



Decision

Kangaroo Island Submarine Cable

**Determination on dispute
regarding the application of the
regulatory investment test for
distributon**

May 2017

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Executive Summary

The Office of the Commissioner for Kangaroo Island and the Kangaroo Island Council (the disputing parties) lodged a written notice with the Australian Energy Regulator (AER) disputing the conclusions made in SA Power Networks' final project assessment report (FPAR) for the Kangaroo Island Submarine Cable regulatory investment test for distribution (RIT-D)¹.

The FPAR identified the installation of a new 33kV undersea cable in 2018 as the option that satisfied the RIT-D. In the dispute notice, the disputing parties indicated a preference for the installation of a 66kV cable (initially operated at 33kV) in 2018.

Our determination is that SA Power Networks' assessment was not in accordance with the RIT-D requirements with respect to the consideration of 'option value' for the 66kV cable option. However, after taking into account additional analysis performed by SA Power Networks at our request, it is clear that consideration of option value through the inclusion of a 'high demand' scenario would not change the outcome of the RIT-D assessment. Therefore, we have determined that SA Power Networks is not required to amend its FPAR.

The regulatory investment test for distribution (RIT-D)

The RIT-D is an economic cost–benefit analysis to identify the investment option—the preferred option—that maximises net economic benefits to all those who produce, consume and transport electricity in the national electricity market (NEM) and, where applicable, meets the relevant jurisdictional or National Electricity Rules (Electricity Rules) based reliability standards.²

Subject to certain exclusions, distribution businesses must apply the RIT-D to all proposed distribution investments.³ The RIT-D process is intended to promote efficient distribution investment (both network and non-network) in the NEM and ensure greater consistency, transparency and predictability in distribution investment decision making.

Between April 2016 and December 2016, SA Power Networks (the distribution network service provider in South Australia) conducted a RIT-D consultation process in relation to maintaining security of supply to Kangaroo Island in the event of a prolonged outage of the existing undersea cable connecting the island to SA Power Networks' distribution network on the mainland.

During the RIT-D assessment process, SA Power Networks considered a range of investment options that increase market benefits to ensure security of supply on Kangaroo Island. Of the eight credible options considered under the RIT-D, option 1—installing a new 33kV submarine cable by 2018, was found to deliver the highest net economic benefits,

¹ As permitted under clause 5.17.5(a) of the National Electricity Rules (Electricity Rules).

² The RIT-D and RIT-D Application Guidelines are available at: <http://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/regulatory-investment-test-for-distribution-rit-d-and-application-guidelines>

³ Clause 5.17.3 of the Electricity Rules.

making it the preferred option. The option with the next highest net economic benefit was option 8—installing a 66kV cable (initially energised at 33kV) in 2018.

Summary of the dispute

The AER is responsible for determining RIT-D disputes raised following the conclusion of the RIT-D consultation process as set out in the Electricity Rules.⁴ Disputes may be raised on the grounds that either the RIT-D proponent has not applied the RIT-D in accordance with the Electricity Rules or there has been a manifest error in the RIT-D evaluation by the RIT-D proponent.⁵

Within the dispute notice, the disputing parties contend that SA Power Networks did not apply the RIT-D in accordance with the Electricity Rules. In particular, the disputing parties consider that there are additional benefits associated with the installation of a new 66kV cable which were not adequately considered. These benefits include:

- option value,
- the reduction in losses associated with a larger capacity cable, and
- other market benefits.⁶

Given the relatively small capital cost difference between the 33kV and 66kV cable options as stated in the FPAR, the disputing parties contend that the additional benefits associated with the 66kV option may outweigh its higher cost and result in it being assessed as the preferred option.

Assessment approach

As required by the Electricity Rules, our review of this RIT-D assessment was a compliance assessment against the RIT-D, not an independent cost-benefit analysis of the potential investment options.

In accordance with the Electricity Rules, our dispute resolution process focused on the grounds for dispute raised within the dispute notice. We identified the grounds for dispute as a failure by SA Power Networks to apply the RIT-D in accordance with the Electricity Rules, on the basis that it had not considered the option value, reduction in losses and other market benefits associated with the larger 66kV cable option as part of its RIT-D assessment.

We undertook an independent review by engaging an expert consultant, HoustonKemp, to assist us in assessing whether the Kangaroo Island Submarine Cable RIT-D was in accordance with the RIT-D requirements. Where our consultant identified that, in its view, the RIT-D was incorrectly applied, it also identified whether, in its view, this was likely to have materially affected the identification of the preferred option.

Our consultant also identified some additional issues arising from its review of SA Power Networks' application of the RIT-D but which do not directly relate to the grounds for dispute.

⁴ Clause 5.17.5 of the Electricity Rules.

⁵ Clause 5.17.5(a) of the Electricity Rules.

⁶ <https://www.aer.gov.au/communication/aer-receives-notification-of-rit-d-dispute-from-kangaroo-island>

Both our consultant's report and our determination provide some commentary on these additional issues, in light of their potential precedent for other RIT-D applications.

AER determination

In accordance with clause 5.17.5(d)(3)(ii) of the Electricity Rules, our determination is that SA Power Networks did not apply the RIT-D in its assessment of the Kangaroo Island Submarine Cable RIT-D in accordance with the Electricity Rules, but that SA Power Networks is not required to amend its FPAR. We consider that SA Power Networks' assessment:

- was not in accordance with the RIT-D requirements with respect to the consideration of 'option value' for the 66kV cable option, as it did not include a 'high demand' scenario,
- was in accordance with the RIT-D requirements with respect to the consideration of differences in losses between the 33kV and 66kV cable options, and
- was in accordance with the RIT-D requirements with respect to the consideration of 'other market benefits'.

With respect to the consideration of option value for the 66kV cable option, based on additional analysis we have concluded that the inclusion of a 'high demand' scenario would not in practice change the outcome of this RIT-D assessment.

Accordingly, we determine that SA Power Networks is not required to amend its FPAR.

1 Introduction

This chapter sets out the relevant background information to our determination on the dispute in relation to the Kangaroo Island Submarine Cable RIT-D, including a summary of the dispute and the dispute resolution process.

1.1 Who we are and our role in this process

The AER is the economic regulator for electricity transmission and distribution services in the NEM.⁷ Our electricity-related powers and functions are set out in the National Electricity Law (Electricity Law) and Electricity Rules.

We are responsible for developing, publishing and maintaining the RIT-D and accompanying RIT-D Application Guidelines. The RIT-D is an economic cost–benefit analysis that is used by distribution businesses to assess and rank different electricity investment options. The purpose of the RIT-D is to identify the credible option⁸ which maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the market (the preferred option).⁹ The RIT-D Application Guidelines provide guidance on the operation and application of the RIT-D.

Distribution businesses must apply the RIT-D to all proposed distribution investment subject to certain exclusions.¹⁰ The RIT-D is intended to promote efficient distribution investment decision making in the NEM and ensure greater consistency, transparency and predictability.

1.2 Background to the future supply of Kangaroo Island

A 33kV undersea cable owned by SA Power Networks currently connects Kangaroo Island to its mainland distribution network. The undersea cable is approaching the end of its expected 30-year average life and SA Power Networks considered it prudent to determine if the cost to replace the cable was lower than the costs associated with running it to failure (including the costs to consumers of supply disruption).

In its revenue proposal for the 2015-20 regulatory control period, SA Power Networks proposed to install a second undersea cable to Kangaroo Island (costed at \$45.6 million in 2014-15 dollars) as part of its capital expenditure (capex) program.¹¹ Our final determination noted that while the probability of a major failure of the existing cable was unlikely during the

⁷ In addition to regulating transmission and distribution in the NEM and Northern Territory, we also monitor the wholesale electricity and gas markets to ensure suppliers comply with the legislation and rules, taking enforcement action where necessary, and regulate retail energy markets in Queensland, New South Wales, South Australia, Tasmania (electricity only) and the ACT.

⁸ A credible option is defined in clause 5.15.2(a) of the Electricity Rules as an investment option that addresses the identified need, is commercially and technically feasible and can be implemented in sufficient time to address the identified need.

⁹ Clause 5.17.1(b) of the Electricity Rules.

¹⁰ Clause 5.17.3 of the Electricity Rules.

¹¹ [AER, April 2015, Preliminary Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 6 – Capital Expenditure, p. 63.](#)

2015-20 period, we accepted the capex associated with the installation of a second undersea cable.¹²

The capex was accepted on the basis of economic modelling showing that the cost of installing a second undersea cable was less than the cost to the market (in net present value terms) of SA Power Networks repairing the existing cable if it failed. This included assumptions about the time and cost to repair the existing cable if it failed, the cost to maintain backup generation on the island and the cost to consumers from a loss of energy supply.¹³

In response to our preliminary decision, some stakeholders raised concerns about the assumptions SA Power Networks had made within its economic modelling (such as the time taken to replace the cable). We noted in our final decision that SA Power Networks was required to undertake a RIT-D assessment to determine the most economic option and that, in the event this process identified a lower cost option than that proposed in the revenue proposal, these cost savings would be shared with consumers through the capital expenditure sharing scheme.¹⁴

1.3 The Kangaroo Island Submarine Cable RIT-D

On 12 April 2016, SA Power Networks commenced a RIT-D consultation process to identify the preferred option to maintain security of supply to Kangaroo Island.¹⁵ This consultation concluded on 23 December 2016 with SA Power Networks publishing a FPAR.¹⁶

The FPAR considered eight options covering network and non-network alternatives to address security of supply to Kangaroo Island. Option 1, the installation of a second 33kV undersea cable by 2018, had the highest net market benefit and therefore satisfied the RIT-D.

The option with the second highest net market benefit was option 8, the installation of a 66kV undersea cable (initially energised at 33kV) in 2018. Option 8 was included in SA Power Networks' RIT-D assessment in response to a submission by the Office of the Commissioner for Kangaroo Island and the Kangaroo Island Council¹⁷ to the Draft Project Assessment Report (DPAR)¹⁸.

¹² [AER, October 2015, Final Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 6 – Capital Expenditure, October 2015, p. 68-71.](#)

¹³ [AER, October 2015, Final Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 6 – Capital Expenditure, October 2015, p. 69-71.](#)

¹⁴ [AER, October 2015, Final Decision, SA Power Networks determination 2015–16 to 2019–20, Attachment 6 – Capital Expenditure, October 2015, p. 70-71.](#)

¹⁵ [SA Power Networks, 12 April 2016, Non-Network Options Report for Kangaroo Island Submarine Cable RIT-D.](#)

¹⁶ [SA Power Networks, 23 December 2016, Final Project Assessment Report for Kangaroo Island Submarine Cable RIT-D.](#)

¹⁷ [SA Power Networks, 23 December 2016, Final Project Assessment Report for Kangaroo Island Submarine Cable RIT-D, Chapter 16-Attachment 2-Submission Letters Received.](#)

¹⁸ [SA Power Networks, 2 November 2016, Draft Project Assessment Report for Kangaroo Island Submarine Cable RIT-D.](#)

1.4 The dispute

On 23 January 2016, we received a written notice of dispute from the Office of the Commissioner for Kangaroo Island and the Kangaroo Island Council (the disputing parties) regarding the conclusions made in the FPAR.¹⁹

In accordance with clause 5.17.5(a) of the Electricity Rules, interested parties (among others) may dispute conclusions made by a RIT-D proponent in a FPAR on the grounds that:

- the RIT-D proponent has not applied the RIT-D in accordance with the Electricity Rules, or
- there was a manifest error in the calculations performed by the RIT-D proponent in applying the RIT-D.

The disputing parties consider that SA Power Networks did not adequately assess Kangaroo Island stakeholders' preferred option (option 8 – installing a new 66kV undersea cable, initially energised at 33kV) and did not consider the additional benefits provided by a larger capacity network cable. In particular, the disputing parties consider that SA Power Networks' RIT-D assessment did not adequately assess:

- option value,
- the reduction in losses associated with a larger capacity cable, and
- other market benefits.

Given the relatively small capital cost difference between options 1 and 8 as stated in the FPAR, the disputing parties contend that the additional benefits associated with option 8 may outweigh its higher cost and result in it being assessed as the preferred option.

1.5 Structure of this document

This document sets out our determination on the dispute in relation to the Kangaroo Island Submarine Cable RIT-D, including the reasons for the determination.

The decision is structured as follows:

- chapter two sets out our dispute resolution process and how it relates to the present dispute
- chapter three sets out our assessment of the application of the RIT-D by SA Power Networks
- chapter four sets out our determination on the dispute in relation to the Kangaroo Island Submarine Cable RIT-D, including the reasons for the determination.

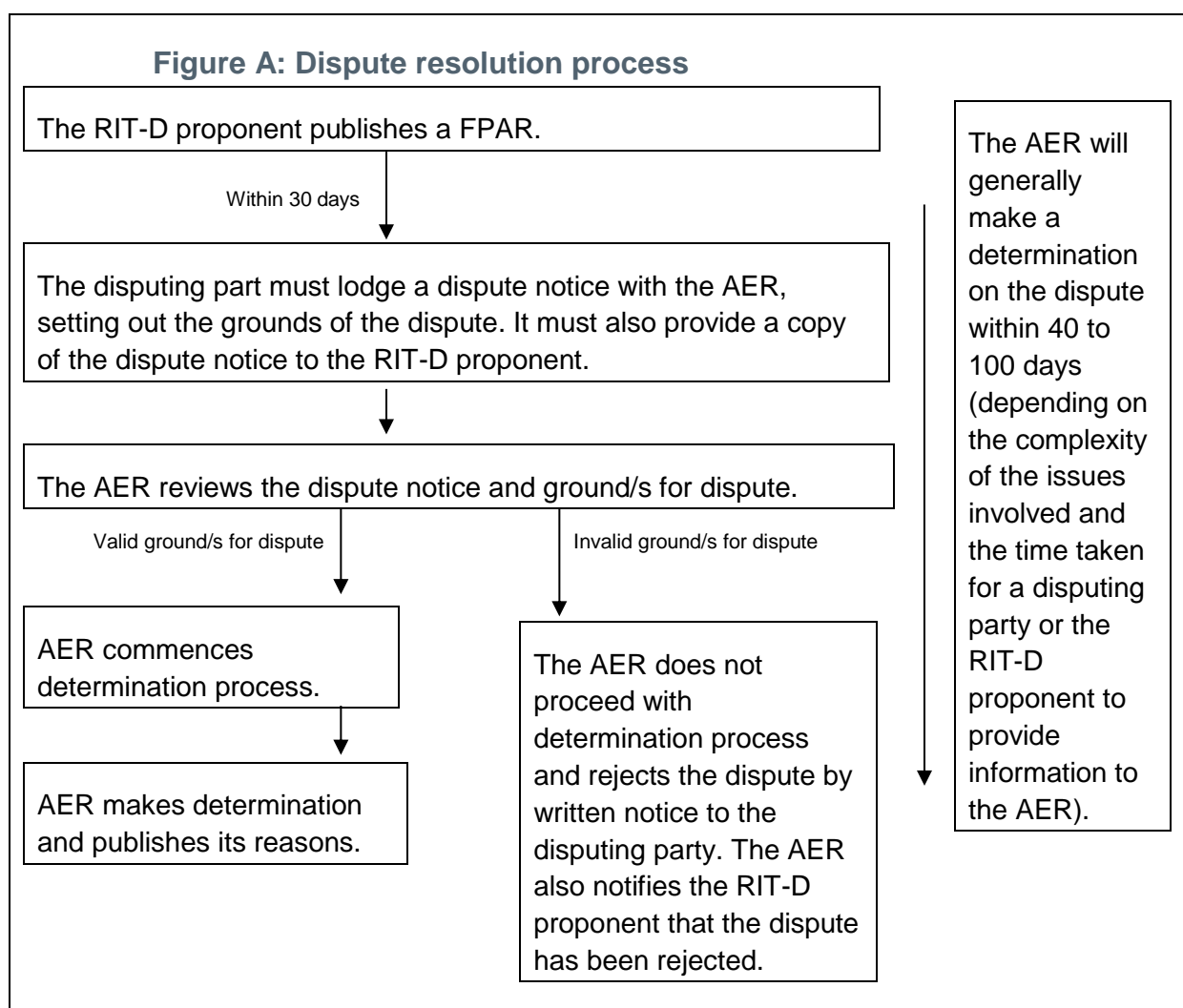
¹⁹ <https://www.aer.gov.au/communication/aer-receives-notification-of-rit-d-dispute-from-kangaroo-island>

2 RIT-D dispute resolution

2.1 Our dispute resolution process

The AER is responsible for determining RIT-D disputes raised by parties following the conclusion of the RIT-D consultation process as set out in the Electricity Rules. In accordance with clause 5.17.5(c) of the Electricity Rules, certain parties may raise a dispute in relation to the conclusions made in the FPAR by a RIT-D proponent by lodging a written notice to the AER within 30 days of the publication of the FPAR.

Clause 5.17.5(a) of the Electricity Rules identifies Registered Participants, the AEMC, Connection Applicants, Intending Participants, AEMO, interested parties and non-network providers as parties eligible to lodge a dispute notice. As stated above, a dispute may be raised in relation to the conclusions made by the RIT-D proponent in the FPAR on the grounds that either the RIT-D proponent has not applied the RIT-D in accordance with the Electricity Rules or there was a manifest error in the calculations performed in applying the RIT-D.



A dispute notice may not be raised about any issues in the FPAR which the RIT-D treats as externalities or relate to an individual's personal detriment or property rights.²⁰ The AER's RIT-D Application Guidelines provide guidance on the information that should be included in a dispute notice.²¹ Our Guidelines also provide a summary of the RIT-D dispute resolution process. This summary has been reproduced as Figure A above.²²

After considering the dispute notice and any other relevant information, we must either reject the dispute or make and publish a determination. If we decide to reject the dispute, we must do the following:

- reject the dispute by written notice to the disputing party if we consider that the grounds for the dispute were misconceived or lacking in substance and
- notify the RIT-D proponent that the dispute has been rejected.²³

If we do not reject the dispute, we must make and publish a determination that:

- directs the RIT-D proponent to amend the matters set out in the FPAR; or
- states that, based on the grounds of the dispute, the RIT-D proponent will not need to amend the FPAR.²⁴

We must decide whether a dispute is valid and resolve the dispute within:

- 40 days of receiving the dispute notice, or
- an additional period of up to 60 days where we notify a relevant party that additional time is required to make a determination because of the complexity or difficulty of the issues involved.²⁵

In making a determination on the dispute, we:

- must only take into account information and analysis that the RIT-D proponent could reasonably be expected to have considered or undertaken at the time it performed the RIT-D,
- must publish our reasons for making the determination,
- may disregard any matter raised by the disputing party or the RIT-D proponent that is misconceived or lacking in substance and
- must specify a reasonable timeframe for the RIT-D proponent to comply with the AER's direction to amend the matters set out in the FPAR.²⁶

Under clause 5.17.5(h) of the Electricity Rules, we may request additional information regarding the dispute from the disputing party and/or the RIT-D proponent. The disputing

²⁰ Clause 5.17.5(b) of the Electricity Rules.

²¹ [AER, 23 August 2016, Regulatory Investment Test for Distribution Application RIT-D Guidelines, pg. 25.](#)

²² [AER, 23 August 2016, Regulatory Investment Test for Distribution Application RIT-D Guidelines, pg. 26.](#)

²³ Clause 5.17.5(d)(1) and (2) of the Electricity Rules.

²⁴ Clause 5.17.5(d)(3) of the Electricity Rules.

²⁵ Clause 5.17.5(d) of the Electricity Rules.

²⁶ Clause 5.17.5(f) of the Electricity Rules.

party or the RIT-D proponent (as the case may be) must provide any additional information as soon as reasonably practicable.

A request for additional information will automatically extend the period of time for making a determination by the amount of time it takes the relevant party to provide the requested information, provided that:

- we make the request for additional information at least seven days prior to the expiry of the relevant period and
- the RIT-D proponent or disputing party provides the information within 14 days of receipt of the request.

2.2 Application of our dispute resolution process

We received a written dispute notice from the disputing parties on 23 January 2017. Clause 5.17.5(c) of the Electricity Rules requires a dispute notice to be provided to us within 30 days of the date of the publication of the FPAR. The dispute notice was received more than 30 days after the publication of the FPAR which occurred on 23 December 2016.

However, given that the day 30 days after the publication of the FPAR did not fall on a business day, section 28(3) of Schedule 2 of the Electricity Law operates to allow the dispute notice to be received on the next business day. Therefore, the deadline for raising a valid dispute in accordance with clause 5.17.5(c) was met by the disputing parties.

After an initial assessment, we considered that the dispute notice was not invalid, misconceived or lacking in substance and that it adequately specified the grounds of the dispute. The concerns raised in the dispute notice (as summarised in section 1.4 above) involved a claim that SA Power Networks, as the RIT-D proponent, has not correctly applied the RIT-D in accordance with the Electricity Rules.

We also determined that, due to the complexity of the issues involved, we required additional time in order to resolve the dispute.²⁷

Accordingly, on 3 March 2017, we provided written notice to SA Power Networks and the disputing parties of our decision to extend the 40 day time period within which we must resolve the dispute by an additional 60 days. At this time, we also informed SA Power Networks and the disputing parties that we had engaged the services of an expert consultant, HoustonKemp, to assist us in independently assessing SA Power Networks' application of the RIT-D for the purposes of resolving the dispute.

To better understand the economic modelling performed by SA Power Networks, prior to the engagement of our consultant, we met with SA Power Networks and the disputing parties separately. These meetings allowed us to gain a better understanding of the basis for dispute and explain the dispute resolution process.

²⁷ As provided for by clause 5.17.5(d) of the Electricity Rules.

Following our consultant's preliminary consideration of the relevant technical, economic and other factual issues, we again met both parties separately to discuss the issues identified by the consultant.

On 15 March 2017, we requested additional information from SA Power Networks, including an assessment of an additional scenario based on higher demand growth and additional step load changes (ie spot loads) on the island. A copy of our letter and SA Power Networks response, dated 29 March 2017, is available on our website.²⁸

2.3 Our expert consultant

To assist in our review, we engaged the services of HoustonKemp to undertake an independent qualitative assessment of whether the Kangaroo Island Submarine Cable RIT-D satisfies the requirements of the RIT-D.

In particular, our consultant:

- provided expert advice on the market benefits assessment and economic modelling undertaken by SA Power Networks,
- tested the validity of the outcomes of the Kangaroo Island Submarine Cable RIT-D, and
- considered material such as
 - the FPAR and its underlying economic model,
 - the dispute notice,
 - additional information provided by SA Power Networks (including the economic model supporting that analysis), and
 - information provided in discussions with SA Power Networks and the disputing parties.

Our consultant's report detailing its views about the Kangaroo Island Submarine Cable RIT-D is available on our website.²⁹

2.4 Our assessment approach

HoustonKemp were engaged to undertake an independent review of the Kangaroo Island Submarine Cable RIT-D. If they considered that SA Power Networks had incorrectly applied the RIT-D, HoustonKemp were to consider whether that misapplication was likely to have materially affected the identification of the preferred option.

In accordance with the Electricity Rules, our review of this RIT-D assessment was a compliance assessment against the RIT-D. We do not consider it appropriate for us to undertake an independent cost-benefit analysis of the potential investment options to

²⁸ Letter dated 15 March 2017 from Peter Adams, General Manager Wholesale Markets Branch, AER to Sean Kelly, General Manager Corporate Services, SA Power Networks. Letter dated 29 March 2017 from Doug Schmidt, General Manager Network Management, SA Power Networks to Peter Adams, General Manager Wholesale Markets Branch, AER.

²⁹ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements.

determine whether SA Power Networks' application of the RIT-D was in accordance with the Electricity Rules.

We did review the economic model upon which the conclusions of the FPAR were based, as did HoustonKemp. We note, for example, that HoustonKemp performed a range of sensitivity tests on the economic model used by SA Power Networks to prepare additional information provided to us, in order to test the robustness of the conclusions SA Power Networks had made.

This determination specifically addresses the basis for the dispute raised by the disputing parties in the dispute notice (see sections 3.1 – 3.3). However, as part of the compliance assessment, a number of additional issues were identified that do not directly relate to the grounds for dispute but are relevant to SA Power Networks' application of the RIT-D and our assessment of other regulatory investment test applications in the future. These additional issues are discussed in section 3.4.

3 AER assessment of RIT-D dispute

This section outlines our compliance assessment of the application of the RIT-D by SA Power Networks in relation to the Kangaroo Island Submarine Cable in response to the dispute notice we received. In particular, we assessed whether SA Power Networks' application of the RIT-D was in accordance with the requirements of the Electricity Rules. The structure of this section addresses the grounds for dispute raised in the dispute notice (see section 1.4) and additional issues identified during the course of our compliance assessment.

3.1 Option value associated with the 66kV option

3.1.1 The basis of the dispute

The first basis of the dispute is that SA Power Networks failed to consider the option value associated with the larger 66kV network cable option. The disputing parties contend that the additional benefits associated with option 8 (installing a new 66kV undersea cable, initially energised at 33kV) may outweigh the modest cost increase of this option when compared with option 1 (installing a new 33kV undersea cable). Consideration of this additional benefit, either in isolation or in combination with the benefits associated with the remaining matters on which the dispute is based, may affect the ranking of the options and result in option 8 becoming the preferred option under SA Power Networks' RIT-D assessment.

The potential benefit of the option value associated with a larger capacity cable was supported by information provided in discussions with the disputing parties and their submission to the DPAR³⁰ which together claimed:

- a larger capacity cable would be able to meet substantial future load growth on Kangaroo Island,
- future demand growth on the Kangaroo Island may be contrary to AEMO's latest forecasts of declining demand across South Australia, as supported by a number of local developments at various stages of progression listed in the Kangaroo Island Council's Economic Development Outlook³¹,
- SA Water indicated to the disputing parties that in the event of a future drought they would deploy mobile desalination plants on the island, which would further increase electricity demand and
- A larger capacity cable would encourage the development of renewable energy on the island by enabling greater levels of energy export.

³⁰ [SA Power Networks, 23 December 2016, Final Project Assessment Report for Kangaroo Island Submarine Cable RIT-D, Chapter 16-Attachment 2-Submission Letters Received.](#)

³¹ [Office of the Commissioner for Kangaroo Island, 2016, The Kangaroo Island Economic Development Outlook.](#)

3.1.2 RIT-D requirements

Where the identified need under a RIT-D assessment is not for reliability corrective action, a RIT-D proponent must quantify all classes of market benefits where it considers that the applicable market benefits may be material or the quantification of market benefits may alter the selection of the preferred option.³²

The RIT-D requires RIT-D proponents to consider option value as a class of potential market benefits where it has not already been included in other classes of market benefits.³³

The AER RIT-D Application Guidelines³⁴ explain that option value refers to a benefit that results from retaining flexibility in a context where certain actions are irreversible (sunk), and new information may arise in the future as a payoff from taking a certain action. We consider that option value is likely to arise where there is uncertainty regarding future outcomes, the information that is available in the future is likely to change and the credible options considered by the RIT-D proponent are sufficiently flexible to respond to that change.

We consider that appropriate identification of credible options and scenarios is capable of capturing any option value, thereby meeting the requirement to consider option value as a class of market benefits under the RIT-D.

The RIT-D also includes a direct requirement that the number and choice of reasonable scenarios must reflect any variables or parameters that are likely to affect the ranking of the credible options.³⁵

3.1.3 Independent assessment

HoustonKemp's view was that SA Power Networks' RIT-D assessment for the Kangaroo Island Submarine Cable was not in accordance with the RIT-D requirements since it did not adequately consider option value by incorporating a suitable range of future scenarios, in particular, a higher future demand scenario. However, further analysis undertaken by SA Power Networks, indicated that quantification of additional option value does not affect the ranking of the credible options and, ultimately, which credible option is identified as the preferred option in this RIT-D.

3.1.3.1 Consideration of higher demand scenario

Our consultant observed that SA Power Networks had included two demand scenarios³⁶ in its RIT-D analysis for Kangaroo Island Submarine Cable — flat demand and 'moderate' 0.9% pa growth. Given the potential for future demand growth on Kangaroo Island reported by the disputing parties, in our consultant's view, SA Power Networks could reasonably have

³² AER, 23 August 2013, RIT-D Determination, paragraph 5.

³³ AER, 23 August 2013, RIT-D Determination, paragraph 7(f).

³⁴ AER, 23 August 2016, Regulatory Investment Test for Distribution (RIT-D) Application Guidelines, pg. 62.

³⁵ AER, 23 August 2016, RIT-D Determination, paragraph 20.

³⁶ SA Power Networks, 23 December 2016, Final Project Assessment Report for Kangaroo Island Submarine Cable RIT-D, pg 41.

been expected to include in its RIT-D analysis a 'high demand' scenario to test whether it would materially affect the rankings of the options under the RIT-D assessment.

With a difference in net market benefit of less than 8% when comparing the 33kV and 66kV network options, assessing the extent of the benefit associated with the flexibility to operate the larger capacity cable at 66kV could potentially change the rankings between the options in the RIT-D analysis.

Our consultant identified several key points to support its view, including:

- The FPAR mentions the need to allow for uncertainties associated with future network development, load and generation patterns. However, the scenarios adopted by SA Power Networks in the RIT-D analysis had not fully tested these uncertainties.³⁷
- Both the FPAR and DPAR make reference to having considered potential step load changes in customer demand on the island, however, the 'moderate' load growth scenario only reflected customer committed spot loads and did not include any additional spot loads that are not currently committed.³⁸
- The RIT-D requires scenario analysis in order to test the robustness of the option rankings to variations in key assumptions. These scenarios need not be limited to the standard approach that SA Power Networks has taken in developing its demand forecasts (ie spot loads limited to committed projects and reduced by 50% to reflect diversity).³⁹

Our consultant considered that assessing the 33kV and 66kV network options under a high demand scenario would provide transparency regarding whether the additional flexibility provided by the larger capacity cable option is expected to provide sufficient benefit to outweigh the moderate increase in upfront capital cost required in the event of a substantial peak demand increase on Kangaroo Island.

In our consultant's view, analysis of a 'high demand' scenario in the context of this RIT-D assessment was necessary in order to fulfil the requirements of the RIT-D regarding the consideration of option value as a class of potential market benefit. We agree with this view.

Additional analysis performed by SA Power Networks

We requested that SA Power Networks assess the net benefit of options 1 and 8 under a 'high demand scenario'.⁴⁰ In its response, SA Power Networks' analysis adopted a demand growth rate of 4.5% p.a. across Kangaroo Island, under which the 33kV cable exceeds its 20 MVA limit in 2034/35.⁴¹

³⁷ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pg 12.

³⁸ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pg 13.

³⁹ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pg 14.

⁴⁰ Letter dated 15 March 2017 from Peter Adams, General Manager Wholesale Markets Branch, AER to Sean Kelly, General Manager Corporate Services, SA Power Networks.

⁴¹ Letter dated 29 March 2017 from Doug Schmidt, General Manager Network Management, SA Power Networks to Peter Adams, General Manager Wholesale Markets Branch, AER.

Under both the 66kV option and the 33kV option there would be additional costs incurred once the 20 MVA limit of the cable is reached. The analysis showed that the additional capital costs required (ie substation upgrades and upgrading of the existing 33kV network) to operate the 66kV option at 66kV were higher than the costs of using local generation under the 33kV option once the capacity of the 33kV cable is reached. The benefits of lower losses associated with the 66kV option once the cable is operated at 66kV are not enough to offset the additional cost of this option relative to the 33kV option.

Accordingly, under a high demand scenario, the 33kV option continues to have a greater net market benefit than the 66kV option, and so continues to be ranked ahead of that option. Inclusion of this scenario would therefore not change the outcome of the RIT-D assessment, irrespective of the weight accorded to this scenario. Our consultant undertook a range of sensitivity tests on this additional analysis and found SA Power Networks' conclusions on the relative ranking of the options to be robust.

3.1.3.2 Consideration of generation export scenario

In discussions, the disputing parties raised the prospect that a larger capacity cable would enable greater electricity exports, which in turn would encourage the development of renewable generation on the island. This was identified as a further potential source of option value for the larger 66kV option. It was identified that a recent study by ARENA on the potential for local generation on Kangaroo Island highlights the feasibility of such investments.⁴² It was further noted that the FPAR cited the potential opportunity to export surplus energy to the NEM.

HoustonKemp identified that the additional option value associated with the 66kV option could be quantified by including a further scenario in the RIT-D analysis that reflected substantial growth in local generation.

Additional analysis performed by SA Power Networks

In response to our information request and associated discussions, SA Power Networks clarified that it had considered whether to include a large-scale generation scenario, but had concluded that there was no likelihood of an expansion of generation triggering a need to operate the cable at 66kV and so had not included in it the RIT-D analysis. SA Power Networks stated that consideration of large scale local generation on Kangaroo Island above 20 MVA would trigger extensive network augmentation both on Kangaroo Island and on the mainland, thereby making it uneconomic.

Our consultant undertook further analysis of the details provided by SA Power Networks. Key findings were:

- The 33kV cable option already provides generation export capable of 24 MVA to the NEM.

⁴² UTS Institute for Sustainable Futures, 2016, Towards 100% Renewable Energy for Kangaroo Island, Report prepared for ARENA, Renewables SA and Kangaroo Island Council, Final Report.

- The costs of additional network augmentation both on the island and the mainland (where exports exceed 24 MVA over a 66kV cable) are estimated by SA Power Networks at around \$19.3m.
- To the extent that additional generation development on Kangaroo Island is contingent on the installation of a 66kV cable, the capital and operating costs of this generation would be included in the RIT-D as an additional cost associated with the 66kV option (lowering the net market benefit associated with the 66kV option).
- Under the RIT-D, any offsetting benefits associated with the displacement of higher cost generation dispatch elsewhere in the NEM are not a necessary or automatic inclusion in the RIT-D analysis.

On the basis of the above assessment, our consultant found that the inclusion of an additional generation scenario would be unlikely to materially affect the outcome of the RIT-D analysis. SA Power Networks' analysis was therefore in accordance with the RIT-D requirements, as additional scenarios are only required to be included where they are likely to affect the ranking of options.

3.1.4 AER view

Consistent with the findings identified by our consultant, we consider that SA Power Networks' RIT-D assessment was not in accordance with the RIT-D requirements with respect to the consideration of 'option value' for the 66kV cable option. Specifically, SA Power Networks could reasonably have been expected to include in the RIT-D analysis an additional scenario that reflected higher demand, in order to assess the extent of benefit (if any) associated with having the flexibility to operate the larger cable at 66kV.

Notwithstanding this conclusion, as the additional analysis requested of SA Power Networks demonstrates, inclusion of a 'high demand' scenario would not in practice change the outcome of this RIT-D assessment. The additional analysis undertaken by SA Power Networks shows that the additional capital costs required to operate the 66kV option at 66kV outweighs the costs of additional local generation under the 33kV option and the benefits of lower losses under the 66kV option. SA Power Networks' analysis has been independently assessed using a range of sensitivity tests which found SA Power Networks' conclusions to be robust.

We consider that the absence of a generation export scenario in SA Power Networks' analysis was in accordance with the RIT-D requirements, as it was reasonable for SA Power Networks to conclude that the inclusion of such a scenario would be unlikely to materially affect the outcome of the RIT-D analysis.

3.2 Inclusion of losses

3.2.1 The basis for the dispute

The second basis for the dispute is that SA Power Network failed to include the benefit associated with reduced losses for the 66kV option. The dispute notice refers to a reduction in losses having not been assigned to the 66kV option in the FPAR. The disputing parties

consider that the difference in losses between the 33kV and 66kV options should have been taken into account in the RIT-D analysis.

3.2.2 RIT-D requirements

Changes in electrical losses are a relevant market benefit under the RIT-D.⁴³ As explained in the RIT-D Application Guidelines⁴⁴, a credible option may lead to a net increase or decrease in network losses. An increase in network losses makes a negative contribution to the market benefits of a credible option, while a decrease in network losses makes a positive contribution to the market benefits of a credible option.

3.2.3 Independent assessment

Our consultant clarified with SA Power Networks and our own technical experts that a 66kV cable operated at 33kV has identical losses to the 33kV option. Therefore, for as long as the 66kV option is operated at 33kV, calculation of the avoided losses for the purposes of the RIT-D assessment is the same as that for the 33kV option. SA Power Networks' RIT-D assessment is therefore consistent with the RIT-D requirements, as it has included the same benefit for avoided losses for both the 33kV option and the 66kV option (while it is operated at 33kV).

As part of its additional analysis of a high demand scenario, SA Power Networks included a larger reduction in losses once the 66kV option is operated at 66kV. However, SA Power Networks' analysis demonstrated that the additional benefit from reduced losses for the 66kV option was relatively small and was outweighed by the much higher costs associated with augmenting the network to be able to operate at 66kV. Accordingly, the inclusion of a higher reduction in losses for the 66kV option under the high demand scenario did not have a material impact on the RIT-D outcome.⁴⁵

3.2.4 AER view

Given that there is no difference in losses when comparing the 33kV option with the 66kV option operated at 33kV, we consider that the approach taken by SA Power Networks in its FPAR with respect to the treatment of losses is in accordance with the RIT-D requirements.

Network losses as a market benefit category was relevant to the additional analysis performed by SA Power Networks when considering a high demand scenario whereby the 66kV option was operated at 66kV towards the end of the assessment period. However, given that the cost of network augmentation to allow the 66kV option to be operated at 66kV significantly outweighs the benefit of reduced losses when operated at 66kV, consideration of differences in losses under a high demand scenario does not materially impact the RIT-D outcome.

⁴³ AER, 23 August 2013, RIT-D Determination, paragraph 7(g).

⁴⁴ AER, 23 August 2013, Regulatory Investment Test for Distribution (RIT-D) Application Guidelines, pg. 62.

⁴⁵ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pg 17.

3.3 Inclusion of 'other market benefits'

3.3.1 The basis for the dispute

The third basis for the dispute is that SA Power Networks failed to quantify the class of market benefits identified in the RIT-D as 'other market benefits'. Consideration of this additional benefit, either in isolation or in combination with the benefits associated with the remaining matters on which the dispute is based, may affect the ranking of the options and result in the 66kV option becoming the preferred option under SA Power Networks' RIT-D assessment.

In discussions, the disputing parties clarified that the 'other market benefits' that they considered may be relevant for this RIT-D include:

- local market benefits including the economic impact on Kangaroo Island in terms of higher employment prospects and other non-energy market benefits
- avoided fuel costs associated with the displacement of generation sourced from the NEM, in assessing the options involving local generation/demand management solutions.

3.3.2 RIT-D requirements

Clause 5.17.1(c)(4) of the Electricity Rules provides that the RIT-D must require the RIT-D proponent to consider whether each credible option could deliver various classes of market benefits, including “any other class of market benefit determined to be relevant by the AER”.

Unlike the regulatory investment test for transmission (RIT-T), the RIT-D does not include changes in fuel consumption arising through different patterns of generation dispatch as one of the classes of market benefit which must be considered by the RIT-D proponent when undertaking a RIT-D assessment.

In accordance with the RIT-D, we will consider an additional class of market benefit if the RIT-D proponent quantifies an additional class of market benefit in its RIT-D assessment. However, the RIT-D proponent must receive approval from us before it makes its non-network options report (NNOR) available to other parties.⁴⁶

Clause 5.17.1(c)(8) of the Electricity Rules provides that non-energy market benefits are excluded from the RIT-D. The RIT-D therefore does not include such benefits as a relevant class of market benefit.

3.3.3 Independent assessment

Our consultant expressed the view that the inclusion of 'local market benefits', outside of the electricity market, is expressly excluded under the RIT-D, and therefore that SA Power Networks' approach in not including those benefits is consistent with the RIT-D.

⁴⁶ AER, 23 August 2013, RIT-D Determination, paragraph 7(h). If the RIT-D proponent is not preparing a NNOR, approval to include an additional class of market benefit must be received before the RIT-D proponent publishes the notice required under clause 5.17.4(d) of the Electricity Rules.

It also found that inclusion of 'other market benefits' (including changes in generator dispatch costs) is not standard practice under the RIT-D, consistent with the guidance provided in the AER RIT-D Guidelines. Our consultant therefore concluded that SA Power Networks' failure to propose additional benefit categories was not inconsistent with the current RIT-D framework.

More specifically, our consultant expressed the view that⁴⁷:

- Non-energy market benefits (such as the 'local market benefits' mentioned in the dispute notice) are excluded from the RIT-D under the NER. As a consequence, 'local market benefits' not directly connected with the electricity market, such as an increase in employment on Kangaroo Island, or the benefits associated with the ability to deploy a fibre optic cable as part of the 66kV option, are not able to be incorporated as benefits in the RIT-D assessment.
- The class of benefit associated with changes in fuel costs as a result of changes in generator dispatch is not one of the benefits that the Electricity Rules require to be routinely considered under the RIT-D (in contrast to the arrangements for the RIT-T).
- Although the RIT-D does make provision for the RIT-D proponent to identify 'other market benefits' that it considers may be potentially relevant to a particular RIT-D assessment, the RIT-D Application Guidelines state that additional market benefits are unlikely and no RIT-D (or RIT-T) assessment to date has incorporated additional market benefit categories that have been formally approved by us. Only one previous RIT-D assessment has included an assessment of avoided dispatch costs.
- As a consequence, there is a presumption under the current RIT-D framework that additional market benefit categories are unlikely to be relevant. In this context, SA Power Networks assessment is not inconsistent with the current RIT-D framework.

3.3.4 AER view

We consider that SA Power Networks' exclusion of non-energy market benefits is in accordance with the RIT-D requirements. In addition, the exclusion of other market benefits (including dispatch costs) from its assessment is in accordance with the RIT-D requirements.

The RIT-D only allows an additional class of market benefit (beyond those already identified in the RIT-D) to be considered if the proponent has proposed it before the publication of its NNOR and it is subsequently approved by us.⁴⁸ If a RIT-D proponent does not consider that other market benefits are relevant to a particular RIT-D assessment, we cannot direct a RIT-D proponent to consider those benefits.

We note our consultant's comments regarding the RIT-D and the inability of stakeholders, or indeed us, to propose additional market benefit categories or review the decision of a RIT-D proponent not to include additional benefit categories. Given the rising trend of distributed generation, we consider that the RIT-D Application Guidelines may benefit from revision in relation to the potential for other market benefits to arise (particularly avoided fuel costs),

⁴⁷ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pp 12-14.

⁴⁸ AER RIT-D, 23 August 2013, paragraph 7(h).

including guidance on how to calculate benefits. We also propose to review the process by which additional market benefit categories may be proposed and tested under the RIT-D.

3.4 Additional issues identified

3.4.1 Independent assessment

At our request, our consultant identified a number of additional issues as part of its review of the Kangaroo Island Submarine Cable RIT-D. These issues do not directly relate to the grounds for dispute raised within the dispute notice, although some were raised by the disputing parties during discussions.

Our consultant included commentary in the light of the potential precedent for other RIT-D applications, and as matters on which we may wish to expand and/or clarify in any review of the RIT-D and the RIT-D Application Guidelines. The key views expressed by our consultant were⁴⁹:

- The RIT-D Application Guidelines would benefit from some additional commentary regarding selection of the 'base case'. For most non-reliability driven RIT-D applications, a 'do nothing' option forms a realistic base case. However, where augmentation is triggered by the need to replace an investment (such as for the Kangaroo Island Submarine Cable RIT-D), a 'do nothing' option may not be realistic. For example, the FPAR uses 'replacement upon failure' (option 2) as the base case as opposed to a base case resulting in unserved energy upon failure which would be unrealistic. This is not inconsistent with the RIT-D, but our Guidelines could be redrafted to make this clearer.
- The sensitivity analysis adopted by SA Power Networks in its RIT-D assessment was consistent with that of most other RIT-D assessments undertaken to date, in that only one parameter was varied for each of the scenarios/sensitivities tested. However, for other RIT-D assessments, a broader approach to sensitivity testing may be more appropriate. We will consider reviewing the RIT-D and the RIT-D Application Guidelines in this respect.
- The treatment of back up generation from the existing diesel generators at Kingscote substation was found to be addressed appropriately by SA Power Networks in the FPAR. The overall security of supply to Kangaroo Island would be jeopardised if the Kingscote generators were used to address the intermittency of the non-network solutions (thereby becoming part of the credible option), rather than continuing to be available as a back-up for the entire credible option.
- The wide range of costs for submarine cable quoted by SA Power Networks in the NNOR (+10% & - 50 %) appears to be inconsistent with best industry practice where a typical cost quote range is +/- 30%. The cost of the submarine cable was noted to be \$21.9m in the DPAR and FPAR, which is a considerable decrease from \$45m estimate in the NNOR. However, this would not have materially affected the non-network proposals received by SA Power Networks.

⁴⁹ HoustonKemp, 19 April 2017, Consistency of SAPN's Kangaroo Island RIT-D with the regulatory requirements, pp 23-27.

- SA Power Networks' interpretation in relation to the calculation of the benefit associated with 'changes to other parties costs' needing to reference an actual, identifiable party is inconsistent with the RIT-D and the RIT-D Application Guidelines. The RIT-D explicitly refers to 'modelled projects' being 'hypothetical projects', which should be included in the market development scenarios. Although this is not material for this RIT-D assessment, a broader interpretation is consistent with the RIT-D.

3.4.2 AER view

We note the comments by our consultant regarding a review of the RIT-D Application Guidelines. Under the Electricity Rules, we have the power to amend the RIT-T and RIT-D in accordance with the transmission and distribution consultation procedures. We would consider any comments or material provided by interested parties in any future amendment of the RIT-T or RIT-D.

It is pertinent to mention that we will be undertaking a review of the RIT-T, the RIT-D and their associated application guidelines following the finalisation of the replacement expenditure planning arrangements rule change by the AEMC⁵⁰. As part of this review, we will engage with stakeholders and industry participants to address the areas that would benefit from revision or additional guidance.

⁵⁰ <http://www.aemc.gov.au/Rule-Changes/Replacement-Expenditure-Planning-Arrangements>

4 AER determination

In accordance with clause 5.17.5(d)(3)(ii) of the Electricity Rules, our determination is that SA Power Networks did not apply the RIT-D in its assessment of the Kangaroo Island Submarine Cable RIT-D in accordance with the Electricity Rules, but that SA Power Networks is not required to amend its FPAR. We consider that SA Power Networks' assessment:

- was not in accordance with the RIT-D requirements with respect to the consideration of 'option value' for the 66kV cable option, as it did not include a 'high demand' scenario,
- was in accordance with the RIT-D requirements with respect to the consideration of differences in losses between the 33kV and 66kV cable options, and
- was in accordance with the RIT-D requirements with respect to the consideration of 'other market benefits'.

With respect to the consideration of option value for the 66kV cable option, based on additional analysis we have concluded that the inclusion of a 'high demand' scenario would not in practice change the outcome of this RIT-D assessment.

Accordingly, we determine that SA Power Networks is not required to amend its FPAR.