

- 21 December 2018 – We met with TasNetworks staff to discuss our preliminary assessment of the cost-benefit analysis models that TasNetworks submitted as part of its revised proposal. We outlined that its analysis double counted the expected benefits of its proposed replacement options. We initially flagged these concerns with TasNetworks via email on 13 December 2018.
- 16 January 2019 – We met with TasNetworks staff to discuss data reconciliation issues that we uncovered during our assessment of TasNetworks' revised proposal.
- 16 January 2019 – We met with TasNetworks staff to discuss TasNetworks' revised proposal for contingent projects.
- 4 February 2019 – We met with TasNetworks staff to again discuss data reporting and reconciliation issues.
- 14 February 2019 – We met with TasNetworks staff to provide an update on our likely positions on TasNetworks' revised transmission capex forecast. We provided information relating to our own internal timeframes and advised TasNetworks of the cut-off date when we would be unable to consider any additional information.

D Contingent projects

Contingent projects are typically significant network augmentation projects that may be required to be undertaken within the regulatory period in order to achieve the capex objectives. However, unlike other proposed capex projects, the need for the project and the associated costs are not sufficiently certain at the time the business submits its proposal. Consequently, expenditure for such projects does not form a part of our assessment of the total forecast capex that we approve in this draft determination. The cost of the projects may ultimately be recovered from customers in the future if certain predefined conditions (trigger events) are met.

If, during the regulatory control period, TasNetworks considers that the trigger events for a contingent project have occurred, then it may apply to us to amend its revenue determination.[89] In particular, at that time, we will assess whether the trigger event has occurred and whether the project meets the NER materiality threshold. If we were satisfied of both, we would then go on to determine the efficient incremental revenue that is likely to be required in each remaining year of the regulatory control period as a result of the contingent project, and amend the revenue determination accordingly.[90]

D.2 Draft decision

TasNetworks initially proposed five contingent projects for the 2019–24 regulatory control period with total estimated capital cost of $938 million:[91]

- Second Bass Strait Interconnector (Project Marinus)
- Sheffield to Palmerston 220 kV Augmentation
- Rationalisation of Upper Derwent 110 kV Network
- North West 110 kV Network Development
- North West 220 kV Network Development (also known as the Sheffield to Burnie 220 kV Augmentation).

TasNetworks' proposed contingent project trigger events in its original proposal took the following form for all projects:[92]

> *1 (a) Successful completion of a RIT-T; or*
>
> *(b) A decision by a government or regulatory body that results in a requirement for the [project name].*

[89] NER, cl. 6A.8.2 (a).

[90] NER, cl.6A.8.2.

[91] TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, January 2018, pp. 106–109.

[92] TasNetworks, *Regulatory Proposal 2019–2024*, January 2018, pp. 106–109.

2. TasNetworks Board approval to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

TasNetworks' proposed trigger events for all five contingent projects made successful completion of the RIT-T optional.

Our draft decision determined that TasNetworks' proposed trigger events in relation to the five contingent projects were not appropriate as required by the NER.[93] Specifically TasNetworks had not demonstrated that the proposed contingent project triggers were:[94]

- reasonably specific and capable of objective verification; and
- probable to occur during the regulatory control period.

We did not include TasNetworks' proposed contingent projects as contingent projects for the 2019–24 regulatory control period. We stated that TasNetworks should provide additional supporting information and amended project trigger events for all proposed contingent projects in its revised proposal to support the inclusion of these projects as contingent projects for the 2019–24 regulatory control period. We also encouraged TasNetworks to continue to engage with consumers and other stakeholders to provide greater transparency around the drivers, scope, timing, benefits, funding options and indicative price impacts of these projects.

D.3 TasNetworks' revised proposal

Following the submission of its initial proposal, TasNetworks received strong feedback from customers and stakeholders that the proposed contingent projects were not supported for inclusion in the 2019–24 regulatory control period and that additional information around the need, scope, timing, drivers, funding options, price impacts and benefits of these projects was required.

In its revised proposal, TasNetworks acknowledged our concerns and those of stakeholders regarding its initial contingent project proposal.[95] TasNetworks' revised proposal removed two of the five contingent projects initially proposed: the Rationalisation of the Upper Derwent 110 kV Network and North West 110 kV Network Redevelopment projects. TasNetworks advised that it no longer considered the projects were likely to proceed in the 2019–24 regulatory control period.[96]

For the remaining three contingent projects, TasNetworks stated that:

---

93 NER, cl.6A.8.1(b)(4)

94 AER, *Draft decision, TasNetworks Transmission - Attachment 5 Capital Expenditure*, September 2005, p. 5-50; NER, cll. 6A.8.1(c)(1) and (5).

95 TasNetworks, *Proposal 2019–2024*, November 2018, p. 39.

96 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 40.

- in relation to the Project Marinus contingent project, since the submission of its initial revenue proposal it had published a Project Specification Consultation Report (PSCR) for Project Marinus in accordance with the RIT-T requirements.[97] TasNetworks considered that the PSCR provided further detailed information on the project. TasNetworks also provided an additional supporting document responding to the matters raised in our draft decision.[98]
- in relation to the other two contingent projects, the Sheffield to Palmerston 220 kV Augmentation and the Sheffield to Burnie 220 kV Augmentation, the circumstances had not changed since submitting its initial revenue proposal. Specifically, TasNetworks submitted that:[99]
    - the Palmerston to Sheffield 220 kV corridor will need to be reinforced to facilitate significant generation developments in the North West Renewable Energy Zone or to facilitate power flows from central Tasmania to the second interconnector
    - the Sheffield to Burnie 220 kV corridor will need to be reinforced to facilitate significant generation developments in the North West or to facilitate a connection of a second Bass Strait interconnector into Burnie
    - for these projects it had addressed the issues raised in our draft decision by preparing a 'project needs analysis' for each project, setting out the following information:[100]
        - background on the existing network capacity and configuration
        - the issues or 'identified need' that would arise if particular 'triggers' eventuate
        - high level options for addressing the identified need
        - preliminary analysis of the net benefits that would arise from the proposed contingent project; and
        - specific trigger events that are consistent with the analysis presented.

Subsequent to the submission of its revised proposal, TasNetworks reviewed its proposed trigger events for the Palmerston to Sheffield and Sheffield to Burnie 220kV

---

97 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 40.

98 TasNetworks, *Revised Regulatory Proposal 2019–2024 - Marinus Link Contingent Project Explanatory Paper*, November 2018.

99 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 40.

100 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 40.

augmentation contingent projects and provided updated project needs analyses for the projects to rectify an omission to its proposed trigger events for these two projects.[101]

Table D.3.1 below shows the indicative contingent capex amount and the proposed trigger events for the three contingent projects proposed by TasNetworks for the 2019–24 regulatory control period.

Table D.3.1 TasNetworks' revised proposed contingent projects

Contingent project	Contingent capex	Proposed trigger events
Second Bass Strait Interconnector (Project Marinus)	$81 to $810 million[1]	1. Successful completion of a 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 between Tasmania and Victoria, and/or that addresses a reliability corrective action. 2. Determination by the AER that the proposed investment satisfies the RIT-T. 3. TasNetworks 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 occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.
Palmerston to Sheffield 220 kV Augmentation	$117 million	1. A net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect in North West and/or West Coast of Tasmania; and/or 2. A commitment to proceed with a second Bass Strait interconnector connecting in North West Tasmania. 3. Successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T. 4. TasNetworks Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules. 5. Clause 3 does not apply if a change occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.
Sheffield to Burnie 220 kV Augmentation	$80 million	1. A net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect at or west of Burnie Substation in North West Tasmania; and/or 2. A commitment to proceed with a second Bass Strait interconnector connecting at 220 kV at or west of Burnie Substation. 3. Successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T. 4. TasNetworks Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

[101] TasNetworks, *Revised Regulatory Proposal 2019–2024 - Contingent Project Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis* and *Contingent Project Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019.

	5. Clause 3 does not apply if a change occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.

Source: TasNetworks, *Revised Regulatory Proposal 2019–2024 - Project Marinus, Second Bass Strait interconnector*, November 2018; TasNetworks, *Revised Regulatory Proposal 2019–2024 - Contingent Project Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019; and TasNetworks, *Revised Regulatory Proposal 2019–2024 - Contingent Project Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019.

1 This is a total project cost estimate of the Tasmanian proportion (5 per cent to 50 per cent) of a Stage 1 600 MW interconnection.

TasNetworks considered that the inclusion of the three contingent projects in its revised proposal would ensure that provision is made to allow significant infrastructure projects to proceed if they deliver a net economic benefit. Further, TasNetworks considered that its approach to contingent projects also ensured that customers would not pay for capital projects unless they actually proceed in the regulatory period.[102]

D.4 Final decision position

We consider that TasNetworks' proposed contingent projects should be included as contingent projects for the 2019–24 regulatory control period. Subject to the identified trigger events occurring, these projects may be reasonably required to be undertaken in order to achieve one or more of the capex objectives.[103]

The trigger events for the proposed contingent projects, as set out in Table D.3.1, are appropriate.[104] The triggers are reasonably specific, and capable of objective verification. The contingent projects will only be triggered following the successful completion of a RIT-T process that identifies the proposed investment as the preferred option which satisfies the requirements of the RIT-T. This is consistent with the form of contingent project triggers included in current revenue determinations for other transmission businesses across the NEM.

D.5 Submissions

We received a number of submissions on our draft decision and TasNetworks' revised proposal for contingent projects in the 2019–24 regulatory control period. Table D.5.1 summarises these submissions.

102 TasNetworks, *Tasmanian Transmission and Distribution Revised Revenue Proposals 2019–2024*, November 2018, p. 41.

103 NER, cl. 6A.8.1(b)(1).

104 NER, cl. 6A.8.1(c).

Table D.5.1 - Submissions on TasNetworks proposed contingent projects

Stakeholder	Issue
Consumer Challenge Panel 13 (CCP13)	CCP13 noted concerns from consumers regarding the impact of potential significant expenditure on contingent projects, particularly concerning who pays and who benefits.[105] CCP13 is of the view that it would be prudent to incorporate a conditional trigger related to consistency with the ISP and its implementation mechanisms, and recommends that the "AER require the conduct of a RIT-T and consistency with the ISP for all contingent projects".[106]
Tasmanian Small Business Council (TSBC)	The TSBC is concerned the price impacts of Project Marinus will be largely invisible to consumers. TSBC explicitly expressed their concerns that consumers, especially those in Tasmania and Victoria, could bear significant risks from the project including stranding or underutilisation of the asset, uncompetitive markets so that benefits are not passed through and risks from government intervention and regulation.[107] The TSBC suggested that the trigger of passing the RIT-T should include an analysis of costs and quantifiable financial benefits which will accrue to each section of the Tasmanian electricity customer base, and that the project approval process should ensure that audited benefits exceed costs for any approved project.[108] The TSBC listed a number of concerns regarding the proposed trigger points including modification of the present pricing framework, changes to triggers over time, and political rather than economic justifications for the project.[109] The TSBC noted that while the benefits to wind generation proponents from other contingent projects are apparent, the impact on Tasmanian electricity consumers is not clear.[110]
Tasmanian Council of Social Service (TasCOSS)	TasCOSS expressed continuing concern about Project Marinus as a contingent project, due to the potentially substantial cost impacts and unclear benefits to Tasmanian energy consumers, in particular, low-income and disadvantaged customers and the community sector in Tasmania. TasCOSS considered the Tasmanian community has not been properly consulted, especially regarding the price-impacts to vulnerable customers. TasCOSS considered that any network cost impacts passed on to low-income and vulnerable customers must be more-than offset by reductions in other components of electricity prices, in order to be justified.[111]
Tasmanian Minerals and Energy Council (TMEC)	While the TMEC supports Project Marinus in its aim to supply baseload energy to the NEM, it is against consumers funding the infrastructure required, be that new installations or augmentation of existing assets. TMEC considered that any future interconnection costs should be borne by the proponents who wish to access the interconnection and not current network users in Tasmania.[112]
Tasmanian Government - Department of State Growth, Office of	The OEP considered that TasNetworks' revised Project Marinus proposal presented further supporting information to justify the project, especially given initial modelling shows the project could have positive economic benefits from the mid-2020s under some scenarios.[113]

105 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, p. 5.

106 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, p. 6.

107 Tasmanian Small Business Council, *Submission on AER Draft Decision and TasNetworks' Revised proposals*, January 2019, p. 29.

108 TSBC, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 33.

109 TSBC, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, pp. 34–35.

110 TSBC, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 37.

111 TasCOSS, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, December 2018, p. 5.

112 TMEC, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 3.

113 OEP, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 3.

Energy Planning (OEP)	The OEP considered that the AER should give due consideration to the likelihood that future iterations of the ISP may bring forward the timing for investments such as Project Marinus and that, without contingent project status, timely investment in line with the least-cost development pathway outlined by the ISP may not occur.[114] TheOEP welcomed TasNetworks' commitment to ensuring Tasmanian customers pay no more than their fair share of costs and that the framework for cost recovery for interconnector services fairly allocates costs to those who benefit, especially when the benefits of strategic infrastructure are shared more widely across the NEM rather than being realised in only one or two jurisdictions.[115]
Aurora Energy	Aurora Energy welcomed TasNetworks' refinement of the number of, and triggers for contingent projects. Aurora Energy supported TasNetworks exploring the merits of a second interconnector, recognising the feasibility study will determine whether or not the project should proceed. However, given the substantial potential cost of Project Marinus and other contingent projects, Aurora remained concerned about potential material impacts on commercial and residential customer prices "for an as yet unquantified benefit".[116] Aurora Energy was concerned that the triggering of contingent projects will result in an average network price increase greater than CPI, even if a Tasmanian contribution of just five percent of the total cost of Project Marinus cost is assumed.[117] Aurora Energy is of the view that the cost recovery framework for Project Marinus should fairly allocate costs to those who benefit from its service, in particular the mainland NEM customers to whom its benefits will primarily flow. Aurora Energy supported TasNetworks commitment to ensuring Tasmanian customers only incur costs commensurate with the benefits they receive and to only proceed with the project if arrangements are put in place to protect Tasmanian customers from unacceptable price increases.[118] Aurora Energy submitted that, if Project Marinus is approved as a contingent project, it is imperative that TasNetworks:[119] • fulfils its stated commitment to actively seek modification of the existing regulated service pricing framework and/or appropriate financial contributions to support the project if triggered. • undertakes a holistic, combined assessment of the costs and benefits associated with all three contingent projects that would be triggered by a commitment to proceed with a second interconnector; and • undertakes a comprehensive assessment of how much (if any) of the cost associated with the three contingent projects should be recovered from Tasmanian customers, as well as their ability and willingness to pay.
Anonymous Submission	The anonymous submission discussed a perceived flaw in the logic of the trigger events for the North West 220kV Network Redevelopment and the Sheffield to Palmerston 220kV Augmentation contingent projects. The submission considered that for each project, trigger event (a) is not independent of event (c); if (a) can be demonstrated/ it will contribute to (c). That is, if a "net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect" in each of the project locations, that will significantly contribute to "successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T".[120] The submission considered that given the Palmerston to Sheffield and Sheffield to Burnie projects are essential for Project Marinus, it is unusual that a commitment to proceed with a second Bass Straight Interconnector should be a trigger for the other two contingent projects. The submission argued that given these two contingent projects are essential to Project Marinus, they should be

114 OEP, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 3.
115 OEP, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 4.
116 Aurora Energy, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 2.
117 Aurora Energy, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 2.
118 Aurora Energy, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 3.
119 Aurora Energy, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 3.
120 Anonymous, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, pp. 1-2.

included in the scope for Project Marinus to enable a full assessment of the costs and benefits under the RIT- T, given that any RIT-T performed without consideration of consequential augmentation will be inadequate.[121]

The submission was also concerned about the distribution of costs and benefits associated with Project Marinus, especially the impact in Tasmania.[122]

D.6 Reasons for our position

Our review of TasNetworks' proposal did not focus on the merits of individual projects, but rather on whether the information provided by TasNetworks and the form of trigger events proposed justified the inclusion of the projects as contingent projects for the 2019–24 regulatory control period in accordance with the requirements of the NER.

We must review each of TasNetworks' proposed contingent projects against the assessment criteria in the NER.[123] In doing so, we must consider whether:

- the proposed contingent project is reasonably required to be undertaken in order to achieve any of the capex objectives[124]
- the proposed contingent project capital expenditure is not otherwise provided for in the capex proposal[125]
- the proposed contingent project capital expenditure reasonably reflects the capex criteria, taking into account the capex factors, in the context of the proposed contingent project[126]
- the proposed contingent project capital expenditure exceeds the defined materiality threshold[127]
- the proposed contingent project complies with any relevant regulatory information instrument[128]
- the trigger events in relation to the proposed contingent project are appropriate.[129]

Based on the information available, we consider that if the defined trigger events occur, each of the contingent projects proposed may be reasonably required to be undertaken in order to meet one or more of the capex objectives, for example to maintain the

121 Anonymous, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 2.
122 Anonymous, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 2.
123 NER, cl. 6A.8.1.
124 NER, cl. 6A.8.1(b)(1).
125 NER, cl. 6A.8.1(b)(2)(i). A TNSP must include forecast capex in its revenue proposal which it considers is required in order to meet or manage expected demand for prescribed transmission services over the regulatory control period (see NER, cl. 6A.6.7(a)(1)).
126 NER, cl. 6A.8.1(b)(2)(ii).
127 NER, cl. 6A.8.1(b)(2)(iii).
128 NER, cl.6A.8.1(b)(3).
129 NER, cl. 6A.8.1(b)(4).

quality, reliability and security of supply, or to meet or manage the expected demand for transmission services.[130]

Further, we consider that the contingent capex for each of the three proposed contingent projects exceeds the defined materiality threshold requirement of the NER.[131] The contingent capex proposed for each project is significantly greater than the $30 million or 5 per cent of the maximum allowed revenue threshold. We are also satisfied given the nature of the projects that the proposed contingent capex is not otherwise provided for in TasNetworks' capex proposal.[132]

In respect to the remaining criteria for contingent projects in the NER, as we stated in our draft decision, we expected that TasNetworks' revised proposal would provide additional information to inform our assessment of whether each proposed contingent project meets the contingent project criteria under the NER, including that:

- the proposed contingent project capex reasonably reflects the capex criteria in the context of the proposed contingent project;[133] and
- the trigger events are appropriate.[134]

The definition of the trigger events associated with each contingent project is important, as it is the occurrence of these events that determines if and when TasNetworks may apply to us to recover the efficient costs of undertaking the projects. In assessing whether the proposed trigger events are appropriate, we have regard to the need for each trigger event to be:

- reasonably specific and capable of objective verification[135]
- a condition or event which, if it occurs, makes the project reasonably necessary in order to achieve any of the capex objectives[136]
- a condition or event that generates increased costs or categories of costs that relate to a specific location rather than a condition or event that affects the transmission network as a whole[137]
- described in such terms that it is all that is required for the revenue determination to be amended;[138] and

130 NER, cl. 6A.8.1(b)(1).
131 NER, cl. 6A.8.1(b)(2)(iii).
132 NER, cl. 6A.8.1(b)(2)(i). A business must include forecast capex in its proposal which it considers is required in order to meet or manage expected demand for prescribed transmission services over the regulatory control period (see NER, cl. 6A.6.7(a)(1)).
133 NER, cl. 6A.8.1(b)(2)(ii).
134 NER, cl. 6A.8.1(b)(4).
135 NER, cl. 6A.8.1(c)(1).
136 NER, cl. 6A.8.1(c)(2).
137 NER, cl. 6A.8.1(c)(3).
138 NER, cl. 6A.8.1(c)(4).

- probable during the 2019–24 period but the inclusion of capex in relation to it (in the total forecast capex) is not appropriate because there is not sufficient certainty regarding either the occurrence of the event or condition during the regulatory control period or the costs associated with the event or condition.[139]

We have reviewed the additional information provided by TasNetworks in its revised proposal, in particular the PSCR and explanatory document for Project Marinus, and the project needs analysis for the Sheffield to Palmerston 220 kV Augmentation and the North West 220 kV Network Redevelopment projects.

We consider that for each of these projects, TasNetworks has provided sufficient information to inform our assessment of whether the project meets the contingent project criteria. In particular, we consider that TasNetworks has provided sufficient information to enable us to better assess the likelihood of the project commencing during the 2019-24 regulatory control period, the need for the project, and whether the proposed trigger events are appropriate.

Project Marinus

Project Marinus is the project investigating the feasibility and business case for construction of the Marinus Link, a second Bass Strait interconnector between the Tasmanian and Victorian jurisdictions of the NEM. TasNetworks is progressing Project Marinus, with funding from the Tasmanian Government and the Australian Renewable Energy Agency, to examine the benefits of greater interconnection in facilitating the transition of the NEM towards an increasing penetration of renewable energy generation.

TasNetworks has commenced a RIT-T process for Project Marinus. TasNetworks released the Project Marinus Project Specification Consultation Report (PSCR) in July 2018.[140] The PSCR is the first step in the RIT-T process which will assess whether further interconnection between Victoria and Tasmania will deliver a 'net economic benefit' as defined by the RIT-T in the NER. The PSCR describes the 'identified need' that further interconnection would address. It also provides details of the assumptions underpinning this need, credible options that could address the need, how TasNetworks intends to evaluate the benefits of these options, the likely implementation timetable, and indicative costs.

In addition to the Project Marinus RIT-T process, TasNetworks published an Initial Feasibility Report assessing the project at the end of 2018, and will publish a Final Feasibility Report and Business Case Assessment at the end of 2019. This feasibility study has a broader scope than the economic analysis required by the RIT-T.[141]

---

139 NER, cl. 6A.8.1(c)(5).

140 TasNetworks, *Project Marinus Project Specification Consultation Report - Additional interconnection between Victoria and Tasmania*, July 2018.

141 TasNetworks, *Project Marinus Project Specification Consultation Report - Additional interconnection between Victoria and Tasmania*, July 2018.

TasNetworks' revised proposal

TasNetworks submitted that the PSCR for Project Marinus addressed some of the matters raised in our draft decision in relation to the inclusion of Project Marinus as a contingent project in the 2019–24 regulatory control period.[142]

TasNetworks' revised proposal also included an explanatory paper that responded to our draft decision in respect to Project Marinus.[143] The paper sought to address our concern that TasNetworks' initial proposal did not contain sufficient information to support the project timing by demonstrating that project triggers are probable to occur during the 2019-24 regulatory control period. The paper also included updated details in respect to:

- the integration of Project Marinus and AEMO's ISP in transforming the NEM and the role of greater interconnection between Victoria and Tasmania. TasNetworks submitted that analysis undertaken subsequent to release of the ISP in July 2018 reinforces that a second Bass Strait interconnector could provide benefits in transforming the NEM and could proceed in 2019–24 regulatory control period.[144]
- project specification, which based on current estimates of pumped hydro storage and other renewable energy development in Tasmania and the NEM, preferences an option of developing the link in two 600 MW stages which preserves capacity options and provides timing flexibility.[145]

  TasNetworks' analysis shows that assuming smooth project progression, it is feasible to assume the delivery of 600 MW of interconnector capacity during the 2019–24 regulatory control period, with an expected commissioning date in the mid-2020s. For the purposes of this contingent project definition, TasNetworks is referring to the delivery of 600 MW of interconnector capacity, either relating to the development of a 600 MW link or the first 600 MW stage of 1200 MW link.[146]
- project costs. These were first estimated to be $1.1 billion in Dr Tamblyn's feasibility study[147] (50 per cent of which were assumed to accrue to TasNetworks customers) then revised in the PSCR to $1.4 to $1.9 billion for a 600 MW HVDC interconnector plus AC network upgrades.[148]

  TasNetworks revised its cost estimate in the revised proposal in light of better information regarding HVDC cable costs, the costs of electricity network upgrades in Victoria and Tasmania to support increased electricity flows, as well as updating the cost estimates for inflation. TasNetworks' latest cost estimate for an initial

---

142 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 5.
143 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018.
144 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 6.
145 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 6.
146 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 6.
147 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 7.
148 TasNetworks, *Project Marinus - Project Specification Consultation Report*, July 2018, p. 44.

600 MW of interconnector capacity ranges from $1.3 to $1.6 billion.[149] TasNetworks considered that the most prudent and realistic approach is to outline the contingent project capex as a range noting that under the current pricing framework, it would only seek to include in its RAB a proportion of costs commensurate with the benefits Tasmanian customers receive. TasNetworks nominated a range from five to 50 per cent of the estimated cost ($81 to $810 million). On this basis, TasNetworks proposed contingent capital expenditure of $445 million, being the midpoint in this range and its best estimate in the circumstances.[150]

- indicative timings for delivery. TasNetworks considered that while the 2018 ISP modelling provided an indicative timing of 2033, the optimal timing will depend on future events in the NEM, particularly when and where coal-fired generation withdraws and new generation and storage resources are built. TasNetworks' initial economic modelling shows that MarinusLink has positive economic worth – with benefits greater than costs – from the mid-2020s under some scenarios. TasNetworks submitted that the timing variation largely relates to retirement of coal-fired generation, which at this point remains largely uncertain and dependent on a number of factors, which will be further explored as TasNetworks progresses through the RIT-T process.[151]

TasNetworks acknowledged its customers' concerns that the costs of Project Marinus should not be borne by Tasmanian electricity customers. TasNetworks submitted that while the project may deliver a positive net economic benefit across the NEM, the question of 'who pays' is highly relevant to the investment decision, particularly given the affordability concerns raised by customers and stakeholders. In response to these concerns, TasNetworks submitted that it will take steps to ensure that Tasmanian customers only incur costs that are commensurate with the benefits they receive.[152]

After submission of its revised proposal, in February 2019, TasNetworks released the Project Marinus Initial Feasibility Report presenting the outcome of its initial feasibility study of the technical, environmental, planning and economic matters of Project Marinus.[153] The report concluded that:

- favourable routes for a 600 MW to 1200 MW Marinus Link are for a converter station in the Sheffield or Burnie area in north-west Tasmania linked by HVDC cable to a converter station in the Latrobe Valley in Victoria.[154]
- the environment, land use planning and heritage external approvals required to deliver Marinus Link across Commonwealth, Victorian and Tasmanian jurisdictions approvals are achievable for the favourable route options.[155]

---

149 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 7.
150 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 9.
151 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 9.
152 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 8.
153 TasNetworks, *Initial Feasibility Report*, February 2019.
154 TasNetworks, *Initial Feasibility Report*, February 2019, p. 14.
155 TasNetworks, *Initial Feasibility Report*, February 2019, p. 13.

- there are plausible circumstances in which Marinus Link is likely to deliver positive economic worth from the mid-2020s.[156]
- should the project proceed, it will be important that the framework to recover the costs for interconnector services fairly allocates costs to those who benefit from the services. TasNetworks considers that the present regulated service pricing arrangements are unlikely to achieve this outcome.[157]

TasNetworks stated that revenue recovery is based on transmission pricing rules that largely result in project cost recovery determined by network usage from customers in the region where assets are located. TasNetworks considered that this regional pricing does not align with the NEM wide net economic benefits identified through the RIT-T process. TasNetworks' analysis shows that the current regulated pricing framework would see Tasmanian customers' transmission charges increase disproportionately because of Marinus Link, relative to the benefits received. TasNetworks therefore considered that Marinus Link should only proceed as a regulated service if there are contributions from Government and/or the present pricing framework is modified, recognising that Marinus Link benefits are principally to mainland NEM customers. TasNetworks submitted that it will work with policy makers, regulators and market bodies to seek this outcome.[158]

Revised trigger events

In our draft decision, we determined that TasNetworks' proposed trigger events for this project were not consistent with the requirements under the NER. The proposed trigger events made successful completion of the RIT-T optional. In response to our request that TasNetworks should amend its project trigger events, TasNetworks has proposed the following:[159]

1. Successful completion of a 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 between Tasmania and Victoria, and/or that addresses a reliability corrective action.
2. Determination by the AER that the proposed investment satisfies the RIT-T.
3. TasNetworks 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 occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.

---

156 TasNetworks, *Initial Feasibility Report*, February 2019, p. 15.

157 TasNetworks, *Initial Feasibility Report*, February 2019, p. 15.

158 TasNetworks, *Initial Feasibility Report*, February 2019, p. 17.

159 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 15.

TasNetworks' revised triggers are consistent with the form of contingent project triggers included in current revenue determinations for other TNSPs across the NEM.

Conclusion on Project Marinus

We are satisfied that the proposed contingent project for Project Marinus should be included as a contingent project in TasNetworks' revenue determination for the 2019–24 regulatory control period.[160] If the trigger events occur, the proposed contingent project is likely to be reasonably required to achieve one or more of the capex objectives.[161]

The additional information provided with TasNetworks' revised proposal, and other relevant information published since our draft decision, provides greater support for the probability that the project may be triggered during the 2019–24 regulatory control period. Our final decision position has been influenced by the following considerations:

- release of the Project Marinus PSCR in July 2018 as the first step in a RIT-T process that will consider credible options that would meet the 'identified need' of the Marinus Link
- release of the Project Marinus Initial Feasibility Report that identified plausible circumstances in which a second Bass Strait interconnector would deliver positive economic benefit from the mid-2020s, and which supports the potential viability of Marinus Link in relation to the project's technical, environmental, planning and economic considerations[162]
- commitment of Federal Government funding to progress initial work on both the Marinus Link and Battery of the Nation projects
- the information contained in TasNetworks' explanatory paper in response to our draft decision, including updated details in respect to the integration of Project Marinus and AEMO's ISP, project specification, project costs and indicative timings.

We are also satisfied that TasNetworks' proposed triggers for the Project Marinus contingent project are appropriate as required by the NER.[163] Broadly, we consider these triggers are appropriate because they are specific and verifiable and, if they occur, would make undertaking the proposed contingent project reasonably necessary.

TasNetworks' proposed triggers define the particular condition or event which is likely to trigger the need for a network investment. The successful completion of a RIT-T is an important step in demonstrating that the capex ultimately required to undertake a contingent project meets an identified need, is required to achieve the capex objectives and reasonably reflects the capex criteria. Completion of the RIT-T process provides

---

160 NER, cl. 6A.8.1.

161 NER, cl. 6A.8.1(b)(1).

162 TasNetworks, *Initial Feasibility Report*, February 2019, p. 15.

163 NER, cl. 6A.8.1(b)(4).

evidence of a comprehensive and transparent assessment of credible options, which demonstrates that the proposed network investment maximises net economic benefits. We support TasNetworks' revised proposal to include this trigger for all of its proposed contingent projects.

We have also accepted TasNetworks' proposal to recognise that successful completion of a RIT-T would no longer apply as a trigger event where the current obligation in the NER to undertake a RIT-T no longer applies. We do not anticipate that the obligation for TNSPs to conduct a RIT-T process for potential investments such as Project Marinus will change in the 2019–24 regulatory control period. Relevantly, the AEMC's final report of its review into the coordination of generation and transmission investment (COGATI Review) recommended some changes to the transmission investment approval framework to streamline and speed up the time taken to complete the RIT-T.[164] The COGATI Review did not recommend changes that would remove the need for TNSPs to undertake the RIT-T. While inclusion of this conditional trigger is therefore likely to be redundant, it is consistent with the wording of contingent project triggers in other current transmission determinations and has no practical effect if the NER requirement to undertake a RIT-T remains. We have therefore made no amendment to TasNetworks' revised proposal in this regard.

TasNetworks' proposed triggers also include the requirement for a determination by the AER that the proposed investment satisfies the RIT-T. This is consistent with the form of contingent project triggers in other current transmission determinations.[165] In this regard, the COGATI Review recommended removing clause 5.16.6 from the NER, which provides for RIT-T proponents to seek such a determination from the AER after completing a RIT-T process.[166] However, we also note the AEMC's recent final determination on the *Early Implementation of ISP Priority Projects* rule change streamlines the post-RIT-T regulatory process without removing or altering any of the steps (including the clause 5.16.6 determination) that 'are designed to protect consumers from paying for inefficient investment'.[167]

At this time, we consider that it is appropriate for the contingent project triggers for this decision to reflect the current framework for transmission investment under the NER. In the event that the regulatory framework for transmission investment is amended in the future, we consider that any issues arising from changes to the RIT-T and post RIT-T regulatory processes should be addressed, as part of those amendments, through transitional mechanisms or consequential amendments to existing obligations, including in relation to contingent projects included in existing revenue determinations. We have therefore made no amendment to TasNetworks' revised proposal in this regard.

---

164 AEMC, *Final Report - Coordination of Generation and Transmission Investment*, 21 December 2018, pp. 45-51.

165 For example, current determinations for ElectraNet and TransGrid for the 2018–23 regulatory control period.

166 AEMC, *Final Report - Coordination of Generation and Transmission Investment*, 21 December 2018, p. 49.

167 AEMC, *Rule Determination - National Electricity Amendment (Early Implementation of ISP Priority Projects) Rule 2019*, 4 April 2019, p. 11.

We are also satisfied that, while the trigger events for the Project Marinus project may occur during the 2019–24 regulatory control period, the inclusion of capex in relation to it (in the total forecast capex) is not appropriate. This is because at this time there is not sufficient certainty regarding either the occurrence of the event during the regulatory control period, or the costs associated with the event or conditions.[168]

Allocation of costs

We recognise the concerns that stakeholders have raised in regard to the extent to which Tasmanian electricity consumers may be required to pay for Project Marinus, should the project proceed, given the significant benefits to customers in other jurisdictions of the NEM.

All submissions we received commented on the cost recovery framework for Project Marinus. The submissions considered it appropriate that costs should be allocated to those who benefit from the establishment of the Marinus Link.

We acknowledge these submissions and consumer concerns more broadly in respect to the cost recovery framework for Project Marinus. TasNetworks also acknowledged these concerns and submitted that it will take steps to ensure that Tasmanian customers only incur costs that are commensurate with the benefits they receive.[169] TasNetworks has also stated that it will continue to work with a range of stakeholders to understand potential arrangements – including funding arrangements – to support efficient and timely project outcomes.[170] We welcome this commitment from TasNetworks.

Any future decision on the funding of Project Marinus will need to have regard to the principle that Tasmanian consumers should not pay more than the benefit they derive from Project Marinus. The specific funding arrangements that apply to Project Marinus will also be relevant to our assessment of any future application to recover the incremental revenue required in undertaking the project, once the contingent project triggers have been met. However, for this determination, the current NER criteria for assessing proposed contingent projects do not directly address the cost recovery framework or funding arrangements for a potential contingent project.[171] Future funding and cost recovery arrangements are therefore not a deciding factor in determining whether TasNetworks' proposed contingent projects should be included as contingent projects for the 2019–24 regulatory control period.

We note that the COGATI Review similarly identified that concerns have been raised about whether the current inter-regional transmission charging regime adequately attributes the cost of interconnectors to their beneficiaries. The AEMC concluded that there may be some elements of the existing inter-regional transmission charging

---

168 NER, cl. 6A.8.1(c)(5).

169 TasNetworks, *Project Marinus - TasNetworks Revised Revenue Proposal 2019-24*, November 2018, p. 8.

170 TasNetworks, *Initial Feasibility Report*, February 2019, p. 48.

171 NER, cl. 6A.8.1.

arrangements that could be changed to better align the costs of interconnectors with those that benefit from the investment. The AEMC considered that these changes should be considered in more depth through re-examining inter-regional TUOS arrangements, to allow these changes to be implemented alongside dynamic regional pricing.[172]

CCP13 commented that the AEMC stated that the reform package to put the ISP into action would see an updated ISP in 2020 (and every 2 years thereafter) and allow generators to pay for transmission infrastructure from July 2023. CCP13 also stated that inter-regional charging would also be reviewed in 2019. CCP13 considered that all significant changes that will occur during the 2019-24 regulatory control period are relevant to TasNetworks' proposed contingent projects, and as such, it would be prudent to incorporate a conditional trigger related to consistency with the ISP and its implementation mechanisms.[173] While we acknowledge CCP13's proposal to incorporate a conditional trigger related to consistency with the ISP, we have not done so in this final decision. We consider it is preferable that relationships between different aspects of the transmission investment approval framework be considered holistically and determined through the ongoing work of the AEMC and the Energy Security Board, rather than through our business specific regulatory determinations.

Palmerston to Sheffield 220 kV Augmentation

TasNetworks' revised proposal includes additional information on its proposed Palmerston to Sheffield 220 kV Augmentation contingent project. In particular, TasNetworks submitted a project needs analysis that provides additional details on the need for reinforcing the Palmerston to Sheffield 220 kV corridor to facilitate significant generation developments in the North West and/or West Coast of Tasmania, or to facilitate a connection of a second Bass Strait interconnector in North West Tasmania.

Subsequent to the submission of its revised proposal, TasNetworks reviewed its proposed trigger events for the Palmerston to Sheffield 220 kV Augmentation and provided an updated project needs analysis that rectified an omission to its proposed trigger events.[174] TasNetworks submitted that the inclusion of the Sheffield to Palmerston 220 kV augmentation as a contingent project in its revised regulatory proposal ensures that provisions are made to allow this significant infrastructure project to proceed if it is demonstrated to deliver a net economic benefit.[175]

TasNetworks submitted that it has received a number of connection applications from potential new generators in North West Tasmania and on the West Coast of Tasmania

---

172 AEMC, *Final Report - Coordination of Generation and Transmission Investment*, 21 December 2018, pp. vii-viii.

173 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, pp. 5–6.

174 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 5.

175 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 5.

– currently totalling approximately 680 MW of new generation proposed to connect within the 2019-24 regulatory control period.[176] This includes Granville Harbour Wind Farm on the West Coast of Tasmania (112 MW), which has a signed connection agreement and has commenced construction but is not yet technically committed. TasNetworks submitted that there are also other significant proposals still at the connection enquiry stage.[177]

In order to accommodate a significant amount of new generation in North West Tasmania and on the West Coast of Tasmania, TasNetworks has proposed this contingent project to augment the existing Palmerston to Sheffield 220 kV corridor resulting in a new double circuit 220 kV transmission line. TasNetworks submitted that this line will avoid the need to constrain generation in order to maintain a secure operating state. The estimated contingent capex for this project is $117 million.[178]

TasNetworks also considers that a second Bass Strait interconnector that connects into the network in North West Tasmania would also require upgrading the existing Palmerston to Sheffield 220 kV corridor with a new double circuit 220 kV transmission line. TasNetworks submitted that this augmentation would be required to address the thermal limitations caused by the additional energy transferred across the second Bass Strait interconnector (for both import and export scenarios), and is independent of the development of new generation.[179] TasNetworks stated that the augmentation of the Palmerston to Sheffield 220 kV transmission corridor has not been included within the scope of the separate Project Marinus contingent project.[180]

Operational constraints

TasNetworks submitted that although operational scenarios leading to system instability of the Palmerston to Sheffield 220kV transmission line are currently rare, they would increase with the connection of the new wind developments in North West Tasmania and on the West Coast of Tasmania, as power flows both in quantum and duration increase through the Palmerston–Sheffield–George Town triangle.[181]

TasNetworks submitted that to maintain a secure operating state in the presence of increasing generation in North West Tasmania and on the West Coast of Tasmania, it has identified two credible options; maintain power system security by invoking a

---

176 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 8.

177 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 6.

178 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 6.

179 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 6.

180 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 20.

181 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

constraint equation or construct a new double circuit Palmerston to Sheffield 220 kV transmission line.[182]

TasNetworks submitted that the first option will avoid the cost of undertaking the augmentation, but customers may suffer economic loss from not having access to this new generation. TasNetworks considers that the second option would avoid the need to introduce a new constraint and therefore would allow additional generation to be dispatched in North West Tasmania and on the West Coast of Tasmania. Where the market benefits from having access to this additional generation exceed the costs of the augmentation, this option will deliver an overall positive net market benefit. TasNetworks considers that construction of the Palmerston to Sheffield 220 kV transmission line is feasible after extension of the existing easements. A detailed options analysis will be undertaken once the project reaches the RIT-T stage and prior to any contingent project application.[183]

Cost estimate

The cost estimate to construct a new double circuit Palmerston to Sheffield 220 kV transmission line of $117 million includes construction of the transmission line alongside the existing line, the required substation work at both Palmerston and Sheffield substations, and all other associated activity.[184]

Benefits of the augmentation

Preliminary analysis has been undertaken by TasNetworks to identify the amount of new generation capacity in North West Tasmania and on the West Coast of Tasmania beyond which the benefits of relieving the constraint equation are expected to be greater than the costs of the augmentation. TasNetworks' analysis identified two key market benefits:[185]

- avoided water or wind spill in North West Tasmania and on the West Coast of Tasmania, which results in avoided dispatch costs; and
- reduction in transmission network losses in Tasmania.

Based on its current analysis, the augmentation becomes economic when approximately 342 MW of new generation connects in North West Tasmania and on the West Coast of Tasmania.[186]

---

[182] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[183] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[184] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[185] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 10.

[186] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 11.

Second Bass Straight interconnector

The Project Marinus PSCR identified a new double circuit Palmerston–Sheffield 220 kV transmission line is likely to be required to support a second interconnector where it connects in North West Tasmania.[187] TasNetworks submitted that this requirement is to support the second interconnector itself (in both import and export scenarios) and is not co-dependent on new generation also being developed. TasNetworks has undertaken preliminary analysis of the effect of a second interconnector that will be analysed in more detail as part of Project Marinus.[188]

Revised trigger events

In our draft decision, we determined that TasNetworks' proposed trigger events for this project were not appropriate as required by the NER. We noted that the proposed trigger events made successful completion of the RIT-T optional. In response to our request that TasNetworks should amend its project trigger events, TasNetworks has proposed the following alternative trigger events for the Palmerston to Sheffield 220 kV Augmentation:[189]

1. A net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect in North West and/or West Coast of Tasmania; and/or
2. A commitment to proceed with a second Bass Strait interconnector connecting in North West Tasmania.
3. Successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T.
4. TasNetworks Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.
5. Clause 3 does not apply if a change occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.

Submissions

The Tasmanian Small Business Council (TSBC) submitted that while the benefits to wind generation proponents are apparent, the impact on Tasmanian electricity consumers is not clear.[190] CCP13 expressed its concern regarding the impact of

---

187 TasNetworks, *Project Marinus Project Specification Consultation Report - Additional interconnection between Victoria and Tasmania*, July 2018, p. 29.

188 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 15.

189 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Palmerston to Sheffield 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2018, p. 20.

190 Tasmanian Small Business Council, *Submission on AER Draft Decision and TasNetworks' Revised Proposals*, January 2019, p. 37.

potential significant expenditure on contingent projects, especially concerning who pays and who benefits.[191]

We acknowledge the TSBC and CCP13 concerns in respect to the magnitude of the costs and allocation of costs and benefits in relation to the cost recovery framework for the Sheffield to Palmerston 220 kV Augmentation project. While the framework for the allocation of costs and benefits is not a matter for this determination, the inclusion of the successful completion of the RIT-T as a project trigger should ensure that the project does not proceed without a thorough assessment of costs and benefits that demonstrates positive net economic benefits to the market from the investment.

The anonymous submission stated that for the Sheffield to Palmerston 220 kV Augmentation project, trigger event one is not independent of trigger event three. That is, if a "net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect" in the project location, it will significantly contribute to "successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T".[192] The purpose of the RIT-T is to identify the credible option that maximises the present value of net economic benefit to all those who produce, consume and transport electricity in the market.[193] We consider that it is therefore reasonable to assume a relationship between a contingent project that provides a net economic benefit and one that satisfies a RIT-T.

Conclusion on Palmerston to Sheffield 220 kV Augmentation

We are satisfied that the proposed contingent project for the Palmerston to Sheffield 220 kV Augmentation satisfies the requirements for contingent projects set out in the NER and may be reasonably required to be undertaken in order to meet the expected demand for transmission services in the 2019-24 regulatory control period.[194] TasNetworks' revised proposal provides support for the probability that the project will occur during the 2019-24 regulatory control period. Our position reflects the following considerations:

- TasNetworks' project needs analysis which identified and substantiated the drivers of the need for augmentation in this location
- plausible high level options for addressing the identified need
- preliminary analysis of the net benefits that would arise from the proposed contingent project, including identification at what new generation load the augmentation would become economic; and
- new load related trigger events that are consistent with the analysis presented.

---

191 Consumer Challenge Panel, CCP Sub-Panel No. 13, *Submission on AER draft decision and TasNetworks' revised proposal*, 11 January 2019, p. 5.

192 Anonymous, *Submission on AER draft decision and TasNetworks' revised proposal*, January 2019, pp. 1–2.

193 NER, cl. 5.16.1(b).

194 NER, cl. 6A.8.1.

We are also satisfied that TasNetworks' proposed triggers for Palmerston to Sheffield 220 kV Augmentation are reasonably specific and capable of objective verification.[195] Broadly, we consider these triggers are appropriate because they are specific and verifiable, in particular:

- the successful completion of a RIT-T process may demonstrate that a project is reasonably necessary in order to achieve the capex objectives and reasonably reflects the capex criteria; and
- a determination by us that the preferred option satisfies the RIT-T will provide greater surety that the cost and scope of the proposed contingent project will satisfy the capex objectives and capex criteria.

TasNetworks' proposed triggers define the particular condition or event which is likely to trigger the need for a network investment.

The successful completion of a RIT-T is an important step to ensure that the capex ultimately required to undertake a contingent project meets an identified need, is required to achieve the capex objectives and reasonably reflects the capex criteria. Completion of the RIT-T process provides evidence of a comprehensive and transparent assessment of credible options which demonstrates that the proposed network investment maximises net economic benefits. We support TasNetworks' revised proposal to include this trigger for all of its proposed contingent projects.

However, we also recognise that in the event that regulatory arrangements may change in the future, including the obligation for TNSPs to conduct a RIT-T or the relationship between the RIT-T and other elements of the transmission network planning and investment approval framework, it is be appropriate to allow for this circumstance in the trigger events. We have therefore accepted TasNetworks' proposal to recognise that a RIT-T would no longer apply as the trigger event where the obligation to undertake a RIT-T in the NER is no longer applicable.

We are satisfied that while the trigger events for the Palmerston to Sheffield 220 kV Augmentation project may occur during the 2019–24 regulatory control period, the inclusion of capex in relation to it (in the total forecast capex) is not appropriate. This is because at this time there is not sufficient certainty regarding either the occurrence of the event during the regulatory control period or the costs associated with the event.[196]

Sheffield to Burnie 220 kV Augmentation

TasNetworks revised proposal includes additional information on its proposed Sheffield to Burnie 220 kV Augmentation contingent project. In particular, TasNetworks submitted a project needs analysis that provided additional details on the need for reinforcing the Sheffield to Burnie 220 kV corridor to facilitate significant generation

[195] NER, cl. 6A.8.1(c)(1).

[196] NER, cl. 6A.8.1(c)(5).

developments in the North West of Tasmania, or to facilitate the connection of a second Bass Strait interconnector into the Burnie area.

Subsequent to the submission of its revised proposal, TasNetworks reviewed its proposed trigger events for the Sheffield to Burnie 220 kV Augmentation and provided an updated project needs analysis that rectified an omission to its proposed trigger events.[197] TasNetworks submitted that the inclusion of the Sheffield to Burnie 220 kV augmentation as a contingent project in its revised regulatory proposal ensures that provision is made to allow this significant infrastructure project to proceed if it is demonstrated to deliver a net economic benefit.[198]

TasNetworks submitted that it has received a number of connection applications from potential new generators in North West Tasmania – currently totalling approximately 565 MW of new generation proposed to connect within the 2019-24 regulatory control period.[199] TasNetworks submitted that there also is significantly more proposed generation still at the connection enquiry stage.[200]

In order to accommodate a significant amount of new generation in North West Tasmania, TasNetworks has proposed this contingent project to augment the existing Sheffield to Burnie 220 kV corridor with a new double circuit 220 kV transmission line. TasNetworks submitted that the augmentation of this transmission corridor will avoid the need to constrain generation in order to maintain power system security in a secure operating state. The estimated cost of this project is $80 million.[201]

TasNetworks also considers that a second Bass Strait interconnector that connects into the network in North West Tasmania would also require upgrading the existing Sheffield to Burnie 220 kV corridor with a new double circuit 220 kV transmission line. TasNetworks submitted that this augmentation would be required to address the thermal limitations caused by the additional energy transferred across the second Bass Strait interconnector (for both import and export scenarios), and is independent of the development of new generation.[202] TasNetworks noted that the augmentation of the Sheffield to Burnie 220 kV transmission corridor has not been included within the scope of the separate Project Marinus contingent project.[203]

---

197 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 5.

198 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 5.

199 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, pp. 7-8.

200 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 7.

201 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 6.

202 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 6.

203 TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 15.

Operational constraints

TasNetworks submitted that dynamic analysis carried out using generic wind farm models suggests that the voltage in North West Tasmania could collapse for the loss of the single Sheffield–Burnie 220 kV transmission circuit once the new generation connecting at 220 kV at Burnie Substation exceeds 135 MW.[204] TasNetworks submitted that to maintain the power system security requirements as stipulated by the NER with increasing generation in North West Tasmania, it has identified two credible options: maintain power system security by invoking a constraint equation and construct a new double circuit Sheffield to Burnie 220 kV transmission line.[205]

TasNetworks submitted that the first option will avoid the cost of undertaking the augmentation, but customers may suffer economic loss from not having access to this new generation. TasNetworks considers that the second option would avoid the need to introduce a new constraint and therefore would allow additional generation to be dispatched in North West Tasmania. TasNetworks submitted that where the market benefits from having access to this additional generation exceed the costs of the augmentation, this option will deliver an overall positive net market benefit. TasNetworks considers that construction of the Sheffield to Burnie 220 kV transmission line is feasible after extension of the existing easements. TasNetworks submitted that a detailed options analysis will be undertaken once the project reaches the RIT-T stage and prior to any contingent project application.[206]

Cost estimate

The cost estimate to construct a new double circuit Sheffield to Burnie 220 kV transmission line of $80 million includes construction of the transmission line alongside the existing line, the required substation work at both Sheffield and Burnie substations, and all other associated activity.[207]

Benefits of the augmentation

Preliminary analysis has been undertaken by TasNetworks to identify the amount of new generation capacity that connects at or west of Burnie substation in North West Tasmania beyond which the benefits of relieving the constraint equation are expected

---

[204] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 8.

[205] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 201, p. 8.

[206] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[207] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

to be greater than the costs of the augmentation.[208] TasNetworks' analysis identified two key market benefits:[209]

- avoided wind spill in North West Tasmania, which results in avoided dispatch costs
- reduction in transmission network losses in Tasmania.

Based on its current analysis, the augmentation becomes economic when approximately 277 MW of new generation connects to or west of Burnie substation.[210]

Second Bass Straight interconnector

TasNetworks submitted that a second Bass Strait interconnector would require augmentation of the Sheffield to Burnie 220 kV transmission corridor. A decision to proceed with a second interconnector in the Burnie area of North West Tasmania has been included as a separate trigger for this contingent project. TasNetworks noted that the augmentation of the Sheffield to Burnie 220 kV transmission corridor has not been included within the scope of the separate Project Marinus contingent project.[211]

Updated trigger events

In our draft decision, we determined that TasNetworks' proposed trigger events in relation to the proposed contingent projects were not appropriate as required by the NER. We noted that the proposed trigger events made successful completion of the RIT-T optional. In response to our request that TasNetworks should amend its project trigger events, TasNetworks has proposed the following alternative trigger events for the Sheffield to Burnie 220 kV Augmentation:[212]

1. A net economic benefit can be obtained by increasing transmission capacity for low cost generation committed to connect at or west of Burnie Substation in North West Tasmania; and/or
2. A commitment to proceed with a second Bass Strait interconnector connecting at 220 kV at or west of Burnie Substation.
3. Successful completion of a RIT-T and a determination by the AER that the proposed investment satisfies the RIT-T.
4. TasNetworks Board commitment to proceed with the project subject to the AER amending the revenue determination pursuant to the Rules.

---

[208] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[209] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 9.

[210] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 10.

[211] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 15.

[212] TasNetworks, Revised Regulatory Proposal, *Contingent Project - Sheffield to Burnie 220 kV augmentation, TasNetworks Project Needs Analysis*, 5 February 2019, p. 16.

5. Clause (c) does not apply if a change occurs that allows the inclusion of the proposed investment in TasNetworks' maximum allowed revenue even if a RIT-T is not carried out.

Submissions

The submissions received, and our responses, as summarised in relation to the Palmerston to Sheffield 220 kV Augmentation project above are also relevant to the Sheffield to Burnie 220 kV Augmentation project, but are not repeated here.

Conclusion on Sheffield to Burnie 220 kV Augmentation

We are satisfied that the proposed contingent project for the Sheffield to Burnie 220 kV Augmentation satisfies the requirements for contingent projects in the NER and may be reasonably required to be undertaken in order to meet the expected demand for transmission services over the 2019-24 regulatory control period.[213] TasNetworks' revised proposal provides support for the probability that the project will occur during the 2019-24 regulatory control period. Our position reflects the following considerations:

- TasNetworks' project needs analysis which identified and substantiated the drivers of the need for augmentation in this location
- plausible high level options for addressing the identified need
- preliminary analysis of the net benefits that would arise from the proposed contingent project, including identification at what new generation load the augmentation would become economic; and
- new load related trigger events that are consistent with the analysis presented.

We are also satisfied that TasNetworks' proposed triggers for Sheffield to Burnie 220 kV Augmentation are reasonably specific and capable of objective verification.[214] Broadly, we consider these triggers are appropriate because they are specific and verifiable, in particular:

- the successful completion of a RIT-T process may demonstrate that a project is reasonably necessary in order to achieve the capex objectives and reasonably reflects the capex criteria; and
- a determination by us that the preferred option satisfies the RIT-T will provide greater surety that the cost and scope of the proposed contingent project will satisfy the capex objectives and capex criteria

The successful completion of a RIT-T is an important step to ensure that the capex ultimately required to undertake a contingent project meets an identified need, is required to achieve the capex objectives and reasonably reflects the capex criteria.

---

[213] NER, cl. 6A.8.1.

[214] NER, cl. 6A.8.1(c)(1).

Completion of the RIT-T process provides evidence of a comprehensive and transparent assessment of credible options which demonstrates that the proposed network investment maximises net economic benefits. We support TasNetworks' revised proposal to include this trigger for all of its proposed contingent projects.

However, we also recognise that in the event that regulatory arrangements may change in the future, including the obligation for TNSPs to conduct a RIT-T or the relationship between the RIT-T and other elements of the transmission network planning and investment approval framework, it is be appropriate to allow for this circumstance in the trigger events. We have therefore accepted TasNetworks' proposal to recognise that a RIT-T would no longer apply as the trigger event where the obligation to undertake a RIT-T in the NER is no longer applicable.

We are satisfied that while the trigger events for the Sheffield to Burnie 220 kV Augmentation may occur during the 2019–24 regulatory control period, the inclusion of capex in relation to it (in the total forecast capex) is not appropriate. This is because there is not sufficient certainty regarding either the occurrence of the event during the regulatory control period or the costs associated with the event.[215]

[215] NER, cl. 6A.8.1(c)(5).