Goanna Energy Consulting Pty Ltd

Report for

Tasmanian Small Business Council
Uniting Small Business

A Consumer-focused Assessment of the Regulatory Investment Test – Transmission (RIT-T) and Its Application to *Marinus link*

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LIMITATION OF ANALYSIS

The analysis provided has several inherent limitations, including but not limited to the following:

- It is limited to a consumer-focused assessment of the Regulatory Investment Test – Transmission (RIT-T) and no other matters have been considered.
- It assesses the RIT-T with reference to a single transmission investment proposal, Marinus link, and no other RIT-T projects have been considered.
- The use of the Marinus link for the above purpose is based solely on material that was publicly available at the time of writing.

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EXECUTIVE SUMMARY – RECOMMENDATIONS AND FINDINGS

This report provides a consumer-focused assessment of the Regulatory Investment Test – Transmission (RIT-T) and uses Marinus link, which is currently undergoing a RIT-T assessment, as a reference point for that assessment.

The assessment has been undertaken at a time of significant change as a result of the transition that is occurring in the National Electricity Market (NEM) from a market dominated by thermal generation (black coal, brown coal and gas) to one where intermittent renewable generation, storage technologies (pumped hydro and batteries) and distributed technologies (such as roof top solar) are increasing their role in the market. Such a transition will require a range of solutions to achieve a successful transition, with a range of activity currently underway, overseen by the Energy Security Board (ESB), to ensure electricity is produced and delivered to where it is needed, when it is needed.

The pace of change in the NEM, and the associated activities and work programs being undertaken by the COAG Energy Council, Energy Security Board (ESB), the Australian Energy Market Commission (AEMC), the Australian Energy Market Operator (AEMO), the Australian Energy Regulator (AER) and other agencies and organisations, present a challenge to assessments such as this. Accordingly, readers should note that this document uses only material publicly available as at 31st October 2019. Any announcements or material released after that date have not been taken into account in preparing this report.

The Tasmanian Small Business Council is currently conducting a broader review of Marinus link - "A consumer perspective on interconnector and transmission investment – Marinus link (case study)", to be completed by March 2020. This will include an assessment of relevant information that becomes available after the end of October 2019.

This assessment of the RIT-T process provides input to and informs the thinking of that broader review.

Two activities are of particular relevance to the RIT-T and to Marinus link, being the development AEMO's Integrated System Plan (ISP) and the ESB's review of the NEM and subsequent advice to the COAG Energy Council on a long term, fit-for-purpose market framework to support reliability, modifying the NEM as necessary to meet the needs of future diverse sources of non-dispatchable generation and flexible resources including demand side response, storage and distributed energy resource participation.

At present, there are at least four new or upgraded interconnector projects under active consideration in accordance with AEMO's ISP worth an estimated $3.2 - $7.2 billion and slated for construction over the period to the mid-2030s. Marinus Link accounts for between 19 and 49 per cent of the total cost of these links.

The changes in the NEM noted above mean that consumers face the very real risk that poor investment decisions, in the absence of well coordinated and well considered policy guidance, will result in consumers directly bearing the cost of those decisions.

The 2017 Finkel Review (a blueprint for the future of the NEM) made 50 recommendations, two of which are perhaps the most relevant to consideration of the RIT-T, being the AEMO's Integrated System Plan (ISP) responding to recommendation 5.1 of the Review and the establishment of Energy Security Board (ESB) to coordinate the implementation of the reform blueprint responding to recommendation 7.2.

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The ISP (Insights Paper 2019) introduced the term "least regrets" investment, which recognizes the degree of uncertainty the NEM is facing, and is of particular relevance to the RIT-T, as is the commencement of a project by the ESB to address all aspects of the energy supply chain – the interface with consumers, small scale and utility scale generation, distribution, and transmission and by early 2020, and identify potential fit-for-purpose market frameworks for evaluation against each other and the NEM design.

Given the above, Goanna Energy Consulting Pty Ltd (Goanna) was commissioned by the Tasmanian Small Business Council (TSBC) to provide this (limited) assessment of the RIT-T.

We conclude that the RIT-T in its current form is adequate for the assessment of "traditional" network assets such as a zone sub station required to meet expected load growth, or a new transmission line required to overcome congestion on a particular network. There are improvements which could be made which are addressed in our findings and recommendations.

We conclude that the RIT-T in its current form is not adequate for the assessment of proposed new interconnectors, which represent one possible solution to a range of possible solutions to address the rapid and substantial changes to the NEM associated with Australia's transition from fossil fuel generation to renewable generation.

We highlight the risks to consumers of progressing with the investment in or evaluation of very expensive interconnectors, which are part of a future scenario as envisaged by AEMO, ahead of the ESB's assessment of future scenarios for the NEM design/framework, with a key deliverable of that process being to either recommend a package of measures to adapt the existing market design or recommend alternative market designs.

We contend that Tasmania should not pay higher electricity (transmission) charges in order to provide surety of supply and/or lower prices in mainland jurisdictions, which would be the case under the current RIT-T, and, noting the move by AEMO to incorporate "least-regrets" decision making into its ISP, the current RIT-T cost benefit analysis is inadequate given the future uncertainties surrounding the NEM and needs to include additional tools, potentially regrets analysis.

The suggested changes to the RIT-T to address the inadequacies we observe are included in our findings and recommendations, and include the following in relation to the assessment of any particular interconnector:

- A requirement to undertake additional analysis, potentially regrets analysis, as part of a RIT-T.
- A requirement to explicitly consider the economic impact of potential changes to the NEM design/framework, which are part of the ESB's consideration of future scenarios beyond 2025;
- A requirement to explicitly consider the economic impact of the operation of other proposed interconnectors;
- An expansion of section 3.1 of the RIT-T Guidelines to clarify the definition of "Identified Need" and a requirement for consumer endorsement of the Identified Need for the interconnector;
- The establishment of a "Consumer Forum" to negotiate relevant outcomes with the Proponent (including the definition of Identified Need);
- The requirement to report on expected regional outcomes, including NPV and pricing;

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- The inclusion of a test or trigger point based on an assessment of the risk of the interconnector becoming redundant or underutilised;
- The identification of all parties who will benefit from interconnector investments, in all applicable jurisdictions of the NEM, the value of the benefits, and alignment of cost allocations with those benefits;
- Inclusion of a comprehensive consumer risk assessment, including mitigating actions. The risk assessment would be one of the components of the RIT-T requiring agreement between the Consumer Forum and the Proponent.

Our report provides 10 recommendations and 81 findings.

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RECOMMENDATIONS

Context for the RIT-T

Recommendation 1

The RIT-T should include additional tools that help to minimise risks to consumers from poor decision making based on a RIT-T analysis, including (potentially) a "least regrets" analysis. Specifically, the scale and cost to consumers of any unnecessary investment under one future scenario should be identified in a way which can be directly compared to the cost of failure to invest under a different future scenario. This should be examined more thoroughly to determine its usefulness to electricity consumers in full consultation with them.

Recommendation 2

Any RIT-T evaluation of an interconnector (including Marinus Link) should incorporate explicit consideration of the possible impacts of a revision to the NEM framework/design, and an evaluation of the economic impact of other interconnectors which are or proposed but yet to be constructed. That consideration should include an assessment of the probability of achieving any projected cash flows included in the assessment of net benefits.

Identified Need

Recommendation 3

The AER should revisit the RIT-T Guidelines and expand Section 3.1 to provide guidance specifically for interconnector projects, in particular expand on the current reference to "An identified need may consist of an increase in the sum of consumer and producer surplus in the NEM", supported with relevant examples.

Recommendation 4

The AER should revisit the RIT-T Guidelines and mandate that an appropriate consumer representative body is established ahead of any RIT-T process and, amongst other roles, that body must endorse the Identified Need of the proposed project.

Credible options

Recommendation 5.

Assessment of credible options identified as part of the ESB's Post 2025 Market Design Project should precede the consideration, via the RIT-T process, of any given interconnector, including Marinus link.

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Recommendation 6

The RIT-T should be amended to include a formal requirement for RIT-T proponents to report on regional consumer impacts where these are material, and with interconnectors, regional NPVs and projected price impacts across broad customer classes.

Market Benefits

Recommendation 7

The RIT-T as it is applied to interconnectors should be modified to provide a test or trigger point based on an assessment of the risk of the interconnector becoming redundant or underutilised and therefore not delivering the expected market benefits , under a range of plausible scenarios, and the associated need for governments to carry that risk rather than consumers.

Transmission Pricing

Recommendation 8

The ESB should undertake an extensive review of the RIT-T and the provisions of Chapter 6A of the NER and effect the necessary Rule changes to require that the RIT-T clearly identifies all parties who will benefit from interconnector investments, in all applicable jurisdictions of the NEM, the value of those benefits, and that the resulting cost allocations and changes to transmission prices are directly aligned to those benefits.

Consumer risks

Recommendation 9

The RIT-T be amended to require the inclusion of a consumer comprehensive risk assessment, including mitigating actions. The risk assessment would be one of the components of the RIT-T requiring agreement between the Consumer Forum and the Proponent.

Current RIT-T process and Consumer Engagement

Recommendation 10

The requirement for consumer engagement in the RIT-T process should be significantly strengthened in line with the mechanisms outlined in the New Reg process, incorporating the establishment of a Consumer Forum noted at recommendation 4 to negotiate key inputs and outcomes from the conducting of any RIT-T.

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FINDINGS SUMMARY

Context for the RIT-T

- Rapid changes taking place in the NEM and the emergence of a range of plausible future scenarios to the shape and functioning of the NEM mean that consumers face the very real risk that poor investment decisions, in the absence of well coordinated and well considered policy guidance, will result in consumers directly bearing the cost of those decisions.

Identified Need

- Establishing an Identified Need is a critical strategic starting point for projects being assessed under the RIT-T so that consumers can understand, from the outset, why the project would have value for them.
- We agree with the AER that proponents should both set out an Identified Need as a proposal to consumers and engage with consumers from the outset, however the AER's definition of Identified Need at section 3.1 of the December 2018 Guidelines is far from clear. The fact that TasNetworks consider that their Identified Need for Marinus link meets the requirements of the Guidelines is testament to that lack of clarity.
- TasNetworks' PSCR Identified Need for Marinus link does not meet the AER's requirements and should be redefined in its PADR so that it is more specific and meaningful to consumers.

Credible options

- The development of Credible Options as part of the application of the RIT-T should provide assurance to consumers that transmission investments will be the lowest cost option to achieve the Identified Need.
- The identification of credible options is dependent on the Identified Need. A lack of clarity in the Identified Need, in particular one which has not been endorsed by an appropriate consumer body, has the potential to constrain the examination of credible options.
- The ISP assumes that "energy interchange" will be achieved by the construction of electricity interconnectors and does not contemplate alternatives to large scale storage and interconnectors as a mechanism to complement renewable energy.
- Those alternatives could conceivably include, for example but not limited to: a much greater level of diversified (distributed) energy than the ISP contemplates; greater use of existing generation gas plants and gas networks than the ISP; greater demand response; the development of small scale nuclear generation plant and the production, storage and transport of hydrogen or hydrogen based products.
- The selection of Credible Options is in the hands of the project proponent, who could well have suppressed incentives to include all Credible Options, especially if such options involve non-network solutions to the Identified Need or options not developed by the proponent itself.
- The requirement that Credible Options be commercially and technically feasible is important but does not guarantee the inclusion of all feasible Credible Options.
- The RIT-T process is also responsive rather than pro-active, which can act to limit the discovery of other Credible Options.
- Marinus link provides a case-in-point as TasNetworks has, to date, only identified two Credible Options to satisfy the RIT-T, both of which it would develop.

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- The AER's position that the number of Credible Options should be proportional to the costs of a project is at odds with TasNetworks' consideration of only two Credible Options for Marinus link to date. TasNetworks should either increase its range of options, or explain in detail why there are no other feasible Credible Options.

Selection of Inputs & Assumptions

- It should generally work to the benefit of consumers that the AER now requires that RIT-T proponents use information from the ISP as default and starting points in setting inputs and assumptions for application of the RIT-T. This will support consistency across projects and transparency in assessments.
- The AER's approach to departures is also appropriate, noting the emphasis on "evidence and good reasons" to support alternative sources.
- Nevertheless, consumers should have the opportunity to satisfy themselves that the inputs and assumptions chosen for a project are robust and fit-for-purpose. Recommendation 4 above proposes a mechanism to ensure that occurs.
- The AER's approach to the choice of discount rates and VCR is also acceptable, including the methodologies, values, use of independent sources, and use of scenario and sensitivity testing.
- The assumptions included in the IFR for Marinus link, whilst generally consistent with the ISP, contain a number of departures from AEMO's neutral scenario, some of which we query above.
- The 6 per cent discount rate applied in the IFR is consistent with recent RIT-Ts although, at this stage, no sensitivities have been carried out.
- TasNetworks should re-examine the VCR values for Marinus link in developing its PADR and (if available and supported by consumers) rely on the forthcoming AER values.

The Net Market Benefits Test

- The application of the RIT-T and its net market benefits test provides consumers with some reassurance that transmission investments should deliver some economic benefits, but this is by no means certain.
- The test lacks full independence and impartiality, albeit tempered by opportunities for public and consumer scrutiny, but is still susceptible to manipulation by proponents.
- The inclusion of producer, as well as, consumer surplus in the measurement of market benefits, when combined with the existence of monopoly and market power in the NEM, can preclude consumers from benefiting fully from transmission investments with positive market benefits (NPVs).
- Marinus link provides a case-in-point, where the need to show positive net market benefits via the RIT-T process is critical to project approval which is to the benefit of consumers but where RIT-T shortcomings are also a potential Achilles heel with respect to issues such as the vested interest of the proponent and market power as a constraint on passing through full benefits to consumers.
- Under the current RIT-T guidelines and cost allocation under the National Electricity Rules, not all parties who benefit from interconnector investments will carry a share of the associated costs.

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Project Costs

- Project costs will have a significant impact on the calculation of net market benefits for large costly projects such as Marinus link. Consumers need to be provided with project cost estimates that are as accurate and robust as possible.
- Unfortunately, but not unusually, there is a tendency for RIT-T project costs to escalate over time as a project proceeds from concept to approval and then construction. If costs are not accurately expressed at the PADR and PACR stages, this will impact the degree of scrutiny a project is subjected to and the calculation of net market benefits (NPV). If costs increase significantly after approval to commence construction is given, it is possible that a project showing positive net market benefits could turn negative with consumers left to carry the resulting risks and extra costs.
- Capital costs are particularly important for most RIT-T projects and show an unfortunate tendency to increase over time. For Marinus link, capital expenditure accounts for over 80 per cent of the present value of project costs. They are also front ended with consumers paying for them in advance of the project benefits.
- When assessing project costs, consumers face a knowledge and information disadvantage compared to proponents. This impacts on the scrutiny they can apply to a project.
- The application of probability weightings to costs can help to demonstrate the impact of some project risk and cost uncertainty on the RIT-T outcome, but cannot eliminate them.
- While cost estimation accuracy should improve as the RIT-T progresses, with TasNetworks already having indicated as much in the IFR, cost estimates will likely remain an area of significant risk for consumers impacted by Marinus link. Some indications of cost escalation have already emerged.
- Consumers should ensure there is close scrutiny of the costs of Marinus link with the next opportunity being the PADR.

Market Benefits

- Benefits estimation is even more fraught and subject to uncertainty for consumers than costs.
- The AER expects that all market benefits will be included unless they are not material and any additional ones require AER approval, affording consumers some comfort that included market benefits are appropriate.
- The AER recommends using probability weightings where benefits are large and sufficiently uncertain. Whilst we support this approach, it will not completely overcome the impact of uncertainty on consumers given the rapidly evolving nature of the NEM and the changing roles of all market participants.
- Consistent with standard cost-benefit practice a RIT-T must include a range of credible scenarios to test the ranking of options and sensitivities to test the scenarios. This affords a degree of protection for consumers that RIT-T's are robust. It is however essential that this requirement is met.
- However, the flip side is that this adds complexity to the RIT-T which may disadvantage consumer understanding. Simplification of messages by proponents can help to offset this.
- The IFR for Marinus link only assesses one credible scenario. It includes some but not a full range of sensitivity tests. Moreover, it models the impact of all likely material benefits. This is not a situation which is acceptable to consumers.
- Given the rapid transformation of the NEM which is currently taking place; the range of possible future scenarios for the NEM and the potential changes to the role of

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interconnectors, the risk that consumers will bear the risk of expensive, long life assets becoming redundant is large.

Market Modelling Approach and Results

- As the PADR is yet to be completed, the only available contemporary modelling information for Marinus link is contained in the IFR.
- The market modelling undertaken for the IFR is consistent with the approach required by the RIT-T, but not as detailed as required for the PADR. This provides consumers with some useful preliminary information about the market impacts of Marinus link, but additional work will be needed for the PADR.
- We accept that the EY model can model the market benefits of Marinus link but note that it is currently unable to estimate some benefits.
- We have reservations about the justification for and likelihood of the high impact sensitivities (High Emission Reduction and Loss of 300 MW Load) used to test the sensitivities of the market benefits.
- There is a potential concern that estimating some market benefits outside the main model could led to issues such as estimation differences, inconsistencies or overlap. TasNetworks should ensure that the use of different estimation techniques does not interfere with the robust estimation of market benefits in the Marinus link RIT-T.
- The IFR presents estimates for avoided hydro spill, resilience benefits, reduced need for ancillary services and avoided network upgrades. Their inclusion is consistent with the RIT-T, but estimation outside the main model, by using a Hydro Tasmania model (for avoided spill) and (in some cases) internal TasNetworks estimates is not sufficiently independent to provide consumers with the requisite degree of quality assurance.
- A range of other potential market benefits have not been quantified in the IFR – power system security, competition benefits and option value. We note TasNetworks' intention to further investigate these compared to its initial view that these benefits were too small to include. If they are to be included, robust and independent estimates will need to be made to assure consumers of their value.
- The results of the net market benefit analysis shown in the IFR strongly suggest that, on the basis of current evidence, the case for building Marinus Link before the mid-2030s (a proposition advanced by TasNetworks) is weak and not very likely to benefit electricity consumers. This suggests that consumer support should be withheld for the time being.

Option Value

- Option value can be useful for customers as it essentially allows costs to be deferred until the option is realised (sometime in the future) and, for the time being at least, associated transmission charges will be lower as result.
- However, there are risks associated with invoking an Option Value, such that costs may increase unexpectedly in the future, or demand may increase faster than expected raising the possibility of price pressures or load shedding.
- TasNetworks is considering the use of an Option Value in the RIT-T for Marinus link that involves deferring construction of one of the two 600 MW cables used in its 1,200 MW option for two to three years. This could benefit consumers, albeit with some risks of exposure to higher future costs or tight supply situations.

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Inter-regional Impacts

- Interconnection of the NEM's regions is an important issue for consumers given that it impacts interregional trade, prices, reliability and security of supply.
- The RIT-T adopts an approach to inter-regional market benefits that ensures these are taken into account, assuming proponents closely follow the AER Guideline.
- It would be preferable for consumers (i.e., more transparent and informative) if inter-regional impacts were formally required to be separated in the RIT-T as market benefits have been in the EY modelling for Marinus link.
- However, the generation transition taking place in the NEM is driving a need to consider multiple interconnector and transmission projects more-or-less simultaneously and this is challenging the RIT-T. There is a risk that individual projects being considered by individual proponents will not lead to optimal outcomes for consumers, notwithstanding the partial circuit-breaker provided by the ISP.
- Consumers should be able to take some comfort from the fact that TasNetworks is closely following the AER Guideline in how it is approaching the inclusion of inter-regional market benefits in the RIT-T for Marinus link, although further steps are needed in the PADR.
- It is beyond the scope of this report to opine on whether the ISP should replace the RIT-T in order to provide a more holistic consideration of NEM transmission investments so that there is a more integrated approach to transmission investments. However, these are matters that should be considered further.

Regional Impacts

- Consumers should be presented with an analysis of the regional impacts of RIT-T projects given that they will be asked to shoulder much of the associated costs in regulated transmission charges, but this is not a requirement under the RIT-T.
- Helpfully, some RIT-T proponents have themselves reported some regional impacts, such as average price impacts, which consumers should welcome.
- There should be a formal requirement for RIT-T proponents to report on regional consumer impacts where these are material, e.g., with interconnectors, especially regional NPVs and prices.
- Marinus link is a case in point where the regional market benefits vary widely between regions, with Victorian consumers standing to gain the most and Tasmanian consumers standing to lose the most. This has prompted the Tasmanian Government and TasNetworks to only support Marinus Link if this issue is addressed.

Transmission Prices

- The cost allocation of RIT-T projects must fairly and reasonably reflect the expected benefits to consumers and must recognise the risks to consumers of the unbalanced timing of project costs and market benefits.
- The current transmission pricing framework results in a serious disconnect where the vast majority of interconnector and transmission shared network revenue allocated to a NEM region are recovered from customers within that region, even where the assets are principally used to move energy to other regions and where market benefits reflect this.
- This is precisely what is expected to occur with Marinus Link, with Tasmanian consumers paying a significant share of costs but deriving few market benefits,

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Victorian consumers paying some costs but benefiting significantly more, and NSW, Qld and SA consumers benefiting but paying none of the costs.

- Such a disconnect is not acceptable to consumers and a revised pricing mechanism is necessary to achieve equity in cost allocation, including the allocation of costs to generators utilising and benefiting from Marinus Link and interconnectors in general.
- There is a clear need within the RIT-T process to identify who will be the beneficiaries of any interconnector investment, and the relative value of the benefits derived, with a corresponding need to ensure that all beneficiaries pay their appropriate share of the costs of the investment, including ongoing operating costs.

Consumer Risks

- Given the changes taking place in the NEM, as outlined elsewhere in this report, the risks to consumers associated with interconnector investments are large in terms of both the scale of the investment involved and the probability of the investment failing to deliver the expected benefits.
- The risks include but are not limited to the potential for underutilisation and asset stranding, and imperfections or interventions in retail and generation competition acting as a constraint on the pass through of RIT-T market benefits. These risks can impose material costs on consumers, including higher transmission or wholesale prices than anticipated in a RIT-T.
- It would be advantageous to consumers if there was a requirement on project proponents to include a Consumer Risk Assessment in the RIT-T (especially for large projects).

Non-market Benefits

- The RIT-T excludes non-market (or external) benefits as these are outside the assessment of net market benefits in the electricity market that takes place under the RIT-T. This provides a level of protection to electricity consumers that benefits that have no bearing on them will not enter the RIT-T calculus and 'muddy the waters'. If they did enter the RIT-T, consumers could be forced to pay for benefits from which they derive no actual benefit as market customers.
- TasNetworks has separated the computation of market benefits from non-market benefits in the IFR for Marinus link and acted in accordance with the RIT-T. This separation adds transparency to the estimation of market versus non-market benefits.

Merchant and Hybrid Interconnector Options

- Merchant links do not come within the purview of the RIT-T, but do raise potential consumer issues that advocates should monitor closely, including the consideration of which model will provide the best outcomes for consumers.
- No hybrid links currently exist in the NEM, but they are emerging in the European Union and United Kingdom. Presently the RIT-T would need to be applied to the regulated portion of such a link and Rule changes may be needed. Consumer advocates should maintain a watch on developments in this space.
- Both merchant and hybrid options are mentioned in the Marinus link IFR as possible approaches to adopt and are expected to undergo further assessment by TasNetworks.

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External Funding

- Where external funding is provided to support a project, it is important that the RIT-T treat this in a way that enhances the economic welfare of the NEM and electricity consumers.
- The treatment of funds flowing from one NEM Participant to another is treated as a voluntary wealth transfer and so does not enter into the calculation of net market benefits under the RIT-T. This is based on sound cost-benefit analysis practice and affords a level of protection to consumers that the economic case for a project is not being overstated.
- If external funds are provided by non-participants (Other Parties), then project costs are offset accordingly whilst market benefits remain unaffected, with an increase in net market benefits. Consumers should benefit from such an outcome.
- As the most likely source of non-participant funding is government, there is a separate issue, outside the RIT-T regarding whether taxpayers are also beneficiaries from external funding.

Current RIT-T Process and Consumer Engagement

- Consultation steps in the RIT-T process allow for significant response periods, which can assist consumers to participate under the current "consult-and-respond" mechanisms, especially if they are information and resource constrained.
- The current process is transparent and supports the robust application of the test.
- More could be done to recognise the strong interest of consumers in the process, such as the strengthening the requirement to provide consumers (who have registered an interest) with reports; identifying more ways to support consumer understanding of what are, for them, complex issues; and it would improve the RIT-T if there was a requirement on proponents to show how they have responded to consumer feedback and how this has changed the RIT-T assessment.
- Marinus link has proceeded only a short way along the RIT-T process, so it is difficult to comment definitively on how well TasNetworks has consulted and engaged with consumers. Consultation to date has followed and, in some ways, exceeded the RIT-T process with indications that TasNetworks has developed a comprehensive strategy for consumer consultation and engagement. Publication of the PADR will provide further clarification.
- We are of the view however that given the circumstances which prevail in the NEM at present, the RIT-T requirements need to be significantly enhanced to ensure that consumers are satisfied that the scope of the matters considered during the conduct of a RIT-T are in their best interests, the inputs and options being considered are appropriate and all outcomes and conclusions similarly reflect the best interests of consumers.
- For interconnectors, the term "consumers" includes all consumers who will be impacted by the potential investment, across all affected jurisdictions.

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GLOSSARY

ACCC	Australian Competition and Consumer Commission
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
Capex	Capital Expenditure
CER	Clean Energy Regulator
COAG	Council of Australian Governments
COGATI	Coordination of Generation and Transmission Investment Review
ECA	Energy Consumers Australia
ENA	Energy Networks Australia
ESB	Energy Security Board
EY	Ernst and Young
HVDC	High Voltage Direct Current
IFR	Initial Feasibility Report
ISP	Integrated System Plan
NEM	National Energy Market
NTNDP	National Transmission Network Development Plan
OFGEM	Office of Gas and Electricity Markets (UK)
Opex	Operating Expenditure
NPV	Net Present Value
PACR	Project Assessment Conclusions Report
PADR	Project Assessment Draft Report
PSCR	Project Specification & Consultation Report
RAB	Regulated Asset Base
RIT	Regulatory Investment Test
RIT-D	Regulatory Investment Test for Distribution
RIT-T	Regulatory Investment Test for Transmission
TNSP	Transmission Network Service Provider
VSC	Voltage Source Converter

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1 INTRODUCTION

This report provides a consumer-focused assessment of the Regulatory Investment Test – Transmission (RIT-T) and uses Marinus link, which is currently undergoing a RIT-T assessment, as a reference point for that assessment.

It is timely to undertake such an assessment as there is renewed interest in the RIT-T, due particularly to the transition that is occurring in the National Electricity Market (NEM) from a market with a generation fleet dominated by thermal generation (black coal, brown coal and gas) to one where intermittent renewable generation (especially wind and solar), storage technologies (pumped hydro and batteries) and distributed technologies (such as roof top solar) are increasing their role in the market and will continue to do so. At the same time, there are concomitant changes emerging on the demand side, with the installation of smart meters (a driver for more demand side response), smarter appliances capable of external control through the use of smart devices and apps, and growth expected in the use of electric vehicles in future. These existing and potential changes are challenging the conventional use of electricity grids, requiring old generation to be retired and new generation to be built (in the same or different locations). As a result, there is pressure emerging to update the grid with new or upgraded transmission assets, but existing grid infrastructure is also facing the prospect of less use in future unless new sources of supply can be found. A critical change is that new generation capacity may be established in different parts of the NEM compared to the location of existing generation, with a resulting need for more transmission and interconnection. Another is that multiple projects are under active consideration at the same time, which may be substitutable for, or complementary to, one another.

At present, there are at least four new or upgraded interconnector projects under active consideration in the NEM worth an estimated $3.2-$7.2billion and slated for construction over the period to the mid-2030s. Marinus Link accounts for between 19 and 49 per cent of the total cost of these links. Additional interconnector investments will be needed as the NEM transitions.

The costs of Marinus Link are very large and (under current pricing arrangements) would be charged to consumers in the form of transmission charges if approved as a regulated asset. Naturally, affected consumers will wish to know that the investments made are money well spent, that the most beneficial projects will occur first, that the timing of construction is optimal and that they will pay for these assets in proportion to the benefits they obtain. As a result, there is considerable consumer interest in – and advocacy on – interconnector projects, including Marinus Link.

1.1 THE CONTEXT FOR THE RIT-T

The changes noted above mean that consumers face the very real risk that poor investment decisions, in the absence of well coordinated and well considered policy guidance, will result in consumers directly bearing the cost of those decisions.

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The 2017 Finkel Review[1] (a blueprint for the future of the NEM) made 50 recommendations, two of which are perhaps the most relevant to consideration of the RIT-T:

> *Recommendation 5.1* By mid-2018, the Australian Energy Market Operator, supported by transmission network service providers and relevant stakeholders, should develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market; and
>
> *Recommendation 7.2* The COAG Energy Council should immediately agree to establish an Energy Security Board to have responsibility for the implementation of the blueprint and for providing whole-of-system oversight for energy security and reliability.

1.1.1 The role of the ISP relative to the RIT-T

AEMO's first Integrated System Plan[2] responded to recommendation 5.1 of the Finkel Review, and as part of a portfolio approach proposed a series of investments in transmission assets, in order of priority, represented in three groups, necessary to ensure "*the transition [*from thermal to renewable generation*] can occur in a much more orderly manner, reduce the risk of failure from uncontrollable and unplanned events, and help ensure the public interest in reliable, affordable energy is met"*[3]*.*

Reference to group two projects[4] *("action should be taken now, to initiate work on projects for implementation by the mid-2020s")* included the statement "*AEMO will coordinate work with project proponents on a design for transmission networks to support strategic storage initiatives (Snowy 2.0 and Battery of the Nation*)".

The Marinus Link project was part of the transmission networks proposed as group two projects on the basis of – "*Increase in transfer capacity between Victoria and Tasmania by approximately 700 MW"*[5]*,* along with two other interconnector investments, each of which would be subject to the RIT-T, and the South Australia-NSW interconnector (River Link) which was then undoing RIT-T assessment.

The 2019 update of the ISP[6] focused on the role of pumped hydro energy storage (PHES) and the related role of transmission assets. AEMO's assessment of the necessary transmission investment is shown at figure 1 below, and incorporates a significantly expanded role for Marinus Link:

[1] Independent Review into the Future Security of the National Electricity Market Blueprint for the Future June 2017
[2] Integrated System Plan, July 2018
[3] Ibid, page 3
[4] Ibid, page 9
[5] Ibid, page 87
[6] Building power system resilience with pumped hydro energy storage, ISP Insights, July 2019

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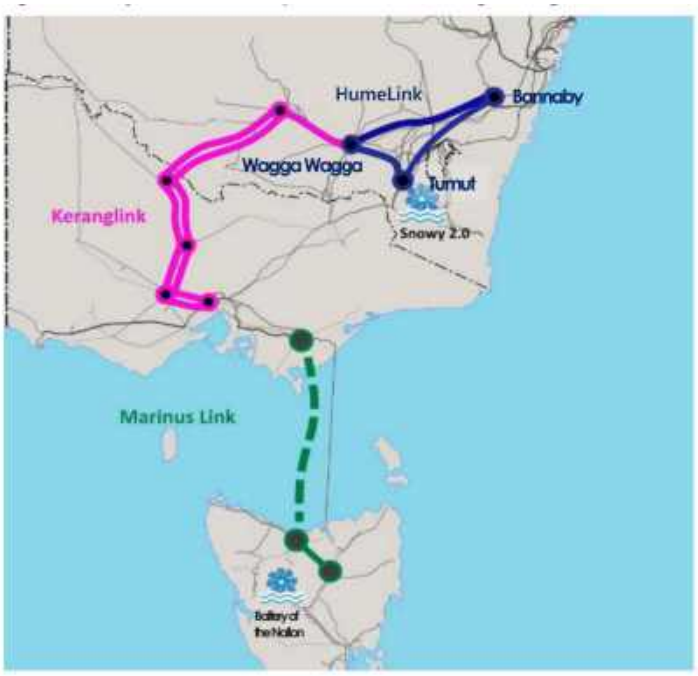
Figure 1 - Major transmission required to connect strategic storage initiatives



Source – AEMO - Building power system resilience with pumped hydro energy storage, July 2019, Figure 5.

There were significant changes between the 2018 ISP and the subsequent ISP Insights Paper in 2019, including the role of Marinus Link, the capacity of which was referred to in the ISP Insights paper as *"an initial 600MW".*[7]

We note the evolution of AEMO's thinking in relation to the role and size of interconnectors, and the introduction of the term "least-regrets strategy"[8], which is not quantified in the 2018 ISP or the 2019 Insights Paper.

Least-regrets decision analysis has however been used as a tool by regulatory authorities in overseas jurisdictions for many years (eg OFGEM in the United Kingdom[9)] and is a response to the uncertainty about the future shape of electricity markets and the impact of that uncertainty on investment in electricity assets, particularly networks.

This concept could also conceivably be applied to the RIT-T. Electricity consumers are rightly concerned about the risks to them from poor decision-making based on the outcomes of a RIT-T and the application of the market benefits test alone, even with the use of risk adjustments such as probability weightings, etc. We recognise that it would be beneficial for the RIT-T to include additional tools that allow such risks to be minimised and made more transparent, bearing in mind that any resultant increased complexity may work against the aim of greater transparency.

[7] Building power system resilience with pumped hydro energy storage, July 2019, page 9, reference 7
[8] Ibid, page 4
[9] For example - Assessing the impact of Low Carbon Technologies on Great Britain's electricity distribution networks, Analysis of Least Regrets Investments for RIIO-ED1 and supporting evidence, Issue 1.1, 7 April 2013.

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That being the case it is, in our view, appropriate that the inclusion of additional safeguards in the RIT-T to deal with risk and transparency gaps would be beneficial and that the use of "least-regrets" analysis could be an option. However, it would be important to undertake additional more detailed work on this matter and how it might be applied to the RIT-T in full consultation with consumers; and consumers would need to be presented with a readily understood evaluation of the results of such an analysis in the RIT-T.

An analogy relevant to the ISP and to interconnector projects - if there is investment in a range of electricity infrastructure projects (including MarinusLink), AEMO believe they can avoid a looming problem in electricity supply, but the investment may not be needed as early as it is planned, and there may not need to be as much investment, which would involve unnecessary cost (be regrettable).

Conversely, if the investment doesn't happen, there could be major disruptions to electricity supply in the foreseeable future, which would involve greater cost, and be more regrettable.

Recommendation 1

The RIT-T should include additional tools that help to minimise risks to consumers from poor decision making based on a RIT-T analysis, including (potentially) a "least regrets" analysis. Specifically, the scale and cost to consumers of any unnecessary investment under one future scenario should be identified in a way which can be directly compared to the cost of failure to invest under a different future scenario. This should be examined more thoroughly to determine its usefulness to electricity consumers in full consultation with them.

We note the role of interconnectors, which are large projects involving large investments, as part of AEMO's view of the transformation of the NEM and suggest that multiple, smaller projects, which could include for example embedded (local) renewable generation and other non-network options, have the potential to provide an alternative to expensive interconnectors, diversifying financial and physical risk.

1.1.2 The role of the ESB and the review of the NEM

The role of the Energy Security Board (ESB) is to coordinate the implementation of the reform blueprint produced by Australia's Chief Scientist, Dr Alan Finkel AO. The ESB also provides whole of system oversight for energy security and reliability to drive better outcomes for consumers.

The view of the ESB, as expressed in their 2018 assessment of the health of the National Electricity Market[10], is worthy of reference in the context of the RIT-T:

"The NEM is transforming at a rapid rate. It is moving toward a system that requires the integration of more variable and distributed energy resources, and both chemical and hydro storage. The shift toward more variable and distributed energy resources has been driven by government policies, significant reductions in technology costs and changing consumer preferences. This transformation will continue with the addition of embedded micro-systems, peer to peer trading through block chain capability and, over time, electrification of the

[10] The Health of the National Electricity Market 2018 ENERGY SECURITY BOARD, pages 6 and 9

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transport sector. With these changes, traditional concepts of the way in which the system is managed, how investment should be rewarded, and the role played by supply, storage, networks and consumers must be revisited"; and

"The risks to delivering a coherent and coordinated approach to energy policy in the NEM have increased during 2018 with the piecemeal approach to setting energy policy. At a time when investment is needed in dispatchable generation and to action the ISP, it is not helpful for the Commonwealth Government to be threatening powers of divestment, price setting and discretionary asset write-downs".

Continuation of the current piecemeal approach risks an outcome whereby major investments in the NEM are driven not only by the long term interests of consumers, but also by:

- Political expediency – the need to be seen to be doing something; populist decision making; or short term responses to long term challenges;
- Political decisions motivated by benefits other than the long term interests of (electricity) consumers, such as regional jobs growth, or "jobs and growth";
- Rent seeking by major players capable of exerting the necessary political influence, where the rent seekers identify opportunities to extract profits as a result of the lack of policy direction; and
- Investments which appear to be appropriate in the current NEM market framework, but are not appropriate under emerging market models.

Against that risk we note that in October 2018 The COAG Energy Council requested the Energy Security Board advise on a long term, fit-for-purpose market framework to support reliability, modifying the National Electricity Market (NEM) as necessary to meet the needs of future diverse sources of non-dispatchable generation and flexible resources including demand side response, storage and distributed energy resource participation[11].

The resulting project will address all aspects of the energy supply chain – the interface with consumers, small scale and utility scale generation, distribution, and transmission and by early 2020, will identify potential fit-for-purpose market frameworks for evaluation against each other and the NEM design[12].

It is our view that the ESB's work is a key consideration for any project being assessed via the RIT-T mechanism. Any investment proposed under the current market framework which governs the NEM, including interconnectors to provide access to new renewable energy sources and deep hydro storages as part of the ISP, must give due consideration to possible alternate market arrangements and the role of the proposed investment under those alternate arrangements.

We also expect that the review of the NEM framework will address matters such as the need for large additional investment in transmission assets given the growing significance of distributed energy resources, and the implications of Australia's National Hydrogen Strategy[13].

[11] ENERGY SECURITY BOARD POST 2025 MARKET DESIGN, ISSUES PAPER, September 2019
[12] Ibid, page 5
[13] AUSTRALIA'S NATIONAL HYDROGEN STRATEGY, November 2019,

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We note the reference in the Hydrogen Strategy - "*Hydrogen technologies are well-suited to balancing supply and demand in an electricity grid that increasingly relies on variable renewable sources such as solar and wind*"[14], and the correlation between that potential role, the role of distributed energy resources, and the role Marinus link is mooted to play in providing access to deep hydro storages.

Ideally, given the significance of the ESB's review of the NEM design, RIT-T consideration of, in particular, interconnectors should be deferred until the end of 2020, when the ESB expects to either recommend a package of measures to adapt the existing market design or recommend alternative market designs.

We also note that "*each option will describe how financial and physical markets interact and how risk is allocated to consumers, taxpayers and market participants*"[15], and expects that the range of options would be very large.

The issues paper states that "*It is likely that the post-2025 project will use the ISP scenarios as the starting point for investigating possible future market designs across different technological scenarios*[16]**.** We hold the view that whilst those scenarios are an appropriate starting point, it is entirely conceivable that other scenarios may be more realistic. For instance, a combination of demand side management; significant advancement in distributed energy resources; and the rapid development of hydrogen production and its subsequent use to provide firming for renewable generation could obviate the need for investment in expensive interconnectors.

We also note the ESB's summary of 13 related initiatives, listed at Annex B of their report[17], being undertaken at the direction of the COAG Energy Council or independently by bodies such as the AEMC, AEMO, the AER and the ENA, working collaboratively or individually.

Included in those initiatives is the Coordination of Generation and Transmission Investment (COGATI) which was established to implement reforms to:

- charging arrangements which enable transmission businesses to recover the costs of transmission infrastructure, within and between regions; and
- to the way generators access and use the transmission network.

As at November 2019 the AEMC's initial proposals were not accepted by the COAG Energy Council and work will continue.

We suggest that there is considerable risk in undertaking economic assessments of the merits of proposed major projects, in particular interconnectors, against that background, let alone proceeding to investment.

That risk is greatly amplified when seeking to evaluate the merits of any one interconnector, in this case Marinus Link, without explicitly considering the economic interplay with other proposed interconnectors, and results in what can be seen as a sequencing risk – evaluating (or worse, proceeding with) any given interconnector, when the South Australia – NSW

[14] Ibid, page 19
[15] ENERGY SECURITY BOARD POST 2025 MARKET DESIGN, ISSUES PAPER, September 2019, page 5
[16] Ibid, page 10
[17] Ibid, page 35

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interconnector is now proceeding to construction under major project status and the NEM framework/design is under review.

1.2 The Assignment

Goanna Energy Consulting Pty Ltd (Goanna) has been commissioned by the Tasmanian Small Business Council (TSBC) to undertake a consumer-focused assessment of the RIT-T and to use Marinus link as a reference point for this. The assessment is to cover key aspects of the RIT-T that impact on consumers and to assess the test's ability to ensure that regulated transmission projects are likely to benefit consumers. This is part of a broader assignment providing a consumer perspective on interconnector and transmission investments (using Marinus link as a case study) being undertaken by Goanna for the TSBC, with an integrated report and modelling results to be released shortly. Engagement with consumer advocates under the auspices of the TSBC is an important part of the project.

1.3 Our Client

The TSBC was founded in 1973 and incorporated in 2000. It has a history of strong advocacy on small business issues including energy related matters. It is Tasmania's peak body exclusively representing the interests of small businesses and is unique in terms of being a State-based body dedicated to small business and in terms of its strong interest in energy matters. The TSBC works actively with other small business and advocacy bodies around Australia.

1.4 Limited Scope of This Report

This report provides a limited assessment of the RIT-T. The assessment is confined to certain aspects of the RIT-T that can be meaningfully applied to Marinus link and are assessed to be key RIT-T consumer issues for that project. Hence:

- This limits our report to assessing the market benefits arm of the RIT-T given that this is the part of the RIT-T being applied to Marinus link.
- We did not assess the RIT-T as applied to replacement capital expenditure, which has recently been added to the RIT-T, as Marinus link would be a new asset.
- We did not comment on those areas of transmission investment where a RIT-T assessment is not required as, if Marinus link is to be a regulated investment, it will need to pass the RIT-T.
- We did not address the matter of urgent and unforeseen investments as this clearly does not apply to Marinus link.
- We did not comment on the capital cost thresholds applied to the RIT-T as Marinus link is well above this.
- We did not assess the RIT as applied to distribution network investments (RIT-D).
- We did not separately assess other transmission interconnectors currently being planned and nor did we assess Hydro Tasmania's Battery of the Nation initiative, although some of the former and the latter are clearly linked to Marinus link.

The deadline for completion of this report and the resources and funds allocated to the project are insufficient to undertake a full assessment of the RIT-T, such that only certain aspects of the RIT-T as applied to Marinus link were able to be assessed in detail. Our approach was to focus on those matters we deemed to be of most relevance to electricity consumers. Nevertheless, within these constraints the report is detailed.

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It should also be noted that we assessed both: the RIT-T Guideline issued by the AER in 2017, as this will be formally applied to Marinus link given that this version of the Guideline was current when TasNetworks commenced its RIT-T assessment of Marinus link; and the current version of the RIT-T Guidelines released in late 2018, which supersedes the earlier version being applied to Marinus link.[18] TasNetworks advised us that they would be working with the new Guideline, notwithstanding the grandfathering provisions applied to the earlier version.[19]

As this report is focused on an assessment of the RIT-T and its application to Marinus link, we did not assess in any detail non-RIT-T aspects of the project, such as the estimation of broader economic benefits that are outside the RIT-T analysis. Nor did we comment on the commercial and financial aspects of Marinus link, or its environmental, planning and land use issues.

The report also does not provide any comparison of the RIT-T versus the Australian Energy Market Operator's (AEMO) Integrated Systems Plan (ISP) as alternative means of assessing proposed large transmission investments, although it does consider the use made of the ISP in RIT-T assessments, specifically for Marinus link and how the use of the ISP might compliment and enhance a RIT-T.

Our Report relied upon public information available at the time of writing and is therefore as up to date as possible. As TasNetworks has not completed or published its Project Assessment Draft Report (PADR) for *Marinus link* at the time of writing, we were unable to include it in our assessment. AEMO's 2019 ISP[20] is also yet to be published and so we relied upon the 2018 ISP, which was used by TasNetworks in both its Marinus link Project Specification Consultation Report (PSCR) and its Initial Feasibility Report (IFR).[21] It is possible that, when the PADR and the next ISP are released, they could materially impact our analysis, findings and conclusions.

Given the above, this report has been based largely around the main documents relating to the RIT-T and *Marinus link* that are currently in the public domain and applicable to the project's RIT-T, namely:

- The AER's RIT-T Guidelines (2017 and 2018);
- TasNetworks' Marinus link Project Specification Consultation Report (PSCR);
- TasNetworks' Marinus link Initial Feasibility Report (IFR);

[18] See https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-minor-amendments-2017 and https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018/final-decision

[19] For compliance purposes concerning a RIT–T, the AER will only have regard to the guidance that was in effect when a RIT–T proponent initiated the RIT–T in question. In this context, initiated means from the publication of a Project Specification Consultation Report, which for Project Marinus was published in July 2018, when the AER's 2017 RIT-T guideline was in effect..

[20] We understand that AEMO will not now be releasing its next final ISP until 2020, although a draft is expected before the end if this year.

[21] AEMO published a *2019 Forecasting and planning scenarios, inputs and assumptions* Report in August 2019, which provides indications as to the possible directions of its next ISP, although these matters are still under consideration by AEMO. There are some clear differences between this and the IFR for Project Marinus. For example, there are different scenarios and different inputs and assumptions used, which could materially impact on the Project Marinus RIT-T. It was beyond the scope of this report to assess these differences.

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- The Current Situation Assessment (CSA) Report published by the Tasmanian Department of State Growth; and
- AEMO's 2018 ISP.

1.5 Structure of this Report

Our report is structured as follows:

- Section 2 provides background information on the RIT-T and Marinus link to help set the scene for the main purpose of the report.
- Section 3 covers issues to do with the initial application of the RIT-T such as the Identified Need, Credible Options and inputs and assumptions, using Marinus link as a case study.
- Section 4 provides the core of our RIT-T assessment and covers the issues around the characterization and estimation of net market benefits in the RIT-T, that is cost and electricity market benefits using Marinus link as a reference point.
- Next, we address in Section 5 the vexed issue of the treatment of transmission prices in the RIT-T and the disconnection between this and the allocation of costs of projects approved under the RIT-T, illustrating this with reference to Marinus link.
- In Section 6, we examine several other RIT-T related matters, namely, consumer risks, the treatment of non-market benefits, alternatives to regulated transmission links and the question of funding from external sources.
- Section 7 considers RIT-T issues to do with consumer and stakeholder engagement.
- Finally, Section 8 provides our report conclusions and findings.

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2 BACKGROUND

This section of the report provides important background to the RIT-T and Marinus link, and helps to place the main content of the report, addressed in later sections, in context.

2.1 THE RIT-T PROCESS

The RIT-T is a form of economic analysis that all proponents of transmission investments – with a cost currently greater than $6 million and that are proposed to be regulated – must perform before such projects can enter the owner's regulated asset base. This allows the cost of the assets to be included in the annual average revenue requirement set by the Australian Energy Regulator (AER) from which regulated transmission charges are recovered from customers. The RIT–T aims to promote efficient transmission investment in the NEM through greater consistency, transparency and predictability in transmission investment decision making. The test and its forerunners have been a feature of transmission investment in the NEM since 1999 and replaced disjointed jurisdictionally based transmission investment decision-making.

The intended beneficiaries of the RIT-T assessment are generators and transporters of electricity, and end use electricity consumers.

Application of the RIT-T involves a staged process were a Project Specification Consultation Report (PSCR) is published, followed by a Project Assessment Draft Report (PADR) and then a Project Assessment Conclusions Report (PACR). There are requirements for proponents to consult with stakeholders (including end-use consumers) at each stage and minimum times set for responses to the PSCR and PADR. RIT-T reports are made public and processes are generally open to public scrutiny.

Furthermore, there is a 30 day window for any party to appeal PACR conclusions to the AER on the basis of either the proponent's application of the RIT-T, its classification as being for reliability corrective action or whether the preferred option will have a material internetwork impact.

Central to the RIT-T is a modified form of cost-benefit analysis that measures the market benefits and project costs of regulated transmission projects and expresses the outcomes in net present value (NPV) terms.[22]

The RIT-T requirements are set out in the National Electricity Rules (NER) and in a Guideline published by the AER.[23]

2.2 MARINUS LINK

Marinus link is an interconnector project proposed by TasNetworks which involves building a second interconnector between Tasmania and Victoria across Bass Strait (Marinus Link) to supplement the existing Bass Link cable. The option most favoured is to build Marinus Link as a regulated investment which requires application of a RIT-T assessment to it. There are

[22] All costs and benefits are discounted by a rate of interest back to a common starting year. This ensures that all costs and benefits are discounted over time to reflect the time value of money.
[23] The current version is at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018/final-decision.

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other possibilities, discussed in Section 6.3 of this report, such as building a merchant (or market based) link, or a hybrid link (part regulated, part merchant).

Marinus link is closely related to plans (called Battery of the Nation) by Hydro Tasmania to significantly upgrade its hydro generation capacity, especially through the major development of pumped storage to provide new dispatchable generating capacity to the NEM, as replacement for retiring thermal capacity and the development of significant new wind capacity in Tasmania. Without Marinus Link such projects could not go ahead and without such projects Marinus Link would be pointless.

As well as the RIT-T assessment being undertaken by TasNetworks, the broader economic and commercial feasibility of Marinus Link is also being examined by TasNetworks for the Tasmanian Government, thus far resulting in the publication of an Initial Feasibility Report (IFR).[24] In addition to the RIT-T framework, the IFR also uses the broader economic assessment framework published by Infrastructure Australia to estimate a range of benefits external to the RIT-T.[25]

Based on work done to date, as represented in its IFR, TasNetworks believes that Marinus Link will be technically feasible for either a capacity of 600 MW, or 1200 MW delivered in two 600 MW stage.

In October 2019 TasNetworks announced that increasing the capacity of the link to 1500 MW (in two 750 MW stages) would provide the greatest benefits.

Furthermore, given manufacturing and construction durations, the earliest a 600 MW link could be in service is the mid-2020s. A 1200 MW link delivered in two 600 MW stages could see the first 600 MW commissioned by the mid-2020s and the second 600 MW two to three years later. It is expected that the same time frames would apply to a 1500 MW link.

TasNetworks have assessed that High Voltage Direct Current (HVDC) is the only suitable interconnector technology able to transfer the required power across Bass Strait. Voltage Source Converter (VSC) technology is the preferred option for the alternating current (AC) - to-direct current (DC) conversion required by Marinus Link at either end of the sub-sea cable. One bi-pole or two symmetrical monopoles are the only viable configurations for a 1200 MW (or 1500 MW) link.

TasNetworks believes that there are numerous interconnector routes that are feasible and likely to obtain environmental and planning approvals. Its most favourable routes for both a 600 MW and 1200 MW Marinus Link connect a converter station in Victoria's Latrobe Valley by HVDC cable to a converter station in the Sheffield or Burnie area in the north-west of Tasmania (see Figure 1 below).

[24] Funding is being provided by the Tasmanian Government and the Australian Renewable Energy Agency (ARENA).

[25] See Infrastructure Australia's guideline, *Assessment Framework for initiatives and projects to be included in the Infrastructure Priority List*, March 2018. This covers the application of cost-benefit analysis to proposed infrastructure projects and allows for the inclusion of externalities, such as jobs created, economic activity stimulated and regional economic benefits.

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Figure 1: Favoured Routes for Marinus Link

Source: *IFR*, Figure 12, p. 65.

3 RIT-T Initial Application Issues

In this section we discuss some of the main RIT-T initial application issues: establishing an Identified Need for the project; specifying Credible Options; and determining inputs and assumptions. We discuss how these can impact on consumers and reference Marinus link.

3.1 Issue: Identified Need

Establishing an Identified Need for a project intended to pass the RIT-T is a critical starting point as it requires the proponent to set out, in broad terms, why its project is important to consumers and relevant to the application of the RIT-T.

The Identified Need as proposed by TasNetworks in its PSCR for Marinus link is:

> "*The characteristics of customer demand, generation, and storage resources vary significantly between Tasmania and the rest of the NEM. Increased interconnection capacity between Tasmania and the other NEM regions has the potential to realise a net economic benefit by capitalising on this diversity."*

In assessing how TasNetworks specified the Identified Need for Marinus link in its PSCR, in our report to the TSBC on the PSCR, which was provided to TasNetworks and published as part of the responses to its PSCR, we drew the conclusion that:

> *"Strictly speaking, the Identified Need specified by TasNetworks fulfils this [the manner in which the AER has specified that the Identified Need should be expressed]. It also has the virtue of being simply expressed, but we find it lacks specificity. This contrasts to the Identified Need set out in ElectraNet's PSCR for Riverlink, which specifically linked the Identified Need to several benefits."*[26]

We note that the AER provided some additional clarification on the specification of Identified Need in its 2018 Guideline:

> *"In all cases, it is essential that RIT–T proponents express identified needs as the achievement of an objective or end, and not simply the means to achieve the objective or end. This objective should be expressed as a proposal to electricity consumers and be clearly stated and defined in RIT–T reports, as opposed to being implicit. Framing the identified need as a proposal to consumers should assist the RIT–T proponent in demonstrating why the benefits to consumers outweigh the costs. That is, the RIT–T proponent should articulate its investment objective to increase consumer and producer surplus in the NEM or undertake reliability corrective action as an objective to deliver a benefit or benefits to electricity consumers*"[27].

In particular, the Guideline requires that the Identified Need "should be expressed as a proposal to electricity consumers" and that it is "valuable to engage with key stakeholders

[26] Goanna Energy Consulting, TasNetworks' *Project Marinus* Project Specification Consultation Report – Small Business & Consumer Impacts , October 2018, p.18, our parenthesis.
[27] AER, Application Guidelines, Regulatory Investment Test for Transmission, December 2018, page 15

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(including consumer representatives and ourselves) on framing the identified need early on, potentially even prior to formally commencing the RIT–T process."[28]

The Identified Need for Marinus link does not indicate an objective to be achieved, and it is not expressed as a proposal to energy consumers. The words "*has the potential to realise a net economic benefit"* do not constitute an objective.

The AER's definition of Identified Need at section 3.1 of the December 2018 Guidelines is adequate when considering projects with relatively simple objectives such as those referred to in the examples at section 3.2.1 of the Guidelines, being market benefits arising from meeting service standards; meeting load growth requirements within a particular transmission network; and meeting safety requirements.

The definition is entirely inadequate when the project which is the subject of the RIT-T is an interconnector with all of its attendant complexities, especially in a market which is subject to the degree of change and uncertainty which is referred to at section 1.1 of this report.

The reference in the Guidelines to "An identified need may consist of an increase in the sum of consumer and producer surplus in the NEM"[29] is, in the view of the TSBC, far too broad to be of value.

The Identified Need for Marinus link could, for example, be expressed by reference to the crucial role of transmission, as outlined in AEMO's 2018 ISP[30], including

- efficiently connect and share low cost renewable fuel resources;
- take maximum advantage of existing resources, integrate variable renewable energy, and support efficient competitive alternatives for consumers; and
- manage the risk of anticipated but uncontrollable climate effects such as bushfires, droughts (both water and wind), and heatwaves.

The matter of credible options is discussed further in the next section of this report, however the Identified Need should be expressed in terms which take account of the credible options which are, or should be, considered, including non-network options, and which assist with the process of identifying a preferred option.

From the examples above, the question could for instance then be asked of Marinus link – "is it the most efficient option to share low cost renewable fuel resources?"

Consumer Findings: Identified Need

- Establishing an Identified Need is a critical strategic starting point for projects being assessed under the RIT-T so that consumers can understand, from the outset, why the project would have value for them.
- We agree with the AER that proponents should both set out an Identified Need as a proposal to consumers and engage with consumers from the outset, however the AER's definition of Identified Need at section 3.1 of the December 2018 Guidelines is

[28] Ibid
[29] Ibid, page 14
[30] AEMO, Integrated System Plan, July 2018, page 6

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far from clear. The fact that TasNetworks consider that their Identified Need for Marinus link meets the requirements of the Guidelines is testament to that lack of clarity.

- TasNetworks' PSCR Identified Need for Marinus link does not meet the AER's requirements and should be redefined in its PADR so that it is more specific and meaningful to consumers.

Recommendation 3

The AER should revisit the RIT-T Guidelines and expand Section 3.1 to provide guidance specifically for interconnector projects, in particular expand on the current reference to "An identified need may consist of an increase in the sum of consumer and producer surplus in the NEM", supported with relevant examples.

As noted above the AER's Guideline requires that the Identified Need should "should be expressed as a proposal to electricity consumers" and that it is "valuable to engage with key stakeholders (including consumer representatives and ourselves) on framing the identified need early on, potentially even prior to formally commencing the RIT–T process."[31]

The TSBC strongly supports these requirements and contends that if TasNetworks had engaged with the TSBC in order to specify the Identified Need for Marinus link then the words which were chosen in the PSCR would not have been acceptable.

The TSBC accordingly proposes that the Guidelines should mandate that an appropriate consumer representative body is established ahead of any RIT-T process and that body must endorse the Identified Need of the proposed project.

Such a body should be established in accordance with New Reg, the joint initiative of the AER, Energy Consumers Australia and the ENA[32].

Recommendation 4

The AER should amend the RIT-T Guidelines and mandate that an appropriate consumer representative body is established ahead of any RIT-T process and that body must endorse the Identified Need of the proposed project.

[31] AER, Application Guidelines, Regulatory Investment Test for Transmission, December 2018, page 15

[32] Directions Paper - NEW REG: TOWARDS CONSUMER-CENTRIC ENERGY NETWORK REGULATION, March 2018

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3.2 Issue: Credible Options

The next step in the RIT-T is to develop credible options that meet the Identified Need. Under the NER, such an option must be commercially and technically feasible. According to the RIT-T Guidelines, if a reasonable and objective operator, acting rationally in accordance with the requirements of the RIT-T, would be prepared to develop or provide the option in isolation of any substitute options, it would be commercially feasible. The AER further states that a TNSP is not entitled to reject a commercially feasible option that would otherwise satisfy the RIT-T purely on the basis that the option lacks a proponent, or that the TNSP is not willing to be the proponent for the option. This has the advantage of requiring proponents to consider all commercially feasible options but also leaves the decision with the proponent, who may well have supressed incentives to identify and consider all such options. For example, non-network, generation, or even competing transmission options that do not benefit a TNSP directly, or delay the development of its preferred option, could be given limited consideration. Furthermore, identification may rely on third parties who have limited information about emerging opportunities.

In the case of Marinus link, it is a concern that the only options identified by TasNetworks to date is the construction of interconnectors. This is a matter we raised in our comments on the PSCR and it remains a concern that TasNetworks has not addressed it in the IFR. They should do so in the PADR. As we noted in our report on the PSCR, the AER is of the view that a TNSP has considered a sufficient number and range of credible options where the number of credible options being assessed is proportionate to the magnitude of the likely costs of any credible option. Given an investment the size of *Marinus link*, we expect that this would require more than the two credible options currently proposed, both of which would be developed by TasNetworks. This should include consideration of non-network and any other credible options located either in Tasmania or on the mainland.

A narrow approach also increases the likelihood that a more costly option will be developed because competing (potentially lower cost) options were not included.

Limiting the options to two projects, which TasNetworks could well end up developing itself as regulated interconnectors, would also not seem to be consistent with competitive neutrality principles, the application of which are a requirement of the RIT-T.

An option is technically feasible if there is a high likelihood that it will, if developed, provide the services that the RIT–T proponent has claimed. We are not aware of any reason why the options selected by TasNetworks for Marinus link would not be capable of providing the services being suggested by TasNetworks. We note, however, that there may be other options (not considered by TasNetworks) that would also be technically feasible.

Credible options are compared to a Base Case to determine whether they deliver Net Market Benefits (see Section 3.2 for further discussion on this). The base case is essentially the State of the World without the project.[33] This is a standard approach in the application of cost-benefit analysis.

The identification of credible options is dependent on the Identified Need. A lack of clarity in the Identified Need, in particular one which has not been endorsed by an appropriate consumer body, has the potential to constrain the examination of credible options.

[33] It may include some costs associated with ongoing opex, minor capex and management of an aging asset to keep it safe and secure.

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In the case of Marinus link, the potential value of a second Tasmania-Victorian Interconnector was identified by AEMO in its 2018 ISP and subsequently in its 2019 ISP Insights, as referenced previously in this assessment.

AEMO's 2018 ISP identifies that *"increases in interstate energy interchange to take advantage of location diversity, coupled with large-scale storage and flexible gas generation, are essential components of a system that relies on significant levels of variable, zero-fuel cost (and hence low marginal cost) renewable energy"*.[34]

The ISP assumes that "energy interchange" will be achieved primarily by the construction of electricity interconnectors and does not contemplate alternatives to large scale storage and interconnectors as a mechanism to complement renewable energy.

Those alternatives could conceivably include, for example but not limited to: a much greater level of diversified (distributed) energy than the ISP contemplates; greater use of existing generation gas plants and gas networks than the ISP; greater demand response; the development of small scale nuclear generation plant and the production, storage and transport of hydrogen or hydrogen based products.

Such alternatives could be expected to form part of the scenarios which the ESB's Post 2025 Market Design Project will consider[35], not contemplated in the scenarios in the current ISP.

TasNetworks, as the proponents of Marinus link, are responding to the ISP and their consideration of credible options is therefore limited to electricity transmission, that is, options relating to the size, type and location of the link (undersea cable and related transmission infrastructure).

Such a link or links would have a service life of 40 years, extending to 2067 from the possible commencement date of operations for the link in 2027. For consumers that period is extremely relevant, occurring after the 2025 commencement date for a potentially alternative market framework/design, arising from the ESB's Post 2025 Market Design Project.

Consumers face the risk that they will be paying for an asset (or assets) which has a limited or no role in the emerging National Energy Market. Without an assessment of the relative merits of an energy interchange based on large scale transmission assets (interconnectors) compared to alternative means of achieving the necessary energy exchange, consumers cannot be assured that that the interconnector option is the least cost.

In order to mitigate that risk an assessment of credible options to achieve the requirement for energy interchange identified in AEMO's 2018 ISP, including non-network solutions, should be undertaken.

The options should be based on those identified as part of the ESB's Post 2025 Market Design Project. Such as assessment should precede the consideration, via the RIT-T process, of any given interconnector, including Marinus link.

Such an assessment should be undertaken under the direction of the ESB.

[34] Page 9
[35] ENERGY SECURITY BOARD POST 2025 MARKET DESIGN, ISSUES PAPER, September 2019

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Consumer Findings: Credible Options

- The development of Credible Options as part of the application of the RIT-T should provide assurance to consumers that transmission investments will be the lowest cost option to achieve the Identified Need.
- The identification of credible options is dependent on the Identified Need. A lack of clarity in the Identified Need, in particular one which has not been endorsed by an appropriate consumer body, has the potential to constrain the examination of credible options.
- The ISP assumes that "energy interchange" will be achieved by the construction of electricity interconnectors and does not contemplate alternatives to large scale storage and interconnectors as a mechanism to complement renewable energy.
- Those alternatives could conceivably include, for example but not limited to: a much greater level of diversified (distributed) energy than the ISP contemplates; greater use of existing generation gas plants and gas networks than the ISP; greater demand response; the development of small scale nuclear generation plant and the production, storage and transport of hydrogen or hydrogen based products.
- The selection of Credible Options is in the hands of the project proponent, who could well have suppressed incentives to include all Credible Options, especially if such options involve non-network solutions to the Identified Need or options not developed by the proponent itself.
- The requirement that Credible Options be commercially and technically feasible is important but does not guarantee the inclusion of all feasible Credible Options.
- The RIT-T process is also responsive rather than pro-active, which can act to limit the discovery of other Credible Options.
- Marinus link provides a case-in-point as TasNetworks has, to date, only identified two Credible Options to satisfy the RIT-T, both of which it would develop.
- The AER's position that the number of Credible Options should be proportional to the costs of a project is at odds with TasNetworks' consideration of only two Credible Options for Marinus link to date. TasNetworks should either increase its range of options, or explain in detail why there are no other feasible Credible Options.

Recommendation 5.

Assessment of credible options identified as part of the ESB's Post 2025 Market Design Project should precede the consideration, via the RIT-T process, of any given interconnector, including Marinus link.

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3.3 Issue: Selection of Inputs & Assumptions

In the 2018 version of the AER's RIT-T guidelines, the AER added information on the selection of inputs, including reference to AEMO's National Transmission Network Development Plan (NTNDP) and its Integrated System Plan (ISP).[36] According to the AER, these documents should be the starting point and default position for developing assumptions to use in the RIT-T analysis. However, this is qualified by the comment that "it might be appropriate to depart from information that AEMO has published where there is evidence and good reason to demonstrate that alternative sources of information are more up-to-date or more appropriate."[37]

This approach, which means that all RIT-T assessments will show a greater propensity to use common assumptions developed by the independent systems planner, is a positive development and is likely to result in the use of assumptions that are robust and acceptable to stakeholders. The AER's approach to departures is also appropriate, noting the emphasis on the need to show "evidence and good reasons".

Nevertheless, consumer support for the use of the AEMO documents should not be assumed. Consumers should have the opportunity to satisfy themselves that AEMO's forecasts and assumptions are robust and appropriate to the application of the RIT-T to a project. For example, as AEMO develops its next ISP it is becoming apparent that there were some shortcomings in the 2018 ISP that the next version will hopefully improve on Moreover, as the ISP is in its infancy, it is to be expected that it is less than perfect and will need to improve over time.

Recommendation 4 above proposes a mechanism to ensure appropriate consumer scrutiny is a part of the RIT-T process.

Turning to Marinus link, we welcome that TasNetworks has essentially adopted ISP assumptions in its IFR and flagged that it will do so in the PADR. However, TasNetworks has departed from the ISP in some areas, although it does not always make this clear in parts of the IFR, which should more correctly refer to a "modified" ISP Neutral Scenario. We outline and comment on these in Table 1 below. In our view, a number of these departures need to be more firmly established before they are accepted by consumers. This highlights the need for consumer scrutiny of the RIT-T assumptions, its reliance on the ISP and proponent's claims to that effect.

Table 1: Departures from ISP Assumptions (Neutral Scenario)

Assumption	IFR v's ISP	Comments
Tas wind generation before MarinusLink	ISP: 308 MW IFR: 1050 MW	IFR updates for 242 MW committed since ISP and 500 MW applications processed by TasNetworks considered

[36] AEMO integrated the NTNDP into the 2018 ISP and appears likely to continue this practice in future.
[37] AER, Application Guideline: Regulatory Investment Test for Transmission, December 2018, p. 25 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.

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		likely to proceed even without MarinusLink. The TSBC accepts the 242 MW committed but believes it could be too early to include the 500 MW in a RIT-T.
VRET & QRET	ISP: Both fully included IFR: VRET partly included (to the extent funded); QRET not funded and not included.	The TSBC accepts the approach included in the IFR unless circumstances change in the meantime. We note that full inclusion of both VRET and QRET has little impact on modelling.
Pumped hydro storage costs	ISP: capex $1.49M/MW Storage capacity 6 hours. IFR: Tasmanian pumped hydro storage: $1.1M/MW; 24 hour storage capacity Mainland pumped hydro storage (except Snowy 2.0): capex $1.49M/MW. Storage capacity 6 hours	Marinus Link assumptions based on Hydro Tasmania Battery of the Nation studies and additional work by TasNetworks (not finalised) supporting lower costs in Tas. The TSBC notes the extremely low costs assumed by Hydro Tas and the far longer storage capacity. We suggest that consumers need independent verification of these numbers.
Wind, solar, hydro input traces	ISP: based on 1 year of historic data. IFR: based on repeating 7 years of historic data.	Increased resolution and duration of Marinus Link studies allows for more realistic representation of multi-seasonal impacts and diversity of generation sources across regions. The TSBC believes that *prima facie* these departures seem reasonable.
Wind generation costs	ISP: VOM = $15.73/MWh FOM = $47.20/kW/year Lifetime = 20 years IFR: VOM = $6/MWh FOM = $25/kW/year Lifetime = 25 years (Applied to all NEM regions)	According to the IFR, this reflects recent data provided by developers and owners of existing wind farms. The TSBC notes the large fall in costs and longer life assumed in the IFR. The robustness of these data needs to be more fully and independently established.

Source: TasNetworks, IFR, Table 6, pp 88-9.

Notes: VOM = Variable Operating and Maintenance costs.
FOM = Fixed Operating and Maintenance costs

The 2018 AER Guideline also incorporated discussion on the choice of discount rates and the Value of Customer Reliability (VCR). Both are important inputs to the RIT-T.

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In relation to the discount rate, the RIT-T specifies that this should be the rate for a private sector investment in electricity with a lower boundary of the regulated cost of capital. Scenario analysis is suggested to reflect the relative risk of different Credible Options. This approach appears consistent with standard cost-benefit analysis, although consumers should check the discount rates applied are appropriate to the project and that sensitivity analysis of the discount rate has been carried out in the RIT-T analysis.

Regarding the VCR, this is important to establishing the market benefits of reliability, such as voluntary and involuntary load curtailment. The AER suggest that the VCR chosen should reflect the reliability preferences of the range of consumers[38] impacted by the project in question and use independent estimates with sufficient detail to allow it to be understood by consumers. AER refer to AEMO's estimates of the VCR and estimates that the AER will soon publish itself as being appropriate. It further says that variations from these should be fully explained and subject to consultation with stakeholders. Scenario analysis should be used to test the impact of different levels of VCR on the application of the RIT-T and sensitivity analysis to illustrate the 'boundary values' of the VCR.

We believe that the AER's approach to the VCR is generally appropriate and particularly welcome its support for independent and transparent estimates to be used that reflect differences in consumer preferences. The publication of AER estimates of the VCR from the end of 2019 should be a positive development for consumers, although consumers should withhold full support until details emerge showing the AER's VCR value to be fit-for-purpose and consistent with customer expectations. We note that VCR estimations can be contentious.

Turning to the Marinus link IFR, costs and benefits associated with Marinus Link over the period 2020 to 2050 were discounted to 2025 (TasNetworks' assumed commissioning date for Marinus Link) using a discount rate of 6 per cent. We note that this rate is consistent with the discount rate applied in various recent studies of NEM interconnection.[39] However, the IFR has not undertaken scenario and sensitivity assessments of the discount rate. We suggest that the PADR should do so.

Regarding the value of customer reliability (VCR), no estimate is provided in the IFR itself. However, in the E&Y modelling of the market benefit impacts of Marinus link, VCR is modelled as $33,460/MWh. We note that this sits between the 2014 VCR values determined by AEMO for residential and business customers escalated to current prices.[40] Moreover, it sits slightly below the Victorian VCR used by AEMO in its recent PADR on upgrading the NSW-Victoria interconnector ($34,848/MWh) but above that used by AEMO for Tasmania ($27,370/MWh).[41] TasNetworks should re-examine the VCR values for

[38] For example, residential customers' VCR will reflect the inconvenience of outages, while for business customers, the VCR reflects lost sales and productivity, as well as stand down, shut down and start-up costs.
[39] Including that used by AEMO in its Vic-NSW interconnector upgrade and its Western Victoria RIT-T, and that used by TransGrid and Ausgrid in the 2017 *Powering Sydney's Future* RIT-T, as well as by Ausgrid and Jemena in recent RIT-Ds. However, Powerlink used a somewhat higher discount rate of 7.04 per cent in its recent repex RIT-Ts.
[40] See AEMO, *Facts Sheet: Value of Customer Reliability*, at https://www.aemo.com.au/-/media/Files/PDF/AEMO_FactSheet_ValueOfCustomerReliability_2015.pdf.
[41] AEMO, Victoria to New South Wales Interconnector Upgrade – Project Assessment Draft Report, August 2019, Table 10, p. 39 at https://www.aemo.com.au/-/media/Files/Electricity/NEM/Planning_and_Forecasting/Victorian_Transmission/2018/Victoria-to-New-South-Wales-Interconnector-Upgrade-RIT-T-PADR.pdf.

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Marinus link in developing its PADR and (if available and supported by consumers) rely on the forthcoming AER values.

Consumer Findings: Selection of Inputs and Assumptions

- It should generally work to the benefit of consumers that the AER now requires that RIT-T proponents use information from the ISP as default and starting points in setting inputs and assumptions for application of the RIT-T. This will support consistency across projects and transparency in assessments.
- The AER's approach to departures is also appropriate, noting the emphasis on "evidence and good reasons" to support alternative sources.
- Nevertheless, consumers should have the opportunity to satisfy themselves that the inputs and assumptions chosen for a project are robust and fit-for-purpose. Recommendation 4 above proposes a mechanism to ensure that occurs.
- The AER's approach to the choice of discount rates and VCR is also acceptable, including the methodologies, values, use of independent sources, and use of scenario and sensitivity testing.
- The assumptions included in the IFR for Marinus link, whilst generally consistent with the ISP contain a number of departures from AEMO's neutral scenario, some of which we query above.
- The 6 per cent discount rate applied in the IFR is consistent with recent RIT-Ts although, at this stage, no sensitivities have been carried out.
- TasNetworks should re-examine the VCR values for Marinus link in developing its PADR and (if available and supported by consumers) rely on the forthcoming AER values.

4 Net Market Benefits Issues

In this section we assess the RIT-T net market benefits from a consumer perspective using *Marinus link* as a case study of the application of net market benefits in the RIT-T.

The issues examined were chosen because they are important to the application of the RIT-T, can have a significant impact on consumers and are relevant to the application of the RIT-T to *Marinus link*.

4.1 Issue: The Net Market Benefits Test

At the heart of the application of the RIT-T to potential large transmission investments such as *Marinus link* is the 'market benefits' test, a form of cost-benefit analysis with specific application to large regulated transmission investments in the NEM.

The market benefit test is used to determine whether a large transmission investment should receive regulated revenues recovered from electricity consumers. Its objective is to protect consumers from inefficient investments where costs outweigh market benefits.

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The RIT-T is a form of economic cost-benefit analysis that has a narrower scope than general economic cost benefit analysis, in that it is limited to benefits and costs applicable solely to the electricity market and it does not consider externalities[42] (as does broader cost-benefit analysis). The RIT-T framework is set out in the Rules and expanded on in the AER RIT-T Guideline. It estimates whether major network investments provide net positive benefits in NPV terms for all who produce, consume or transport electricity.

If it is to pass the RIT-T, Marinus link will need to show that it can deliver positive net market benefits, that is, that the electricity market benefits of the project to producers, consumers and transporters of electricity exceed its direct costs.

The application of the net market benefits test is an important safeguard to consumers that the project under consideration, in this case Marinus link, should have a positive economic impact on the NEM. Without it, consumers would be far more susceptible to poor and *ad hoc* decision-making about costly transmission projects that deliver few benefits to the electricity market.

Nevertheless, the application of the RIT-T does not guarantee consumer benefits and contains some shortcomings from a consumer perspective.

For example, application of the test is in the hands of the proponent, so it lacks full independence and impartiality, albeit it is subject to public scrutiny. In the case of Marinus link, TasNetworks is both the proponent and Tasmanian transmission network service provider (TNSP). It may have incentives to exaggerate benefits, suppress costs or find other ways to make the project seem more attractive than it actually is. Consumers need to be wary of these possibilities in assessing the project. Elsewhere in this report we refer to several specific instances where this may be the case.

The test also measures benefits for all who produce, consume or transport electricity. In economic terms, it measures both the producer and consumer surplus and sums the two to determine the change in economic welfare due to the project.[43] This is theoretically correct, but in a concentrated market such as the NEM the market power of electricity producers – generators, retailers or transmission network service providers – can be used to capture some of the benefits, which are then withheld from consumers.

Looking at Marinus link, the Tasmanian generation sector is dominated by Hydro Tasmania and concentration in the Victorian electricity retail sector is a well-known problem. Given these circumstances, it is quite possible that, should Marinus link show positive net market benefits, some of these benefits may never find their way to electricity consumers but be captured by generators or retailers.

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[42] An example of an external benefit might be the jobs created by the construction of a new transmission investment in the vicinity. An external cost might be the damage to vegetation caused by the construction of transmission towers and lines. This is not to say that externalities receive no attention in new transmission investments. A 'value' might be put on new jobs by the local State Government and vegetation damage would need to be considered in planning, land use and environmental assessments for the project.

[43] The AER defines these terms as follows: Consumer surplus is the difference between what consumers are willing to pay for electricity and the price they are required to pay. Producer surplus is the difference between what electricity producers/transporters are paid for their services and the cost of providing those services. (AER, *Regulatory investment test for transmission application guidelines*, 18 September 2017, p.13)

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A key related issue is the identification of which parties receive which benefits. That issue is discussed further in section 5. In particular, under the current RIT-T guidelines and cost allocation under the National Electricity Rules, not all parties who benefit from interconnector investments will carry any share of the associated costs.

Consumer Findings: Net Market Benefits Test

- The application of the RIT-T and its net market benefits test provides consumers with some reassurance that transmission investments should deliver some economic benefits, but this is by no means certain.
- The test lacks full independence and impartiality, albeit tempered by opportunities for public and consumer scrutiny, but is still susceptible to manipulation by proponents.
- The inclusion of producer, as well as, consumer surplus in the measurement of market benefits, when combined with the existence of monopoly and market power in the NEM, can preclude consumers from benefiting fully from transmission investments with positive market benefits (NPVs).
- Marinus link provides a case-in-point, where the need to show positive net market benefits via the RIT-T process is critical to project approval which is to the benefit of consumers but where RIT-T shortcomings are also a potential Achilles heel with respect to issues such as the vested interest of the proponent and market power as a constraint on passing through full benefits to consumers.
- Under the current RIT-T guidelines and cost allocation under the National Electricity Rules, not all parties who benefit from interconnector investments will carry a share of the associated costs.

4.2 Issue: Estimation of Project Costs

The inclusion of costs and their robust estimation is an important element of the application of the RIT-T. Costs are obviously one-side of the cost-benefit equation used to determine net market benefits. According to the AER's RIT-T Guideline, costs include all capital expenditure related to the project, ongoing operating costs, the costs of disposing of any existing assets, land costs[44], as well as regulatory and compliance costs (not captured in the market benefits).

In order to be able to determine the net market benefits as accurately as possible, costs must be estimated with the greatest degree of accuracy possible, noting that 100 per cent accuracy will be impossible for a range of reasons.

The front ended nature of major costs, such as capital expenditure, make this even more important as consumers will be paying for these costs from the outset.

Several aspects of project costs can have a significant impact on consumers, including:

[44] This should be at market value and include the cost of any easements previously acquired.

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- The usually large amount of capital expenditure involved in large transmission projects.
- The tendency for proponents to under-state project costs due either to a lack of information or an incentive to see a project pass the RIT-T.
- The well-known tendency for project costs to increase over time, including in the post-RIT-T construction phase.
- The impact of any project re-specification or mis-specification on costs.
- For consumers there is also an information disadvantage and transparency gap that places them at a significant disadvantage relative to a project proponent when it comes to knowledge and scrutiny of project costs. Consumers must rely on the efforts of a project proponent and the (less than perfect) public scrutiny embedded in the RIT-T process to overcome this.

In order to reflect the impact of risk and uncertainty on project costs, the RIT–T proponent must separately undertake a probability weighted averaging of the direct costs of a credible option. This can help to demonstrate the impact of cost uncertainty on the calculation of market costs but will not eliminate all the risk and uncertainty impacting consumers.

Examining Marinus link leads us to conclude that all the above issues could be present in the application of the RIT-T. The following additional observations are also made:

- Marinus link remains part way through the application of the RIT-T and increased accuracy in cost estimation should be possible as TasNetworks firms up its information and knowledge about project costs. Indeed, it has indicated in the IFR areas where it will be working to improve cost estimates.
- It is also noteworthy that TasNetworks will include contingency, accuracy and escalation allowances, as well as probabilistic cost estimates, in the PADR. Nevertheless, consumers will need to engage with TasNetworks on these matters. It is likely they will still be left with imperfect cost estimation, with a material risk that costs will only increase if the project progresses as a regulated interconnector and that they will remain at an information disadvantage to the proponent.

Some evidence of possible cost escalation has been evident in Marinus link to date, especially in relation to the larger capital costs (when comparing the Tamblyn Report to the PSCR and IFR), as shown in Table 2 below. Although part of the changes in costs shown over the various stages of the project to date would be due to greater precision in estimation compared to the early reports of the project, it remains a concern that most cost changes to date involve increases. It will be worth consumers keeping a close eye on how this develops further in the PADR and beyond.

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Table 2: Marinus link Cost Estimates

	Size MW	Capex $m	Opex $m pa	NPV $m	Capex range $m
Tamblyn Report	600	978	17.5	1,164	na
PSCR	600	1,650	18	na	1,400-1,900
	1,200 (600x2)	2,300	18	na	1,900-2,700
IFR	600	1,357	18	1,385	1,300-1,700
	1,200 (600x2)	2,450	26	2,198	1,900-3,100

Sources: Tamblyn Report, *Marinus link*, and TasNetworks, *Marinus link: Project Specification Consultation Report* (*PSCR*) and *Marinus link, Initial Feasibility Report* (*IFR*).

Note: Costs are expressed in $2018 (June).

Consumer Findings: Project Costs

- Project costs will have a significant impact on the calculation of net market benefits for large costly projects such as Marinus link. Consumers need to be provided with project cost estimates that are as accurate and robust as possible.
- Unfortunately, but not unusually, there is a tendency for RIT-T project costs to escalate over time as a project proceeds from concept to approval and then construction. If costs are not accurately expressed at the PADR and PACR stages, this will impact the degree of scrutiny a project is subjected to and the calculation of net market benefits (NPV). If costs increase significantly after approval to commence construction is given, it is possible that a project showing positive net market benefits could turn negative with consumers left to carry the resulting risks and extra costs.
- Capital costs are particularly important for most RIT-T projects and show an unfortunate tendency to increase over time. For Marinus link, capital expenditure accounts for over 80 per cent of the present value of project costs. They are also front ended with consumers paying for them in advance of the project benefits.
- When assessing project costs, consumers face a knowledge and information disadvantage compared to proponents. This impacts on the scrutiny they can apply to a project.
- The application of probability weightings to costs can help to demonstrate the impact of some project risk and cost uncertainty on the RIT-T outcome, but cannot eliminate them.
- While cost estimation accuracy should improve as the RIT-T progresses, with TasNetworks already having indicated as much in the IFR, cost estimates will likely remain an area of significant risk for consumers impacted by Marinus link. Some indications of cost escalation have already emerged.
- Consumers should ensure there is close scrutiny of the costs of Marinus link with the next opportunity being the PADR.

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4.3 Issue: Estimation of Market Benefits

The estimation of market benefits is the other side of the coin to costs in the RIT-T net market benefits test. However, if anything, benefit estimation is even more fraught and subject to uncertainty. Estimating market benefits relies heavily on the use of (hopefully) robust input parameters, assumptions and modelling, which generally compounds the uncertainty involved.

The market benefits of a credible option are obtained by: comparing, for each relevant reasonable scenario, the state of the world with the credible option in place with the state of the world in the base case; and weighting any positive or negative benefit derived by the probability of each relevant reasonable scenario occurring.[45] We note that this is a standard procedure in the application of cost-benefit analysis.

The AER expects that all market benefits will be included unless they will not materially affect the outcome of the RIT-T or are too difficult to calculate relative to their impact. AER approval is needed for a proponent to include any additional benefits considered relevant (apart from those normally included in the RIT-T). This affords an additional degree of independence to the calculation of market benefits that helps protect consumers. Obviously, a RIT-T assessment should only include market benefits that are going to improve the welfare of RIT-T beneficiaries. The inclusion of superfluous or overlapping market benefits could bias the net market benefit outcome upwards to the detriment of consumers.

The AER 2018 Guideline recognizes that uncertainty can play an important part in valuing market benefits over the long time frame involved in the application of the RIT-T (typically 20-40 years) and that this can have a material impact on the selection of the preferred option.[46] It recommends using probability weightings. Whilst welcome, this will not overcome completely the impact of uncertainty on consumers.

Broadly speaking, the above is consistent with the approach taken in the IFR for Marinus link, although some important aspects require further development in the PADR, such as the application of sensitivity testing to scenarios and all key inputs, and the non-inclusion of demand response. The latter may gain in importance as the NEM is expected to transition into a market with increased demand side activity.

It is worth pointing out that the estimation of market benefits should not be seen as an exercise in forecasting with precision. On the contrary, it is an attempt to estimate the possible benefits of a transmission project given certain inputs and assumptions. In fact, very little precision actually exists in the application of a RIT-T and having actually predicted the correct result (or something close to it) would be no more than co-incidence. In this 'state of the world' more-and-more complexity and theoretical sophistication can be applied and used to give the impression of having obtained the 'right' or 'best' answer. The techniques adopted have their uses in terms of quantifying what benefits might follow if a

[45] The AER's Guideline contains an example of a project with two Credible Options, a network option and a demand-side option with three reasonable scenarios, high, medium and low demand growth. These nine scenarios are compared and each demand scenario assigned a probability of success.
[46] The AER Guideline discusses the use of probability weighting for variables subject to uncertainty (e.g., demand) by using equally spaced values, or by ranking and dividing values into groups (e.g., using deciles or quartiles). See AER, *Application Guideline: Regulatory Investment Test for Transmission*, December 2018, p. 55-7 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.

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regulated transmission investment is built, but should not be taken as accurately depicting what economic value a project will turn out to have in the real world of the future. This can simply never be known with absolute certainty and consumers should remain wary, particularly bearing in mind the incentives on proponents to build infrastructure and have it regulated with all the certainty (for them) which this entails. Who is holding the 'crystal ball' can have a big impact on estimated benefits.

Of particular relevance to the estimation of market benefits is the very high level of uncertainty which exists in the NEM at present, as discussed at section 1.1.2, reflected in the ESB's assessment:

> *"The NEM is transforming at a rapid rate. It is moving toward a system that requires the integration of more variable and distributed energy resources, and both chemical and hydro storage. The shift toward more variable and distributed energy resources has been driven by government policies, significant reductions in technology costs and changing consumer preferences. This transformation will continue with the addition of embedded micro-systems, peer to peer trading through block chain capability and, over time, electrification of the transport sector. With these changes, traditional concepts of the way in which the system is managed, how investment should be rewarded, and the role played by supply, storage, networks and consumers must be revisited";*

Any scepticism consumers already have concerning the validity of estimates of expected market benefits, derived from the use of assets with a life of forty years or more, is multiplied exponentially by the rate of transformation in the NEM and the degree of uncertainty around expected cash flows which drive economic benefits.

The assignment of probability weightings to any given set of cash flow projections which contribute to the calculation of economic value cannot overcome the reality described above – they should not be taken as accurately depicting the economic value a project will have in the real world of the future.

It is foreseeable under a number of possible future scenarios, such as those which assume a rapid deployment of distributed energy resources combined with rapid advancement of hydrogen and nuclear technologies, that investment in additional interconnectors would provide benefits for a period much less than the useful life of the relevant assets, leaving consumers to bear the brunt of the cost of assets which are no longer required.

We note the ECA's reference to the 2017 Finkel review indicating that there may be a role for governments to make strategic investments in transmission capacity and to carry the risk, rather than consumers. In effect, the review concluded that there are limits to the extent to which better coordination and planning can overcome the uncertainties associated with a complex transforming system and that judgements and choices may need to be made about the future shape of the network[47].

The RIT-T as it is applied to interconnectors should be modified to provide a test or trigger point based on an assessment of the risk of the interconnector becoming redundant or underutilised, under a range of plausible scenarios, and the associated need for governments to carry that risk rather than consumers. [John, I think this is already implicit in

[47] ECA - STRENGTHENING THE CONSUMER TEST – response to THE REGULATORY INVESTMENT TEST GUIDELINES REVIEW, 27 September 2018.

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the RIT-T. If an investment fails to produce net benefits, then it fails the test and another way would need to be found to bring it to fruition, eg, Govt funds or private equity. Moreover, the RIT-T already permits external (to the market) funds to be counted in the assessment on the basis that these are not paid for by electricity consumers.]

This issue flows into the consideration of reasonable scenarios and sensitivity testing.

4.3.1 Reasonable Scenarios and Sensitivity Testing

Consistent with good practice in cost-benefit analysis, the application of the RIT-T must include reasonable scenarios[48] that reflect variables and parameters that affect the ranking or sign of the net benefit of any Credible Option. Additionally, the AER recommend that proponents use sensitivity analysis[49] to help determine a set of reasonable scenarios, be cognizant of relevant policy developments and reforms[50], ensure that scenarios are genuinely reasonable and have regard to the ISP. These are sensible requirements that should help produce a more robust RIT-T outcome for consumers.

We note that the development of a range of reasonable scenarios and sensitivity tests can greatly complicate the analysis undertaken in a RIT-T, which can make it more difficult for consumers to comprehend the outcome. This places an onus on proponents to present the PADR and PACR in a way that assists consumers to understand the outcomes, e.g., simply expressed and well-presented reports, infographics, other concise but informative supporting material, presentations to consumer advocates, a willingness to meet and discuss outputs with consumers and their advocates.

The IFR does not include multiple credible scenarios, as required by the RIT-T, around which sensitivities can be conducted. TasNetworks explains that:

> *"While the purpose of the RIT-T (as currently configured) is to evaluate whether there is an overall positive net market benefit, the purpose of the analysis presented in this chapter [of the IFR] is to determine whether plausible circumstances may exist in which the benefits of Marinus Link outweigh its total costs, and if so, the economic worth in such circumstances."*[51]

We expect that the PADR will extend the analysis to include multiple scenarios.

TasNetworks has not yet developed a full range of reasonable scenarios for Marinus link as it has not yet reached the PADR stage of the RIT-T. However, some sensitivity testing has been undertaken in the IFR.

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[48] Scenario analysis involves describing different sets of states of the world that reflect common values of particular parameters that are relevant to the investment decision.
[49] Sensitivity analysis entails varying one or multiple inputs to test how robust the output of an analysis or model is to its input assumptions.
[50] The AER Guideline specifically mentions electricity pricing, new markets/products (such as demand response), emissions abatement, renewable energy, reliability and energy security.). See AER, *Application Guideline: Regulatory Investment Test for Transmission*, December 2018 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.
[51] TasNetworks, *IFR*, p. 84, our parenthesis.

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4.3.2 Types of Market Benefits

Broadly speaking there are three types of market benefit counted in the RIT-T, namely, capital cost savings (including avoiding investment in generation and network assets), operating costs (including the value of savings in fuel costs, network losses, ancillary service costs, as well as avoiding voluntary and involuntary load reduction)[52] and the costs of meeting environmental targets (such and the RET or State targets)[53].

These categories and the approaches adopted in the Guideline appear to be consistent with the application of cost-benefit analysis to a market such as the NEM and, if undertaken robustly and in an arm's length manner, should provide an indication as to the benefits possible from transmission investments. We note that there are numerous aspects of the RIT-T and the AER's accompanying Guideline that are intended to help ensure that RIT-T analysis is reasonably robust and where requirements are put on proponents to avoid biased or skewed approaches (though none can guarantee this).

The Marinus link IFR adopts the above approach to determining market benefits and uses the types of benefits mentioned and we would expect this to be adopted and extended in the PADR. TasNetworks has commissioned EY to undertake modelling of market benefits, although this assessment was limited to modelling the impact of certain types of market benefits, with TasNetworks undertaking separate assessments of several others. However, the benefits generated by the EY model do appear to account for most of the total market benefits. In our view, the use of the EY model should improve the robustness, transparency and independence of estimated market benefits but does not guarantee it. No model is perfect and they are all highly dependent on inputs and assumptions. The use of assessments outside the EY model for several market benefits could be more problematic. We comment further on the IFR approach in Section 4.4.3 below.

Consumer Findings: Market Benefits

- Benefits estimation is even more fraught and subject to uncertainty for consumers than costs.
- The AER expects that all market benefits will be included unless they are not material and any additional ones require AER approval, affording consumers some comfort that included market benefits are appropriate.
- The AER recommends using probability weightings where benefits are large and sufficiently uncertain. Whilst we support this approach, it will not completely overcome the impact of uncertainty on consumers given the rapidly evolving nature of the NEM and the changing roles of all market participants.
- Consistent with standard cost-benefit practice a RIT-T must include a range of credible scenarios to test the ranking of options and sensitivities to test the scenarios. This affords a degree of protection for consumers that RIT-T's are robust. It is however essential that this requirement is met.

[52] The 2018 Guideline points to the use of market or pool despatch models to compare the simulation or forecast of wholesale spot market outcomes in the presence of each credible option, as well as in the base case, for estimating operating cost savings (pp 38-9).

[53] The 2018 Guideline discusses the treatment of environmental targets in the application of the RIT-T, including the impact of caps, penalties and tax deductibility; and provides a worked example using the RET. See AER, *Application Guideline: Regulatory Investment Test for Transmission*, December 2018, p. 39-41 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.

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- However, the flip side is that this adds complexity to the RIT-T which may disadvantage consumer understanding. Simplification of messages by proponents can help to offset this.
- The IFR for Marinus link only assesses one credible scenario. It includes some but not a full range of sensitivity tests. Moreover, it models the impact of all likely material benefits. This is not a situation which is acceptable to consumers.
- Given the rapid transformation of the NEM which is currently taking place; the range of possible future scenarios for the NEM and the potential changes to the role of interconnectors, the risk that consumers will bear the risk of expensive, long life assets becoming redundant is large.

Recommendation 7

The RIT-T as it is applied to interconnectors should be modified to provide a test or trigger point based on an assessment of the risk of the interconnector becoming redundant or underutilised and therefore not delivering the expected market benefits , under a range of plausible scenarios, and the associated need for governments to carry that risk rather than consumers.

4.4 Issue: RIT-T Market Modelling

Modelling lies at the core of the RIT-T assessment of market benefits. This plays a key role in determining whether a RIT-T project has a positive NPV and therefore whether it passes the RIT-T. It could be argued that it is in the interests of a proponent that the outcome of the RIT-T is shown to be a positive NPV. Therefore, for consumers, it is crucial that the modelling undertaken is robust, is done at arm's length from the interests of the proponent (as far as possible) and seen to be such, will withstand close scrutiny and reasonably resembles the outcomes that would be expected in a functioning market like the NEM. If this is not the case, consumers will be at risk of being left to pay for uneconomic projects. Marinus link provides a case study of how RIT-T market benefits are modelled.

In our view, the fact that the proponent does the RIT-T modelling (or is primarily responsible for it) with the main scrutiny coming from the market (often as competitors with their own vested interest) and consumers (who have a large information gap compared to the proponent) raises an important issue with the application of the RIT-T. This increases the likelihood of uneconomic projects passing the RIT-T, notwithstanding the countervailing requirements specified in the AER's guideline. One way of helping to overcome this problem could be for the AER to be given a more active oversight role in the application of the RIT-T. Another would be to improve the resources for consumers to participate in RIT-Ts.

4.4.1 Market Development Modelling

Beyond taking account of existing assets and facilities, modelling a state of the world must capture the future evolution of and investment in generation, network and load. This includes a proponent including all committed projects, as well as deriving estimated and modelled projects. The AER's reasons in requiring this are understandable, but we note the considerable unknowns and unknowables surrounding all but committed projects. However, the AER also require that this modelling be least-cost, thus providing a degree of surety that consumers will see the least cost option, although that this does not guarantee that only economic projects will pass the RIT-T.

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4.4.2 Modelling Period

The AER's guidance on the period of time to be used in RIT-T modelling is that:[54]

- Proponents should take into account the size, complexity and expected life of the investment in order to provide a reasonable indication of the market benefits and costs.
- At the end of the modelling period, the network is in a 'similar state' in relation to needing to meet a similar identified need to where it is at the time of the investment.

Without wanting to be definitive, the AER suggest that a minimum of 5 years is needed and that, for very long-lived and large investments, 20 years or more should be adopted. We concur with the AER's views on this matter, noting that short term modelling will not be informative for consumers whilst extending too far into the future becomes too opaque and, in any case, values become greatly diminished due to discounting.

The IFR for Marinus link adopts a modelling period of 25 years (maximum) due mainly to input constraints with the EY model. We note that at the discount rate used in the IFR (i.e., 6 per cent) this captures around 75 per cent of expected benefits and costs. Nevertheless, TasNetworks is examining the possibility of extending the modelling in the PADR, which is supportable provided the inputs and assumptions are verifiable and remain robust.

4.4.3 Marinus link Market Modelling Approach

Below we discuss the market modelling used in the RIT-T with reference to Marinus link.

The RIT-T for Marinus link remains at an early stage with only the PSCR having been completed. The PADR was expected in June but has been delayed. As there is no market modelling actually undertaken in a RIT-T until the PADR stage, strictly speaking no RIT-T market modelling has yet been undertaken for Marinus link. This means we need to rely on the market modelling undertaken for the IFR as our reference point, which is more limited. However, the market modelling used in the IFR is based on the RIT-T approach, although being an abbreviated version.

The Marinus link IFR uses two forms of market modelling. The first and main form is via EY's proprietary electricity market expansion model. This accounted for most of the market benefits.[55] Secondly, as some potential market benefits are not modelled by the EY model, a range of other techniques were used to estimate the residual market benefits. We discuss each approach below.

EY Market Benefits Modelling

Critiquing the EY model is beyond the scope of this report, but we note that this type of model is commonly used in deriving market benefits in the RIT-T and broader modelling of the NEM wholesale market. It also appears to be consistent with the type of modelling mentioned in the AER's Guideline. The EY model was developed to determine the least cost long-term expansion of the NEM over the period 2020-2050. It takes projected NEM demand over the study period as an input, and determines the optimal generation mix to

[54] See AER, *Application Guideline: Regulatory Investment Test for Transmission*, December 2018, , Section, 3.12, p. 63 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.

[55] It accounted for 75 per cent of the total market benefits with the 600 MW Marinus Link and 79 per cent under a 1200 MW option.

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supply this demand, to minimise the overall cost of supply to the entire NEM. The model will solve for the most appropriate timing and technology of new generation, and retirement of existing generation that reaches end of life or is uneconomic, across all NEM regions, to yield the overall least cost outcome over the study period. The model expresses the total cost of supply in NPV terms. As with any model, the assumptions made and inputs provided are critical.

The model assessed changes in the following costs:

- **Capital costs** of new energy generation and storage capacity installed.
- **Total operation and maintenance costs** of all generation and storage capacity, including the cost of fuel.
- **Cost of unserved energy**, corresponding to the cost of electricity that cannot be supplied due to a lack of generation or interconnector capacity, valued at the given VCR (i.e., $34,460/MWh).

For Marinus link, the model was asked to compare two states of the world: one with the project (in both 600 MW and 1200 MW forms) and another without it. The ISP Neutral Scenario provided the single scenario modelled in the IFR.

This approach is consistent with the modelling requirements of the RIT-T, albeit with only one scenario used.

We note that the model did not consider demand response, although TasNetworks and EY are investigating its inclusion in future.

The starting point for the modelling was the Neutral Scenario in the 2018 ISP with modified assumptions. These were discussed in Section 3.3 and Table 1. As the ISP demand forecasts include DER such as rooftop solar and distributed battery storage, these are included in the modelling.[56] The modelling included the interconnectors which the ISP recommended for highest priority action.

A range of sensitivities were run to test the impact of different modelling assumptions. Those with high impacts were: a high emissions reduction target of 52 per cent lower emissions by 2030 (from 2005 levels) and a 90 per cent reduction by 2050 (using the ISP Fast Change scenario taken from the CSIRO's Low Emission Technology Roadmap); a 300 MW loss of Tasmanian load, simulating the loss of one or more large Tasmanian energy consumers; and the high emissions target plus commissioning of Snowy 2.0 by 2025.[57]

Whilst the chosen high impact sensitivities could eventuate, we believe that they are less likely to eventuate. Current policy is at odds with such large reductions and there is nothing particularly in the policy outlook that makes the attainment of such high reduction in emissions likely over this time period. This has significant impacts on the net market benefits of Marinus link and its timing. To a lesser degree, this also impacts the scenario

[56] The IFR mentions that the full RIT-T analysis will consider scenarios with alternative demand forecasts, thereby including a greater range of DER outcomes.
[57] A range of other scenarios were run with medium to low impacts, but we do not discuss them in details in this report on the basis that their impact is not as significant and bearing in mind the resource constraint for this report. These were: later (2032 or 2028) commissioning of a 600 MW link; high gas prices; reduced Basslink capacity; loss of 100 MW of load in Tasmania; full inclusion of VRET and QRET; and Snowy 2.0 commissioned in 2025. These all assumed a 600 MW Marinus Link.

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involving Snowy 2.0 plus High Emission Reductions. The loss of 300 MW of major industrial load is perhaps more plausible, although the likelihood of this is far from clear. It is possible that, should such a loss threaten, Governments would step in to either prevent it or protect local jobs through the development of new industries. We also note that there is an equally realistic threat to even larger major industrial load in Victoria, such as the Portland smelter, that has not been modelled to date but could materially impact the need for Marinus Link.

Other Estimated Market Benefits

There is a potential concern that estimating some market benefits outside the main model could led to issues such as differences and inconsistencies in the estimation of market benefits or overlap. It is beyond the scope of this report to investigate this matter, but TasNetworks should ensure that the use of different modelling techniques does not interfere with the robust estimation of market benefits in the Marinus link RIT-T.

The market benefits estimated outside the EY model and included in the net market benefits calculations for Marinus link in the IFR are discussed below.

Avoided spill from hydro storages

Marinus Link could alter Tasmanian hydro generator dispatch patterns to reduce the amount of spill and the energy saved could be used to offset more expensive generation. The IFR used Hydro Tasmania's Tasmanian Electricity Market Simulation model to assess the avoided spill and then applied the average annual Victorian wholesale price derived from the EY model to obtain a preliminary estimate of the market benefit. The IFR includes estimates of 124 GW pa of averted spill valued at $127 million for a 600 MW Marinus Link and 130 GW pa valued at $131 million for a 1200 MW link. We expect that TasNetworks will firm up these results and ensure the robustness of this method in the PADR.

We also note that the use of Hydro Tasmania's model may open concerns about the independence of these estimates as Hydro Tasmania is the main proponent of the Battery of the Nation initiative which depends on Marinus link. TasNetworks should seek alternatives to the use of this model in the PADR, or obtain independent verification as to the robustness of the model, its assumptions and the results.

Resilience Benefits

These account for high probability, low impact events (HILP) such as the loss of an interconnector. Such a loss would require the use of more expensive generation, or even load shedding. TasNetworks notes that they are not a separate category of market benefit in the RIT-T, but are included in existing allowable market benefits (so any double counting would need to be eliminated if resilience benefits were treated separately).

The IFR also mentions a further related benefit in that Hydro Tasmania may be able to relax its water storage targets as a second link provides additional energy security. Hydro Tasmania would be able to increase its despatch flexibility and gain access to the value of a one-time water release.

We note that TasNetworks have placed a preliminary value on the one-off water release of $50 million.[58] However, they have not included the value of Resilience Benefits in the market benefits presented in the IFR as there would be double counting involved and as

[58] The benefit itself is weighted using a 5 per cent probability of occurrence, representing a 1-in-20-year expectation of the 12-month outage of Basslink.

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there is uncertainty about the magnitude of reduction of water storage targets that would be permitted. Further work is planned on resilience benefits.

Consumers could benefit from these resilience benefits, but the approach and estimate would need to be robust and transparent. The further development of this market benefit should be carefully considered by consumer advocates.

Reduction in ancillary services costs

Ancillary services play an essential role in electricity markets by helping to keep the system stable and offer re-start capability if it goes 'black'. Ancillary services are provided via a separate market in the NEM. They do not comprise a significant proportion of smaller customer bills, but spot prices can increase significantly if in short supply or in emergency situations. Interconnectors can transport ancillary services from one region to another and Marinus Link would also be capable of providing some ancillary services directly.

The IFR points out that the future demand for ancillary services is uncertain but the replacement of thermal generation with renewable capacity and storage could increase ancillary services demand. On the other hand, the ability of new forms of generation to provide ancillary services is still evolving. TasNetworks has estimated the worth of ancillary services in the Marinus link IFR at $12 million for frequency control and $42 million for system restart services (present value terms), on a preliminary basis. Without commenting on the actual values, this seems to be a prudent approach with further work planned.

The IFR also mentions that Marinus Link has the potential to reduce the requirements for inertia services, network support and control ancillary services, and could also contribute to system strength. No estimates of the value of these services have yet been made.

The ancillary services benefits have been estimated by TasNetworks using methods and assumptions outlined in somewhat cursorily in the IFR. Consumers should support an independent estimate or, at least, a fully transparent one.

Avoided future network upgrades

Finally, the RIT-T recognises that some transmission investments may offset costs elsewhere in the transmission network (that is, avoid capex that would otherwise have to be committed). The IFR raises this possibility for Marinus Link and suggests that the 1200 MW option would reduce the cost to expand transmission capacity in northern Tasmania to facilitate additional renewable generation connection. This saving was internally valued by TasNetworks at $40 million. They also raise the possibility, still being investigated, of similar types of savings on the Victorian side of Marinus Link.

Although these potential savings are appropriate to include in the RIT-T market benefits calculation, consumers need to ensure that they are robust and independent in the PADR. Relying solely on TasNetworks' internal estimates may not be sufficient, with independent estimation or (as a minimum) verification desirable.

We note that the estimates for all the above market benefit categories are common across all the sensitivities shown, whereas the market benefits emerging from the EY model vary.

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Other Market Benefits Yet to be Quantified

A range of other market benefits that could enter into the Marinus link RIT-T have not been quantified in the IFR but potentially could be included in the PADR (with additional work underway).

We recognise that there are other potential market benefits, such as those below, that Marinus Link could potentially create. However, we note the comment in the IFR that they "have not been evaluated to date because their value was initially expected to be smaller than that of other benefit categories."[59]

Power system security

The IFR points out that the "progressive replacement of large thermal generating units by non-synchronous generators is expected to increase the difficulty in maintaining power system security, resulting in dispatch inefficiencies."[60] It further contends that Marinus Link can assist in mitigating this.

Competition benefits

Competition benefits refer to the market gains that can be obtained through the enhanced trading opportunities that transmission links can create. The IFR suggests that building a second link across Bass Strait will obviate the need for generators to negotiate secondary arrangements for their power purchase agreements across Bass Strait in case Basslink is out of service. We note that the measurement of competition benefits can be controversial, may not be large and is not often included in RIT-T assessments.

Option value

Building a 1200 MW Marinus Link comprising two 600 MW cables opens the possibility of building the link in two stages with an option value created. Option value in the RIT-T is discussed in Section 4.5.

4.4.4 Marinus link Market Modelling Results

We turn now to discuss the modelling results presented in the IFR and their consumer impacts. As this report is an assessment of the RIT-T and not the modelling used in the IFR, we make no assessment of the EY model.

Table 3 below shows a breakdown of the estimated net market benefits of Marinus Link using the IFR neutral scenario. Market benefits estimated from the EY model accounted for 75 per cent of the total market benefits with the 600 MW Marinus Link and 79 per cent under a 1200 MW option. Breaking this down further, variable operating savings[61] made up 60 per cent of the total market benefits with the 600 MW Marinus Link and 66 per cent under a 1200 MW option. These are significant proportions and place considerable onus on establishing that the model is robustly estimates variable operating cost savings and its assumptions are credible. The next biggest source of market benefits is avoided hydro spill, which we commented on (and raised some issues about) in Section 4.4.3.

[59] *IFR*, p. 95.
[60] *IFR*, p. 95.
[61] This item includes the cost of fuel, which typically makes up a significant proportion of RIT-T market benefits.

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We note that the modelling returns significant negative NPVs under both 600 MW and 1200 MW options using the neutral scenario and 2025 commissioning. In our view, the neutral scenario probably represents the most likely outcome given its assumptions on market and policy outcomes, including the important issue of emission reductions. This would call seriously into question the economic value of Marinus Link under both the 600 and 1200 MW options with the early (2025) commissioning date which is broadly consistent with the analysis of Marinus Link in the 2018 ISP, which does not envisage its commissioning until the mid-2030s.

Table 3: Net Market Benefits of Marinus Link in the Neutral Scenario

Marinus Link Neutral Option – 2025	600 MW ($M)	1200 MW[103] ($M)
Capex savings	87	64
Fixed operating cost savings	59	87
Variable operating cost savings	664	975
Reduction of unserved energy	35	28
Total benefits from EY market model	**845**	**1154**
Ancillary services	54	54
Avoided spill	127	131
Energy security	49	49
Avoided future network upgrades	0	40
Tamar Valley Power Station (**TVPS**) stays in service[104]	40	40
Total additional benefits	**270**	**314**
Total Marinus Link benefits	**1115**	**1468**
Marinus Link costs	**1385**	**2198**
Economic worth	**(270)**	**(730)**

Source: *IFR*, Table 9, p. 100

Regarding the sensitivities assessed in the IFR, the impact of these on the Net Market Benefit NPV's for Marinus link are shown in Figure 2 and Figure 3 below. There were ten

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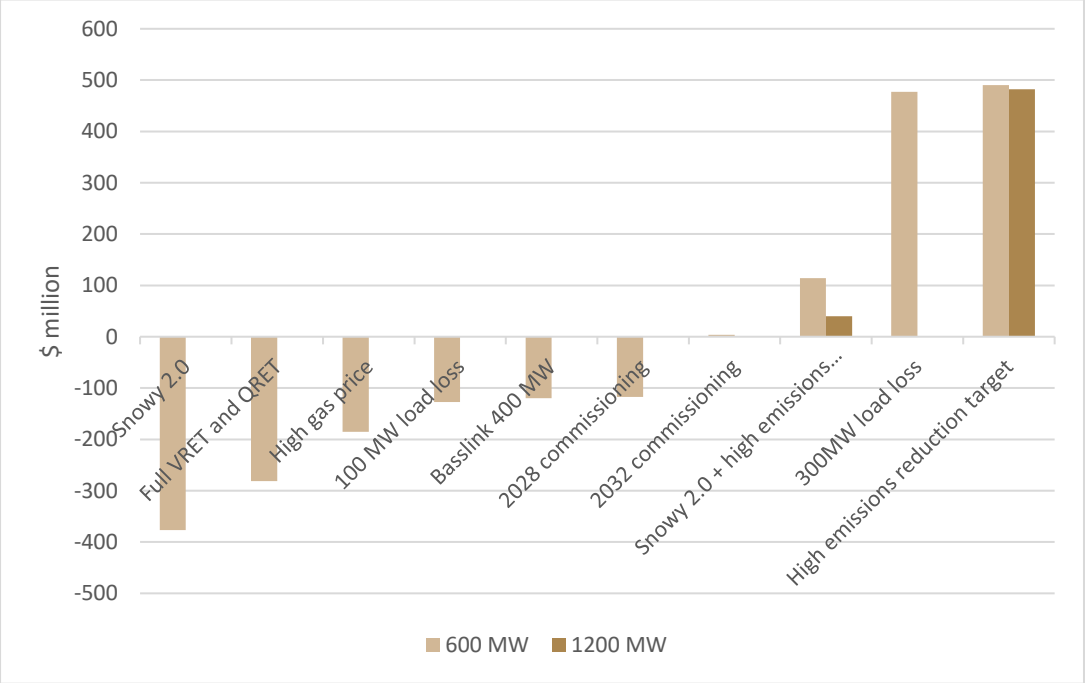
sensitivities undertaken[62] and six show negative NPVs, meaning that the project would not pass the RIT-T. Of the other four sensitivities, delaying commissioning until 2032 shows only a very small positive NPV. Only the sensitivities for a 300 MW load loss in Tasmania (equating to the loss of a major industrial user) and the High Emission Reduction Target (with and without Snowy 2.0) show positive NPVs. However, the addition of Snowy 2.0 significantly reduces the NPV to the point where the 600 MW option still shows a material impact, but the 1200 MW option is close to borderline. This strongly suggests that the economic impact of Marinus Link commissioned in the mid-2020s is highly dependent on either Australia adopting a much higher emission reduction target or Tasmania experiencing a loss of one of more major industrial customers. As we argued in Section 3.3, there are sound reasons to question the likelihood of either of these events happening on current evidence. Therefore, a leap of faith would need to be made if either of these were to be used to justify the construction of Marinus Link before the mid-2030s, which is broadly consistent with the current ISP.

Figure 2: Net Market Benefits of Scenario NPVs



Source: *IFR*, Table 10, p. 101

In Figure 3 below, we show the difference in all sensitivities compared to the neutral one. Much the same picture emerges. While all sensitivities apart from Snowy 2.0 (with neutral scenario assumptions) and that assuming the full impact of VRET and QRET have positive

[62] Aside from the modified AEMO Neutral Scenario, the sensitivities used were: a High Emission Reduction Target of 52 per cent reduction in 2005 emissions by 2030 and 90 percent by 2050; loss of 300MW in industrial load in Tasmania; commissioning of Snowy 2.0 by 2025 with High Emission Reductions; commissioning of a 600MW Marinus Link by 2032; a high gas price; derating Basslink to 400MW; a 100MW Tasmanian load reduction; full impact of both VRET and QRET; and commission Snowy 2.0 by 2032.

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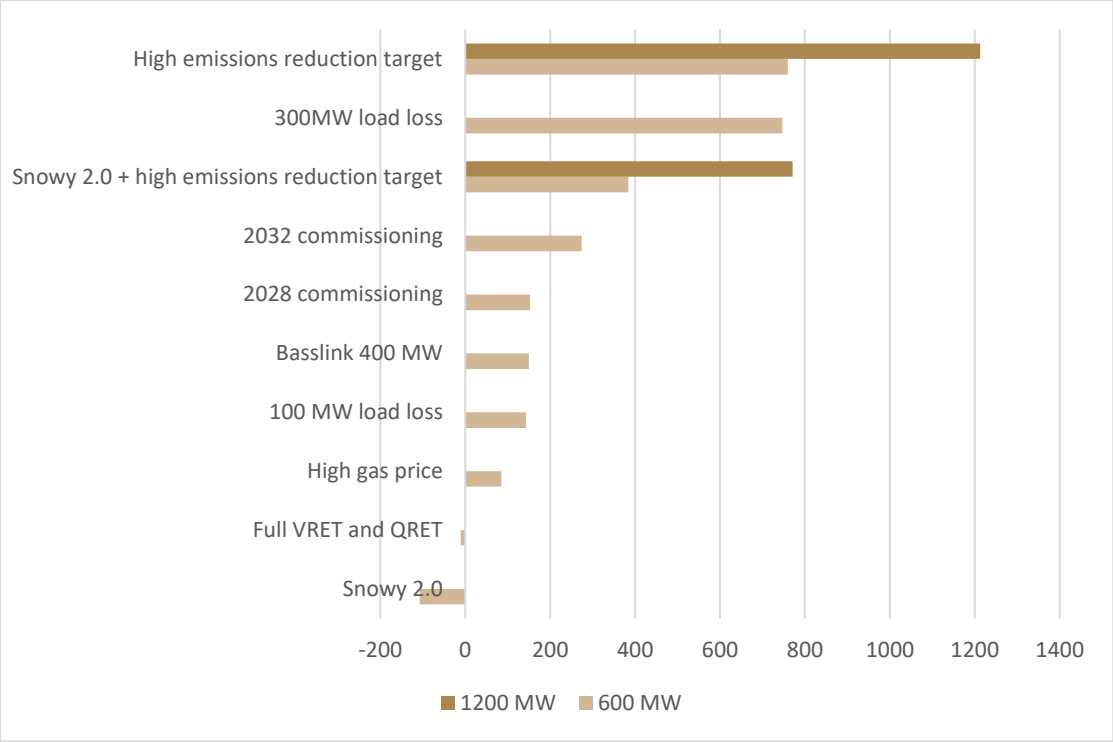
impacts (compared to the neutral scenario), it should be recalled that six show negative NPVs (compared to BAU), and would not pass the RIT-T test.

Figure 3: Scenario NPVs - Difference from Neutral



Source: *IFR*, Table 10, p. 101

These results suggest that, on the basis of current evidence, the case for building Marinus Link before the mid-2030s (a proposition advanced TasNetworks) is weak and unlikely to benefit electricity consumers. In our view, based on current evidence, customers or consumer advocates should not support building Marinus Link earlier than the mid-2030s.

Consumer Findings: Market Modelling Approach and Results

- As the PADR is yet to be completed, the only available contemporary modelling information for Marinus link is contained in the IFR.
- The market modelling undertaken for the IFR is consistent with the approach required by the RIT-T, but not as detailed as required for the PADR. This provides consumers with some useful preliminary information about the market impacts of Marinus link, but additional work will be needed for the PADR.
- We accept that the EY model can model the market benefits of Marinus link but note that it is currently unable to estimate some benefits.
- We have reservations about the justification for and likelihood of the high impact sensitivities (High Emission Reduction and Loss of 300 MW Load) used to test the sensitivities of the market benefits.

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- There is a potential concern that estimating some market benefits outside the main model could led to issues such as estimation differences, inconsistencies or overlap. TasNetworks should ensure that the use of different estimation techniques does not interfere with the robust estimation of market benefits in the Marinus link RIT-T.
- The IFR presents estimates for avoided hydro spill, resilience benefits, reduced need for ancillary services and avoided network upgrades. Their inclusion is consistent with the RIT-T, but estimation outside the main model, by using a Hydro Tasmania model (for avoided spill) and (in some cases) internal TasNetworks estimates is not sufficiently independent to provide consumers with the requisite degree of quality assurance.
- A range of other potential market benefits have not been quantified in the IFR – power system security, competition benefits and option value. We note TasNetworks' intention to further investigate these compared to its initial view that these benefits were too small to include. If they are to be included, robust and independent estimates will need to be made to assure consumers of their value.
- The results of the net market benefit analysis shown in the IFR strongly suggest that, on the basis of current evidence, the case for building Marinus Link before the mid-2030s (a proposition advanced by TasNetworks) is weak and not very likely to benefit electricity consumers. This suggests that consumer support should be withheld for the time being.

4.5 Issue: Option Value

The RIT-T allows proponents to assess options that involve postponing part of an investment for a later time. This action can be assigned a value in the net market benefits test used in the RIT-T. The AER defines option value as follows:

> *"Option value is a benefit resulting from retaining flexibility where certain actions are irreversible (sunk), and new information may later arise on the payoff from taking a certain action."*[63]

This recognises that past investment decisions may be reversible (possibly at a higher cost).

For example, future demand may be subject to significant uncertainty. This may open the option of building the line but at a reduced capacity (a lower kVA rating or constructing a single line for now), or even implementing grid support through demand management initiatives. Once demand is certain, the full project can be implemented.

This value can be modelled in the RIT-T by performing scenario analysis, thereby valuing how the net benefits of different credible options vary under different scenarios.

Option value can be useful for customers as it essentially allows costs to be deferred until the option is realised (sometime in the future) and, for the time being at least, associated

[63] AER, *Application Guideline: Regulatory Investment Test for Transmission*, December 2018, pp 58-9 at https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/rit-t-and-rit-d-application-guidelines-2018.

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transmission charges will be lower as result. However, they may also be impacted if the costs of the full project rise in the meantime.

Marinus link provides a case-in-point where it may be possible to capture some option value in the RIT-T. TasNetworks raises this possibility in the IFR by suggesting that the 1,200 MW option for Marinus link, which involves the construction of two 600 MW cables, could be constructed in two stages, the first beginning in 2025 and the second two to three years later. Of course, it would need to be shown that this is a superior option.

It is worth mentioning that invoking such an option value in Marinus link could also carry risks for consumers. For example, the cost of building the second cable could increase in the meantime, or demand might increase faster than anticipated, opening up a greater possibility of load shedding or price pressures before a second cable is built. These risks can be modelled as RIT-T sensitivities to gain some understanding of the costs involved.

A thorough RIT-T provides the best available assurance that Option Value is used to optimise the investment outcome but will still be subject to some consumer risks of the kind discussed above.

Consumer Findings: Option Value

- Option value can be useful for customers as it essentially allows costs to be deferred until the option is realised (sometime in the future) and, for the time being at least, associated transmission charges will be lower as result.
- However, there are risks associated with invoking an Option Value, such that costs may increase unexpectedly in the future, or demand may increase faster than expected raising the possibility of price pressures or load shedding.
- TasNetworks is considering the use of an Option Value in the RIT-T for Marinus link that involves deferring construction of one of the two 600 MW cables used in its 1,200 MW option for two to three years. This could benefit consumers, albeit with some risks of exposure to higher future costs or tight supply situations.

4.6 Issue: Inter-Regional Impacts

The NEM is an interconnected market via a number of transmission links between its various regions. These links can benefit consumers in terms of facilitating trade in electricity across regions, keeping prices lower, helping to optimise the use of generation assets, and helping to ensure reliability and security of supply. The timing and building of additional interconnector capacity is therefore a critical issue and the RIT-T plays a vital role in this. As the NEM transitions from a market dominated by thermal generation to greater reliance on different forms of generation including renewable generation and storage (with associated locational changes), there are new pressures emerging to build additional transmission capacity, including interconnectors, to facilitate this change. An important issue is the ability of the RIT-T to cope with such changes.

The method outlined above for calculating market benefits should implicitly capture inter-regional market benefits and the AER makes clear that such benefits must be included in the

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RIT-T. However, regional benefits do not need to be separately quantified in the RIT-T, although consumers would presumably prefer a separation of benefits into regions given that consumer impacts (benefits and prices) are mostly regionalised.

The RIT–T allows for the assessment of options whose market benefits are complementary to and/or substitutable by other network and non-network options that may be pursued in other NEM regions. The AER's Guideline discusses the need for proponents to liaise with producers, consumers and transporters of electricity in other regions to understand these impacts and undertake a joint planning exercise if inter-regional market benefits are likely to be material. It also recommends that proponents have regard to AEMO's ISP (or similar documents) to inform their understanding of inter-regional impacts.

These requirements assist the need for inter-regional impacts to be considered in the RIT-T.

However, we note that the generation fleet transition taking place in the NEM in moving to greater reliance on renewable generation is changing not only the type but also the location of generation in the NEM, with consequences for the transmission network and interconnection requirements. This is driving the consideration of a suite of new or upgraded interconnectors and other transmission investments, of which Marinus link is one.

This is, in turn, raising questions about the ability of the RIT-T to deal effectively with a situation where a suite of interconnector options is being considered more-or-less simultaneously. And for the RIT-T to produce outcomes that are consistent, efficient and timely, such that the projects with the highest net market benefits proceed in time to maintain reliability, while other projects are either not proceeded with or postponed until a later time.

The RIT-T procedures mentioned above for the consideration of inter-regional benefits should help but there are some challenges. One is the risk that proponents may show a tendency to act as 'silos' with too much of a focus on their own project to the detriment of NEM-wide outcomes. Another is that, due to the project specific application of the RIT-T, there is no holistic assessment of the suite of projects. As a result, it is possible that over-or under-investment in interconnectors will occur, that investments will take place too early or too late, or that less efficient investments will occur before investments with the higher net worth.

The ISP acts as somewhat of a circuit-breaker on these risks, but it is possible that more is required, e.g., a more holistic assessment through strengthening of the ISP. The recent advent of the ISP also makes its usefulness more difficult to gauge.

Available information suggests that Marinus link could have significant inter-regional impacts (see Figure 4). The IFR makes clear that TasNetworks has been engaging with AEMO and AusNet on the project in order to better understand Victorian impacts, as well as Tasmanian ones. However, this has not yet progressed to formal joint planning, notwithstanding the significant impact on Victoria. TasNetworks has also had regard to the ISP in the development of Marinus link and is (for the most part) using the ISP to develop RIT-T inputs and assumptions (discussed in Section 3.3). This should benefit consumers, although TasNetworks will need to further address these matters in the PADR.

It is beyond the scope of this report to opine on whether the ISP should replace the RIT-T in order to provide a more holistic consideration of NEM transmission investments, be used to overarch it in some way or merely continue to develop to support improvements in the application of the RIT-T so that, for example, there is a more integrated approach to

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transmission investments. However, these are matters that probably should be considered further.

Consumer Findings: Inter-regional Impacts

- Interconnection of the NEM's regions is an important issue for consumers given that it impacts interregional trade, prices, reliability and security of supply.
- The RIT-T adopts an approach to inter-regional market benefits that ensures these are taken into account, assuming proponents closely follow the AER Guideline.
- It would be preferable for consumers (i.e., more transparent and informative) if inter-regional impacts were formally required to be separated in the RIT-T as market benefits have been in the EY modelling for Marinus link.
- However, the generation transition taking place in the NEM is driving a need to consider multiple interconnector and transmission projects more-or-less simultaneously and this is challenging the RIT-T. There is a risk that individual projects being considered by individual proponents will not lead to optimal outcomes for consumers, notwithstanding the partial circuit-breaker provided by the ISP.
- Consumers should be able to take some comfort from the fact that TasNetworks is closely following the AER Guideline in how it is approaching the inclusion of inter-regional market benefits in the RIT-T for Marinus link, although further steps are needed in the PADR.
- It is beyond the scope of this report to opine on whether the ISP should replace the RIT-T in order to provide a more holistic consideration of NEM transmission investments so that there is a more integrated approach to transmission investments. However, these are matters that probably should be considered further.

4.7 Issue: Regional Impacts in the RIT-T

Consumers will have a significant interest in the regional distribution of costs and benefits of RIT-T projects, especially interconnectors, given that their electricity prices are determined on a regional, not national, basis. In the case of interconnectors, regional impacts can be both significant and potentially differ greatly from one region to another. However, the RIT-T is conducted on a purely national basis with no requirement to even report on regional impacts in terms of costs, market benefits, net market benefits and electricity prices. This is a significant shortcoming for consumers, especially where interconnectors are planned.

Consumers should be presented with an analysis of the regional impacts of RIT-T projects given that they will be asked to shoulder much of the associated costs in regulated transmission charges. Consumers in regions that stand to benefit are more likely to support projects, whilst those in regions that stand to lose from a project should know this and can then advocate accordingly to either oppose the project or seek amendments to it. This also improves the transparency of the RIT-T process, the likelihood of consumer participation and the robustness of decision-making.

Most models used to estimate RIT-T net market benefits would be capable of separating market benefits into regional impacts and it would be simple to extend this to prices.

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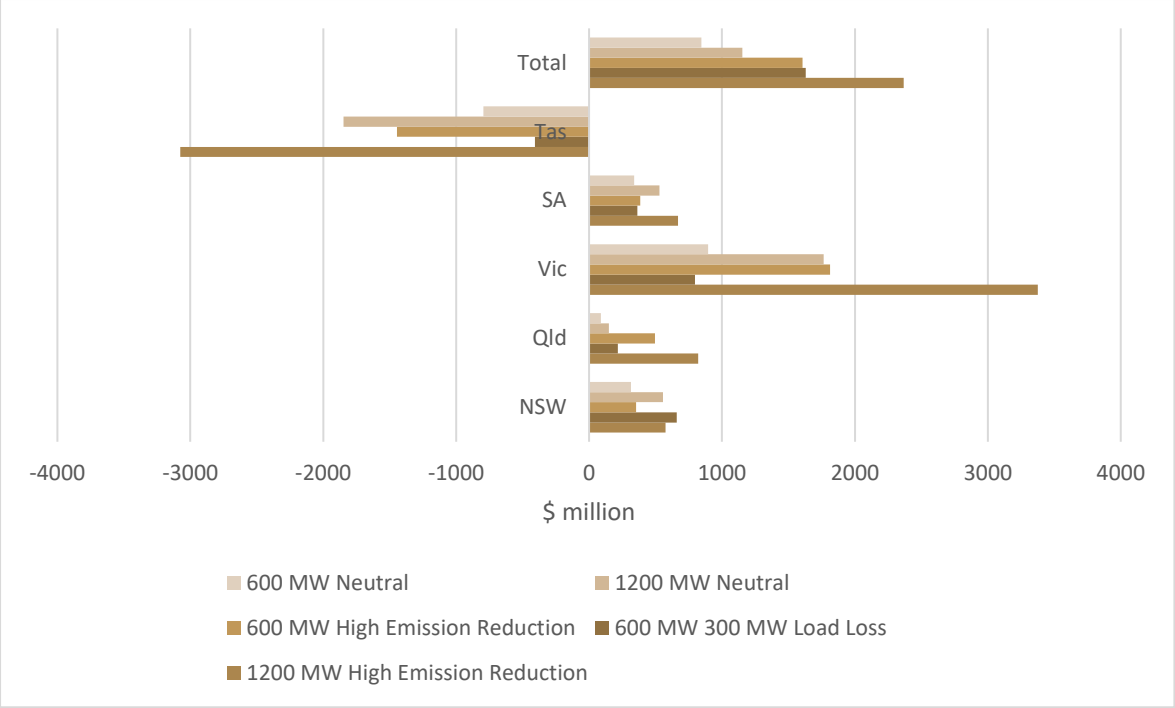
Helpfully, some RIT-T proponents have reported regional impacts and are thus provided consumers with some regional information. The RIT-T that ElectraNet recently concluded for a new NSW-SA interconnector is a case in point where average regional price impacts were reported in the PADR and PACR.[64]

4.7.1 Marinus link Regional Impacts

Unfortunately, the IFR for Marinus link does not report on regional impacts, other than to provide some brief comments. However, the modelling conducted by EY does present regional impacts for the estimated market benefits in terms of their NPVs. From these an indication can be gained as to regional benefits to consumers of the project over the modelling period (2025-2050). However, no electricity price impacts are provided.[65]

Figure 3 below shows the modelled regional impacts of Marinus link for the neutral case, as well as the high emissions reduction target and loss of 300 MW Tasmanian load scenarios. Results are reported for the 600 MW and 1200 MW (staggered construction) options where these were modelled.

Figure 4: Marinus Link Modelled Market Benefits by Region (NPV)



Source: IFR, Appendix 1: Economic Modelling Report

[64] Electranet, *SA Energy Transformation RIT-T*, PACR at https://www.electranet.com.au/wp-content/uploads/projects/2016/11/SA-Energy-Transformation-PACR.pdf.

[65] The IFR points out that the EY model calculates the hourly energy price proxy based on a combination of short run marginal cost for existing energy sources and long run marginal cost for new energy sources, but no price results appear in either the IFR or its Appendix 1 on the EY modelling.

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It is clearly apparent that the regional impacts of market benefits for Marinus link are expected to vary enormously under all scenarios shown. Victoria tends to be the main beneficiary (positive market benefits of between $800 million and $3,400 million NPV), with NSW, Queensland and SA also standing to benefit. However, Tasmania would experience significant negative market benefits (of between -$400 million and -$3,100 million). This result largely explains the current position of the Tasmanian Government and TasNetworks in only supporting the project as a regulated link if this disadvantage is dealt with (we discuss this further in Section 5.

Consumer Findings: Regional Impacts

- Consumers should be presented with an analysis of the regional impacts of RIT-T projects given that they will be asked to shoulder much of the associated costs in regulated transmission charges, but this is not a requirement under the RIT-T.
- Helpfully, some RIT-T proponents have themselves reported some regional impacts, such as average price impacts, which consumers should welcome.
- There should be a formal requirement for RIT-T proponents to report on regional consumer impacts where these are material, e.g., with interconnectors, especially regional NPVs and prices.
- Marinus link is a case in point where the regional market benefits vary widely between regions, with Victorian consumers standing to gain the most and Tasmanian consumers standing to lose the most. This has prompted the Tasmanian Government and TasNetworks to only support Marinus Link if this issue is addressed.

Recommendation 6

The RIT-T should be amended to include a formal requirement for RIT-T proponents to report on regional consumer impacts where these are material, and with interconnectors, regional NPVs and projected price impacts across broad customer classes.

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5 TREATMENT OF TRANSMISSION PRICES ISSUES

Consumers should advocate strongly for an allocation of the costs of RIT-T projects that fairly and reasonably reflects the expected benefits of those projects. Even then, the mismatched timing of costs (largely expended up-front and charged mainly to end use consumers from the point of commissioning) and benefits (likely to flow over the course of the project with delays and uncertainty involved), requires a leap of faith by consumers.

Consumer jeopardy is exacerbated by the fact that the RIT-T is conducted in isolation from transmission price impacts, which are determined through the separate AER regulated revenue, contingent project and annual price adjustment processes.

5.1 COST ALLOCATION AND REVENUE RECOVERY FOR RIT-T PROJECTS

Whilst cost allocation and revenue recovery issues are outside the RIT-T, the issue is considered in this report in view of the potentially significant impact on consumers following the RIT-T assessment.

The Marinus link IFR points out that there are a range of ways that regulated revenues can be allocated between regions and that the current NEM Rules for apportioning interconnector revenue are not clear-cut. The proportion of interconnector revenue allocated between regions is subject to assessment and negotiation, which may include jurisdictional agreement. Typically, revenue for each region reflects the assets located in that region. With an asset crossing Bass Strait, there is scope for a different allocation, including by jurisdictional agreement.

We note that the current pricing framework results in the vast majority of interconnector and transmission shared network revenue allocated to a NEM region being recovered from customers within that region, even where the assets are principally used to move energy to other NEM regions as is expected with Marinus Link.

The IFR points out that the market model used by EY calculates a proxy for the hourly wholesale energy price in each NEM region.[66] It notes that:

> *"The energy price outputs of the model indicate that the majority of the energy price savings delivered by Marinus Link end up being seen by customers in the mainland NEM regions, principally in Victoria and New South Wales, with smaller savings in South Australia and Queensland."*[67]

The only potential benefits of Marinus Link for Tasmanian electricity customers are increased energy security and (potentially) increased competition.

This strongly suggests a serious disconnect between the RIT-T assessment, which considers benefits across the NEM, and the pricing framework to recover the resulting efficient revenues, which applies to each region where the assets are constructed and allocated.

As the IFR goes on to say:

[66] No price results appear in either the IFR or its Appendix 1 on the EY modelling.
[67] *IFR*, p. 143.

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> *"The current NEM regulated network pricing framework would lead to higher transmission charges in Tasmania and Victoria. It would not pass on network charges to electricity customers in other regions, who would benefit directly from Marinus Link. Tasmania will see benefits arising from broader economic stimulus from Marinus Link investment, but receive fewer benefits in the energy market."*[68]

This means the current NEM network pricing framework will disproportionally disadvantage Tasmanian customers and to a lesser extent Victorian ones, but advantage those in NSW, Queensland and SA.

TasNetworks conclude that:

> *"Where the project is forecast to deliver a positive net economic benefit, the question of 'who pays' will be highly relevant to the investment decision. Therefore, TasNetworks considers that the link should only proceed as a regulated service if regulated pricing outcomes recognise that Marinus Link benefits are principally to mainland NEM customers."*[69]

The Tasmanian Government has adopted the same position in the Current Situation Assessment (CSA) published by the Department of State Growth.[70]

The IFR suggests two ways in which this could be achieved:

- Contributions from Government, such as grants that recognise national benefits and that directly offset Marinus Link costs allocated to Tasmanian customers; and/or
- Modifications to the present NEM pricing framework.

TasNetworks has said that it will actively work with policy makers, regulators and market bodies to seek appropriate customer pricing outcomes.

The CSA points out that:

> *"The COGATI [Coordination of Generation and Transmission Investment] final report recognises that the current pricing framework struggles to appropriately allocate costs to beneficiaries, with the AEMC seeking to undertake a further review of this issue. However, this process is likely to take some time and an earlier resolution is required to facilitate Marinus Link to bring it to market when it may be required."*[71]

In our view, consumers and their advocates should take an active interest in this matter in order to help secure a change that more closely aligns the RIT-T cost allocation with pricing

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[68] *IFR*, p. 143.
[69] *IFR*, p. 143.
[70] Department of State Growth, *Current Situation Assessment – Project Marinus and Battery of the Nation* at https://www.stategrowth.tas.gov.au/__data/assets/pdf_file/0007/185839/Current_Situation_Assessment_-_Marinus_Link_and_Battery_of_the_Nation.pdf.
[71] Department of State Growth, *Current Situation Assessment – Project Marinus and Battery of the Nation*, p. 18, our parenthesis, at https://www.stategrowth.tas.gov.au/__data/assets/pdf_file/0007/185839/Current_Situation_Assessment_-_Marinus_Link_and_Battery_of_the_Nation.pdf.

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outcomes. We note that this could also involve the allocation of costs to generators using Marinus link.

The lack of clarity of the Identified Need is discussed in section 3.1 of this report, and an associated issue is the definition of "beneficiary", that is the party or parties which will receive benefits from Marinus link or other interconnectors.

The separation of the RIT-T and associated net benefits analysis from the consideration of cost allocation under the current rules, as mentioned at section 5 of this report, if applied unamended to Marinus link, would result in an inequitable and unacceptable allocation of costs to electricity consumers in Tasmania and Victoria.

In addition, other beneficiaries including wind farm proponents would not bear any share of the costs of a completed Marinus Link.

There is a clear need within the RIT-T process to identify who will be the beneficiaries of any interconnector investment, and the relative value of the benefits derived, with a corresponding need to ensure that all beneficiaries pay their appropriate share of the costs of the investment, including ongoing operating costs.

Such an outcome is what would be expected in any commercial venture, however the existing regulatory framework acts to prevent such an outcome.

From a commercial perspective, the usual starting point is the strategic objectives or outcomes which any investment is expected to achieve, which enables an articulation of which benefits will accrue to which stakeholders (often described using the terms shareholders, customers and community).

In the case of an interconnector investment, it could be expected that the Identified Need" would facilitate such an articulation, but, as in the case of Marinus link, that is not the case – a situation which must be corrected.

It is therefore our view that changes must be effected to the RIT-T process and to the transmission pricing provisions contained in Chapter 6A of the National Electricity Rules.

The necessary rule changes would be preceded by an extensive review of the issues discussed (very briefly) above. Such a review should be guided by the ESB.

Consumer Findings: Transmission Prices

- The cost allocation of RIT-T projects must fairly and reasonably reflect the expected benefits to consumers and must recognise the risks to consumers of the unbalanced timing of project costs and market benefits.
- The current transmission pricing framework results in a serious disconnect where the vast majority of interconnector and transmission shared network revenue allocated to a NEM region are recovered from customers within that region, even where the assets are principally used to move energy to other regions and where market benefits reflect this.
- This is precisely what is expected to occur with Marinus Link, with Tasmanian consumers paying a significant share of costs but deriving few market benefits,

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Victorian consumers paying some costs but benefiting significantly more, and NSW, Qld and SA consumers benefiting but paying none of the costs.

- Such a disconnect is not acceptable to consumers and a revised pricing mechanism is necessary to achieve equity in cost allocation, including the allocation of costs to generators utilising and benefiting from Marinus Link and interconnectors in general.
- There is a clear need within the RIT-T process to identify who will be the beneficiaries of any interconnector investment, and the relative value of the benefits derived, with a corresponding need to ensure that all beneficiaries pay their appropriate share of the costs of the investment, including ongoing operating costs.

Recommendation 8

The ESB should undertake an extensive review of the RIT-T and the provisions of Chapter 6A of the NER and effect the necessary Rule changes to require that the RIT-T clearly identifies all parties who will benefit from interconnector investments, in all applicable jurisdictions of the NEM, the value of those benefits, and that the resulting cost allocations and changes to transmission prices are directly aligned to those benefits.

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6 OTHER RIT-T ISSUES

In this section we focus on the consumer impacts of a range of other important RIT-T issues using Marinus link as a reference point.

6.1 ISSUE: CONSUMER RISK

As discussed in our report on the Marinus link PSCR consumers, especially those in Tasmania and Victoria, could bear significant risks from the construction of Marinus Link, especially if operated as a regulated link. Given the changes taking place in the NEM, as outlined elsewhere in this report, the risks are large in terms of both the scale of the investment involved and the probability of the investment failing to deliver the expected benefits.

These risks include:

- The interconnector does not operate as modelled with lower net market benefits than anticipated, with the possibility that costs exceed actual benefits delivered. The potential drivers of such an outcome are many and varied, but include, for instance, unexpected market behaviours arising from the construction of all four additional interconnectors proposed in AEMO's ISP.
- Transmission pricing matters are not resolved to the satisfaction of consumers.
- Marinus Link is constructed but changes in the NEM, flagged by the ESB in its Post 2025 Market Design Issues Paper, mean that it is not required or is underutilized beyond an initial period, small compared to its service life, and becomes a stranded asset, with costs continuing to be borne by consumers following its stranding.
- The assumption that the market is competitive enough to pass through wholesale price benefits to consumers. Presently, there is considerable doubt about this in Victoria and elsewhere in the NEM, as expressed by the ACCC in its recent report on electricity prices[72] and others[73].
- In Tasmania, pass though of the market benefits associated with Marinus link to smaller consumers will rely on regulation. As retail competition is all but absent for residential and small business consumers, and Hydro Tasmania is a dominant generator, retail prices for smaller customers are currently regulated. There is a risk however around regulation of small business and household prices. Smaller consumers must rely on regulated prices to pass through market benefits, such as lower wholesale prices and ancillary services costs. The Tasmanian Government has capped regulated electricity prices until 2021/22 and is investigating linking retail prices to the cost of producing electricity in Tasmania rather than the Victorian

[72] ACCC, *Restoring electricity affordability & Australia's competitive advantage*, Final Report, 11 July 2018 at https://www.accc.gov.au/publications/restoring-electricity-affordability-australias-competitive-advantage.

[73] See for example, Bruce Mountain and Stephanie Rizio, *Do Victoria's households leave less money on the table when they switch electricity retailers?,* VEPC Working Paper 1909, Sept 2019 and Bruce Mountain and Steven Percy, *The exercise of market power in Australia's National Electricity Market following the closure of the Hazelwood Power Station*, VEPC Working Paper 1901, March 2019 at https://www.vepc.org.au/working-papers. Also Tony Wood, Guy Dundas and Lucy Percival, *Power play: how governments can better direct Australia ' s electricity market*, Grattan Institute Report, 7 October 2019, and Tony Wood and David Blowers, *Mostly working: Australia ' s wholesale electricity market*, Grattan Institute Report, 1 July 2018 at https://grattan.edu.au/home/energy/.

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wholesale contract price but the future of Tasmanian price regulation beyond 2021/22 is unclear.

Aside from these risks to consumers, there are numerous other consumer risks associated with the application of the RIT-T that have been referred to in other parts of this report.

We believe the AER RIT-T Guidelines should contain requirements for proponents to provide a Consumer Risk Assessment as part of the RIT-T. Each RIT would be required to outline the consumer risk issues involved with its project and how this has been taken into account in the RIT-T, as well as how consumer risks were assessed. Application of the usual techniques applied in the RIT-T, such as modelling, scenario analysis, sensitivity testing and probability weighting should be possible in assessing consumer risks.

If the project involves significant risk to consumers it should either include a mitigating strategy acceptable to consumers (or their representatives), or it should not proceed until this is done (unless there is persuasive argument to the contrary).

Such issues would be considered by the Consumer Forum recommended at section 3.1 of this report and would require agreement between the Consumer Forum and the Proponent.

Consumer Findings: Consumer Risks

- Given the changes taking place in the NEM, as outlined elsewhere in this report, the risks to consumers associated with interconnector investments are large in terms of both the scale of the investment involved and the probability of the investment failing to deliver the expected benefits.
- The risks include but are not limited to the potential for underutilisation and asset stranding, and imperfections or interventions in retail and generation competition acting as a constraint on the pass through of RIT-T market benefits. These risks can impose material costs on consumers, including higher transmission or wholesale prices than anticipated in a RIT-T.
- It would be advantageous to consumers if there was a requirement on project proponents to include a Consumer Risk Assessment in the RIT-T (especially for large projects).

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Recommendation 9

The RIT-T be amended to require the inclusion of a comprehensive consumer risk assessment, including mitigating actions. The risk assessment would be one of the components of the RIT-T requiring agreement between the Consumer Forum and the Proponent.

6.2 Issue: Non-Market Benefits

The RIT-T does not permit the inclusion of non-market benefits (or externalities) in the net market benefits test. This is to confine the application of the RIT-T to benefits and costs that apply to consumers, producers and transporters in the electricity market. This also helps to keep the focus of the RIT-T more squarely, although not exclusively, on electricity end-use consumers.[74]

In regards to Marinus link, it is worth pointing out that the IFR is not part of the RIT-T and therefore TasNetworks have included the results of modelling of non-market benefits in that report (using a different model to the EY model used for market benefits), whilst essentially applying the RIT-T approach to modelling of market benefits. The two are summed together to obtain a cost-benefit impact that includes both market and non-market benefits. This was done given the broader purpose of the IFR.

This report is confined to an assessment of the RIT-T, and it would be outside of its scope to assess the Marinus link IFR's treatment of non-market benefits.

It is, however, worth pointing out that the consideration of non-market benefits could have an impact on the RIT-T in that it could be used to justify the provision of external funding to Marinus link, which could impact the net market benefits calculation. The external funding issue is discussed further in Section 6.4 below. In turn, this could impact on consumers depending on how the costs of the project are apportioned and costs allocated. Electricity consumers should only pay for that proportion of the project that enters the Regulated Revenue Requirement and no more. It is therefore important for consumers to carefully consider external funding and how it impacts the allocation of project costs.

Consumer Findings: Non-market Benefits

- The RIT-T excludes non-market (or external) benefits as these are outside the assessment of net market benefits in the electricity market that takes place under the RIT-T. This provides a level of protection to electricity consumers that benefits that have no bearing on them will not enter the RIT-T calculus and 'muddy the waters'. If they did enter the RIT-T, consumers could be forced to pay for benefits from which they derive no actual benefit as market customers.

[74] We note that some project externalities are taken into account, but outside the RIT-T framework, though mechanisms such as planning, environmental, land use, cultural and heritage requirements and the like.

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- TasNetworks has separated the computation of market benefits from non-market benefits in the IFR and acted in accordance with the RIT-T. This separation adds transparency to the estimation of market versus non-market benefits.

6.3 Issue: Merchant & Hybrid Interconnector Options

It is not essential that interconnectors be built as regulated assets. There are also the options of building them as merchant (or market-based) interconnectors, which trade their capacity in the wholesale electricity market by arbitraging price separation between the two regions they connect. Basslink is the only such interconnector in the NEM at present, although Murraylink and Direct Link both began operating as market-based links before subsequently converting to regulated status.

There is also the possibility of building an interconnector on a part regulated and part merchant, or hybrid, model. However, there are no hybrid interconnectors in the NEM at present and rule changes may be required to allow them to operate. Hybrid interconnectors are beginning to emerge in other markets, such as in Europe and the United Kingdom.[75] However, it would be beyond the scope of this report to discuss and assess the use of alternatives to the RIT-T.

Consistent with the scope of this report we confine our comments on the use of non-regulated interconnector options to the RIT-T.

Under a merchant interconnector model no RIT-T is required. Consumers do not pay a regulated transmission charge with a merchant model, rather costs and profits are recovered from the market through trading of capacity and this ultimately finds its way to consumer prices.

Use of a hybrid model would break new ground in Australia. Presumably, the RIT-T would need to be applied as normal to the regulated transmission capacity and costs of the project, whilst the balance would be treated as a merchant asset. The risk that the market assets could convert to regulated status at some stage would also need to be considered.

The IFR raises the possibility of using both merchant and hybrid options for Marinus link. It mentions that for the Marinus Link option of building two 600 MW links, one could be treated as regulated and the other as market based with no Rule changes required. A single link would require its capacity to be split between regulated and merchant, which may require a change in the Rules. Neither option is well developed at this stage, but TasNetworks have indicated they will be doing more investigations.

Consumer Findings: Merchant and Hybrid Interconnector Options

[75] The IFR discusses this development and outlines the 'cap and floor' regime to be applied to Nemo Link, a subsea interconnector between the United Kingdom and Belgium, which will start operating in 2019 (see p. 147).

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- Merchant links do not come within the purview of the RIT-T, but do raise potential consumer issues that advocates should maintain a close eye on, including the consideration of which model will provide the best outcomes for consumers.
- No hybrid links currently exist in the NEM, but they are emerging in the European Union and United Kingdom. Presently the RIT-T would need to be applied to the regulated portion of such a link and Rule changes may be needed. Consumer advocates should maintain a watch on developments in this space.
- Both merchant and hybrid options are mentioned in the Marinus link IFR as possible approaches to adopt and are expected to undergo further assessment by TasNetworks.

6.4 Issue: External Funding

It is possible that a transmission project being assessed under the RIT-T could obtain external funding to assist with commercial development. The RIT-T 2018 Guideline makes clear how such funding is to be treated in the RIT-T assessment. Essentially there are two possible courses.

If the funding comes from a registered market participant (say a generator, transporter or retailer), this is treated as a voluntary wealth transfer between NEM participants and does not increase the net market benefits of the project. It is not enhancing the economic welfare (of the NEM), but simply transferring wealth between market participants so that the financial gain experienced by the recipient of the funds (the proponent) is exactly offset by the funds provided by the other participant. Moreover, if the funding participant has calculated that it will gain more than it pays, this should already have been incorporated in the market benefits calculation. This approach is well founded in the theory of economic welfare and consistent with the exclusion of wealth transfers from social cost-benefit analysis. If it were included, say as an offset to the costs of the project, it would skew the calculation of net market benefits to the detriment of consumers.

If external funds are provided by another party (who is not a market participant), then the benefit gained by the market participant (proponent) receiving the external funds, which becomes a reduction in the project costs, is not offset by the cost incurred (which may be thought of as negative net market benefit) by the Other Party providing the external funds. The reason for this is that the Other Party is not a Participant and its costs and benefits are outside the scope of the RIT-T cost-benefit analysis. As such, external funding from another party outside the market will increase the final net economic benefits of a RIT-T project.

Whilst this approach is soundly based on cost-benefit analysis as applied to the RIT-T, it may raise flow on issues. The most likely sources of such funds would be a Government or government agency. As these funds would be drawn from taxes or borrowing (supported by the taxing power of a Government), taxpayers would presumably want to be assured that this money was being wisely spent. The RIT-T is not particularly useful in this situation and some other robust analysis would be needed to address it (say a separate social cost-benefit analysis that also considered externalities).

Regarding Marinus link, the IFR briefly discusses the possibility of external funding by public or private means but does not do so in detail. It foreshadows that “the Final Feasibility and

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Business Case Assessment Report will include a more detailed assessment of the ownership and financing options." (p. 136)

Consumer Findings: External Funding

- Where external funding is provided to support a project, it is important that the RIT-T treat this in a way that enhances the economic welfare of the NEM and electricity consumers.
- The treatment of funds flowing from one NEM Participant to another is treated as a voluntary wealth transfer and so does not enter into the calculation of net market benefits under the RIT-T. This is based on sound cost-benefit analysis practice and affords a level of protection to consumers that the economic case for a project is not being overstated.
- If external funds are provided by non-participants (Other Parties), then project costs are offset accordingly whilst market benefits remain unaffected, with an increase in net market benefits. Consumers should benefit from such an outcome.
- As the most likely source of non-participant funding is government, there is a separate issue, outside the RIT-T regarding whether taxpayers are also beneficiaries from external funding.

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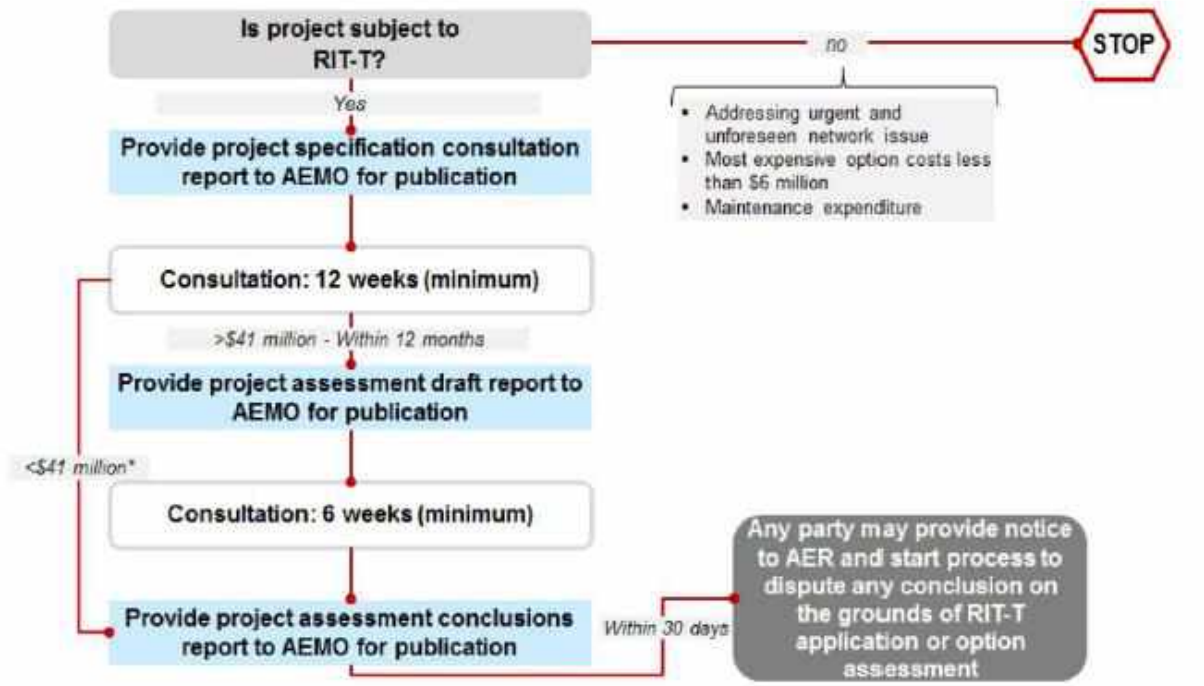
7 RIT-T Process And Consumer Engagement Issues

The RIT-T includes requirements to ensure that a public process is followed by proponents that involves stakeholders, including consumers, in consultation along the assessment path.

Figure 5 below summarises the RIT-T engagement process that proponents need to follow.

Figure 5: RIT-T Assessment and Consultation Process



Source: AER, *2018 RIT-T Guideline*, Figure 1. P. 64.

As described in Figure 5, there are three major consultation steps that proponents of RIT-T projects must undertake – initially provide a PSCR, within 12 months follow this with a PADR and finally provide a PACR. Importantly, there are minimum and reasonably lengthy periods set for stakeholders to lodge submissions on the PSCR and the PADR. This helps ensure that consumers have sufficient time to respond to what are, for the most part, quite technical reports, especially considering that they often face an information and resource disadvantage relative to proponents and market participants.

The AER 2018 RIT-T Guideline outlines in detail what each report needs to do and contain. We do not propose to go through this in detail but provide the following observations from a consumer perspective:

- A number of the RIT-T consultation requirements are directed specifically at the provision of reports to AEMO with consumers included as “interested parties” along with other stakeholders.
- It is a concern that the RIT-T only requires proponents to provide reports to interested parties (which includes consumers) “upon request” and does not require

them to publish reports on their website, with the AER's Guideline only noting that to do so would be "best practice".

- The RIT-T content requirements at each report stage are comprehensive and broadly supportive of transparency, which is useful to consumers.
- The RIT-T is a complex, technical and detailed process involving lengthy reports that many consumers and consumer advocates would have difficulty coming to grips with.
- The timelines for submissions are sufficiently long so as not to be a serious impediment to consumer participation and to assist consumers who have information and resource difficulties in responding to complex and technical RIT-T assessments.

We note however that consumer engagement becomes far less meaningful if there is limited consumer participation or if proponents do not respond constructively to consumer feedback. The RIT-T Guideline contains requirements that proponents must provide a summary of and responses to submissions received on the PSCR and the PADR, which is welcome. They should also clarify that proponents must address how they have responded to consumer feedback (e.g., what impact this has had on the RIT-T and why).

For Marinus link, as mentioned earlier, TasNetworks has completed a PSCR and followed the RIT-T stakeholder consultation process but has not yet provided a PADR, the next step in its RIT-T process. Both the TSBC and Goanna Energy have engaged with TasNetworks on the Marinus link RIT-T and so far we have not encountered any difficulties. We also note that TasNetworks have adopted a broad ranging approach and have made documents readily available on a website dedicated to Marinus link. The AER, in its Draft Decision on TasNetworks' Regulated Revenue Reset found weaknesses in TasNetworks' contingent proposal on Marinus link and made it a requirement that they undertake additional consultations. In our view, TasNetworks responded well to this.

The IFR for Marinus link outlines the consultation approach taken to date and intended for the Final Feasibility Report. This clearly states the value that TasNetworks see in stakeholder engagement and consultation on Marinus link. It also outlines a consultation and engagement approach built on a range of engagement methods, use of a Marinus link Stakeholder Management Tool for recording engagement activities, mapping and identification of stakeholder groups and development of a knowledge sharing plan. Although directed at the Feasibility Study, we would anticipate that this approach would also have applicability to the RIT-T. We also note that TasNetworks has taken some steps to better inform consumers about Marinus link, including undertaking public briefings, individual meetings and providing a separate summary of its PSCR. These are welcome initiatives, and consumers and consumer advocates would benefit from further steps to keep them well informed and engaged about the project. For example, a clear and simple explanation of the modelling and its output would be useful to consumers, with opportunities for them to respond to this.

In summary TasNetworks has engaged positively with consumers in accordance with the current RIT-T requirements, however we are of the view that given the circumstances which prevail in the NEM at present, the RIT-T requirements need to be significantly enhanced.

In our view, given the changes which are occurring in the NEM, the scale of the proposed investments to which the RIT-T is and will be applied, and the risks to consumers identified at section 6.1 above, the form of consumer engagement described in figure 5 above must change.

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In December 2013 the ACCC identified four broad forms of consumer engagement[76]:

1. Consult-and-respond mechanisms, which involve consumers being given an opportunity to respond to consultations on major regulatory decisions, but leave the regulator to take the final decision;
2. Consumer panels or advisory committee established to provide the 'consumer view' in certain regulatory processes;
3. Constructive engagement, where regulated companies are required to consult with consumers about their activities, and in particular their submissions in relation to price controls (such as aspects of their business plans); and
4. Negotiated agreements or settlements whereby companies and consumers are able to negotiate settlements or agreements between themselves on the price and other aspects of regulated services.

The current requirements of the RIT-T process are in accordance with the first form of engagement, whereas the New Reg process, identified in section 3.1 of this report, is in accordance with the fourth form of engagement.

The approach paper for the New Reg joint initiative of the Australian Energy Regulator, Energy Consumers Australia, and Energy Networks Australia[77] notes of the New Reg process that:

> *"The most significant departure from the current practice is that the network is seeking to present the AER with a revenue proposal, which has been developed and agreed with the network's consumers. As such, the network needs an entity with which it can reach agreement with. This entity is called the Consumer Forum, although we note that the title is unimportant. What is important is that this entity can be credibly seen to represent the perspective and interests of consumer. In this context we mean 'consumer' in the same way as it is used in the National Electricity Objective; which is all end users, be they residential, small business or commercial and industrial."*

Consumer Findings: Current RIT-T Process and Consumer Engagement

- Consultation steps in the RIT-T process allow for significant response periods, which can assist consumers to participate under the current "consult-and-respond" mechanisms, especially if they are information and resource constrained.
- The current process is transparent and supports the robust application of the test.
- More could be done to recognise the strong interest of consumers in the process, such as the strengthening the requirement to provide consumers (who have registered an interest) with reports; identifying more ways to support consumer understanding of what are, for them, complex issues; and it would improve the RIT-T if there was a requirement on proponents to show how they have responded to consumer feedback and how this has changed the RIT-T assessment.

[76] ACCC - The Consumer Knows Best: Involving Consumers in Regulatory Processes and Decision-making, Chris Decker

[77] NEW REG: TOWARDS CONSUMER-CENTRIC ENERGY NETWORK REGULATION, Approach Paper , March 2018, page 9

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- Marinus link has proceeded only a short way along the RIT-T process, so it is difficult to comment definitively on how well TasNetworks has consulted and engaged with consumers. Consultation to date has followed and, in some ways, exceeded the RIT-T process with indications that TasNetworks has developed a comprehensive strategy for consumer consultation and engagement. Publication of the PADR will provide further clarification.
- We are of the view however that given the circumstances which prevail in the NEM at present, the RIT-T requirements need to be significantly enhanced to ensure that consumers are satisfied that the scope of the matters considered during the conduct of a RIT-T are in their best interests, the inputs and options being considered are appropriate and all outcomes and conclusions similarly reflect the best interests of consumers.
- For interconnectors, the term "consumers" includes all consumers who will be impacted by the potential investment, across all affected jurisdictions.

Recommendation 10

The requirement for consumer engagement in the RIT-T process should be significantly strengthened in line with the mechanisms outlined in the New Reg process, incorporating the establishment of a Consumer Forum noted at recommendation 4 to negotiate key inputs and outcomes from the conducting of any RIT-T.

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8 FINDINGS & CONCLUSIONS

This report provides a consumer-focused assessment of the RIT-T and its application to Marinus link. Having considered in some detail the RIT-T, its application, outcomes and impacts on consumers, we conclude that the test is broadly appropriate to apply to the assessment of most transmission investments, but should be significantly enhanced for its application to interconnectors.

We have used Marinus link as a basis (where possible) to inform our assessment of the RIT-T. We stress that our conclusions are formed purely on the basis of the assessment in this report, which has been limited: in its scope; by the resources available for this report; and by confining the assessment to Marinus link but not considering other RIT-T projects. Our ability to use Marinus link in the assessment was also limited by the fact that it has not yet progressed to the PADR stage. As such, we have relied on the IFR, which is not (strictly speaking) part of the RIT-T and nor does it need to adhere to its requirements, although it does include assessments closely resembling the RIT-T. Notwithstanding these issues, we believe that this report and our conclusions have validity and should be useful to consumers and their advocates involved in RIT-T matters.

8.1 RIT-T POSITIVES

The RIT-T has a number of virtues, including:

- The assessment revolves around the well-known and widely accepted technique of cost-benefit analysis to help determine the economic worth of regulated transmission investments, which can involve significant sums of money that will be recovered from consumers in regulated transmission charges. A key aim of the technique is to provide an economic and quantifiable basis for informed decision-making about future transmission investments in the NEM. By-and-large the RIT-T meets this aim.
- The assessment centres on establishing that a regulated transmission investment will show positive net market benefits (in NPV terms) over a long period of time and therefore will benefit electricity market generators, transporters and consumers. This aims to ensure that transmission investment decisions will be economically efficient.
- The use of electricity market modelling aims to help consumers to gain a clearer quantified picture of the benefits of RIT-T projects but needs to be seen within its limitations.
- Confining the measured benefits and costs to the electricity market is appropriate for transmission investments that form part of that market.
- The types of benefits and costs included in a RIT-T are relevant to the the impact of transmission investments in the electricity market.
- Importantly, the RIT-T aims to ensure that regulated transmission investments are beneficial to electricity consumers, although the extent to which end-use consumers will actually benefit can be diminished by issues that arise in the application of the RIT-T and by market failures in the NEM.
- There is a process embedded in the RIT-T aimed at ensuring a satisfactory degree of transparency, public scrutiny and stakeholder engagement, including with consumers. The RIT-T does this to a reasonable extent but has some limitations.
- It should be beneficial to consumers that RIT-T proponents must use information from the ISP as default and starting points in setting inputs and assumptions. This

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supports consistency across projects and transparency in assessments but also depends on the quality of the ISP, which is a new and evolving concept.

These positives should provide consumers with a degree of comfort that the RIT-T will consider their interests and help to deliver outcomes aimed at the approval of efficient transmission projects.

8.2 RIT-T Shortcomings

From a consumer perspective, the RIT-T also has shortcomings/gaps that have been discussed in this report and include:

- The RIT-T is broadly appropriate for assessment of the relative merits of large transmission investments, but in its current form is not appropriate for the assessment of interconnectors (refer our ten recommendations).
- The role of consumers in the RIT-T process, as required under the current Rules and Guidelines, is no longer appropriate and must be strengthened.
- All projects currently subject to the RIT-T are being assessed against a background of rapid changes in the NEM, of sufficient potential impact as to compel the ESB to require a review of the overall NEM design/framework. The possible impacts of a material change to that design/framework do not form part of the evaluation of the proposed Marinus link by TasNetworks, but should be a precursor for all RIT-T evaluand of interconnectors.
- There is currently no requirement for the RIT-T to include additional tools, such as regrets analysis, in recognition of the level of uncertainty in the NEM.
- The application of the RIT-T by project proponents, who have a strong interest in the outcome works against fully independent and robust analysis, and places an onus on consumers to counter this. This is particularly relevant when the RIT-T proponent is a state owned entity, which introduces the risk of the long term interests of electricity consumers being adversely impacted by politically motivated considerations and decisions.
- The estimation and modelling of benefits and costs over the long term (20-40 years) relies on the quality of assumptions and inputs used by proponents which inevitably lose accuracy over such a lengthy estimation period. With long-lived assets such as transmission investments there is no real way to avoid this but minimising it, including by targeted risk mitigation, maximising scrutiny and including strong stakeholder engagement, are key.
- The RIT-T involves detail and complexity that challenges stakeholders – and no more so than consumers – who face significant information and resource constraints compared to RIT-T proponents and Market Participants.
- There is no requirement in the RIT-T to report on regional and price impacts, but these are often at the heart of consumer impacts and concerns. The test would be improved if a clear and simple requirement to report on these impacts was included.
- The transition of the NEM from thermal generation to renewables is creating a potential need for more interconnectors and transmission investments across the NEM, all within a similar time frame, which raises questions about whether the RIT-T can cope and whether it will become an impediment to timely and efficient investments.

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- Our assessment of the RIT-T is that some changes to it, the NER and better integration of the RIT-T and ISP would be beneficial, but these should not be at the expense of due process and opportunities for consumer input. Some reforms are underway and they should proceed apace.
- Being a proponent-based approach with most proponents being transmission entities, the inclusion of non-network solutions to network constraints is an ongoing challenge. The likely rise of DER, demand management and non network alternatives to storage and transfer of energy in future will pose further challenges for the RIT-T. Our recommendations include mechanisms to address those challenges.
- There is a serious disconnect between the RIT-T assessment on the one hand, which considers benefits across the NEM, and the pricing framework to recover the resulting efficient regulated revenues on the other hand, which applies to NEM regions where the assets are constructed and allocated.

Measures to deal with the gaps in the RIT-T identified above would enhance the performance of the test, especially from a consumer perspective, and allow it to better meet the challenges ahead.

8.3 Marinus link RIT-T Conclusions

The RIT-T for Marinus link has not yet progressed beyond the PSCR stage, which makes definite conclusions about the application of the RIT-T to the project more difficult, but we have formed the following preliminary views (based mainly on the PSCR, IFR and CSA):

- TasNetworks have been closely following the RIT-T process to date, which should provide consumers with some comfort about TasNetworks' approach.
- However, limitations in the description of the Identified Need, restricting the Credible Options to only two or three (all major transmission investments likely to be undertaken by TasNetworks itself) and only including a single scenario in the analysis of options in the IFR are matters that should be addressed in the PADR.
- The absence of non-network options to date in the Marinus link RIT-T and ISP are a matter of concern. The ISP indicates that TasNetworks is working to include DER in the PADR modelling but more attention beyond that is needed.
- Modelling shows that Marinus link would not pass the RIT-T unless (yet to be proven on current information) assumptions are made about the pace of emission reductions, or the loss of major industrial load in Tasmania.
- Based on current evidence, the case for building Marinus Link before the mid-2030s (a proposition advanced by TasNetworks) is therefore weak and unlikely to benefit electricity consumers, in Tasmania and in mainland NEM states.
- So far there has been little reporting on the regional price impacts of Marinus link, notwithstanding that this is of significant interest to consumers. This should be addressed in the PADR.
- Modelling results show that there will be significant differences between the regional distribution of market benefits from Marinus link and the way costs will be recovered from consumers in NEM regions. Under current arrangements, Tasmanian consumer stand to pay a significant share of the costs for very little benefit, whilst the rest of the NEM benefits but pays fewer of the costs. This is a matter of significant consumer interest and concern. The most desirable response would be to institute reforms that address the problem rather than relying on piecemeal or *ad hoc* solutions involving government funding.

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- The current position of the Tasmanian Government and TasNetworks that Marinus Link should not proceed as a regulated interconnector unless external funding is obtained, or changes are made to the transmission pricing rules, is understandable and supports the interests of Tasmanian electricity consumers. However, provision of government funding will not resolve the fundamental problem that there can be a disconnect that emerges between the RIT-T and transmission pricing, especially regarding interconnectors.

*** End ***

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