CHAPTER 1

Introduction

1 Introduction

Key highlights

- The purpose of Powerlink's Transmission Annual Planning Report (TAPR) under the National Electricity Rules (NER) is to provide information about the Queensland electricity transmission network.
- Powerlink is responsible for planning the shared transmission network within Queensland.
- Since publication of the 2017 TAPR, Powerlink has continued to proactively engage with stakeholders and seek their input into Powerlink's network development objectives, network operations and investment decisions.
- The 2018 TAPR contains enhanced information with respect to forecasting data and identifies key areas of the transmission network in Queensland requiring expenditure in the 10-year outlook period.

1.1 Introduction

Powerlink Queensland is a Transmission Network Service Provider (TNSP) in the National Electricity Market (NEM) and owns, develops, operates and maintains Queensland's high voltage electricity transmission network. It has also been appointed by the Queensland Government as the Jurisdictional Planning Body (JPB) responsible for transmission network planning for the national grid within the State.

As part of its planning responsibilities, Powerlink undertakes an annual planning review in accordance with the requirements of the NER and publishes the findings of this review in its TAPR.

This 2018 TAPR includes information on electricity energy and demand forecasts, the existing electricity supply system, including committed generation and transmission network reinvestments and developments, and forecasts of network capability. Risks arising from the condition and performance of existing assets, as well as emerging limitations in the capability of the network are identified and possible solutions to address these are discussed. Interested parties are encouraged to provide input to identify the most economical solution (including non-network solutions provided by others) that satisfies the required reliability standard to customers into the future. The 2018 TAPR builds upon work undertaken by Powerlink since 2016, maturing the approach for the connection of variable renewable energy (VRE) generation to Powerlink's transmission network.

Powerlink's annual planning review and TAPR play an important part in planning Queensland's transmission network and helping to ensure it continues to meet the needs of Queensland electricity consumers and participants in the NEM.

1.2 Context of the TAPR

All bodies with jurisdictional planning responsibilities in the NEM are required to undertake the annual planning review and reporting process prescribed in the NER[1].

Information from this process is also provided to the Australian Energy Market Operator (AEMO) to assist in the preparation of its Electricity Forecast Insights (EFI) (previously the National Electricity Forecasting Report (NEFR)), Electricity Statement of Opportunities (ESOO), National Transmission Network Development Plan (NTNDP)[2] and/or Integrated System Plan (ISP)[3].

The ESOO is the primary document for examining electricity supply and demand issues across all regions in the NEM. The NTNDP and ISP provide information on the strategic and long-term development of the national transmission system under a range of market development scenarios. AEMO's EFI provides independent electricity demand and energy forecasts for each NEM region over a 20-year outlook period. The forecasts explore a range of scenarios across high, medium and low economic growth outlooks. During 2018 AEMO will deliver the first ISP which will integrate generation and grid development outlooks.

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1 For the purposes of Powerlink's 2018 TAPR, Version 108 of the NER in place from 31 May 2018.

2 The release of the 2017 NTNDP was deferred by the Australian Energy Regulator and will form part of the 2018 Integrated System Plan to be published in July 2018.

3 The introduction of the ISP was a recommendation of the Independent Review into the Future Security of the National Electricity Market (Finkel Review) released in June.

The primary purpose of the TAPR is to provide information on the short-term to medium-term planning activities of TNSPs, whereas the focus of the ISP and NTNDP is strategic and long-term. The ISP, NTNDP and TAPR are intended to complement each other in informing stakeholders and promoting efficient investment decisions. In supporting this complementary approach, information from the 2016 NTNDP, as the most recent version published, is considered in this TAPR and more generally in Powerlink's planning activities.

Interested parties may benefit from reviewing Powerlink's 2018 TAPR in conjunction with AEMO's 2018 EFI, 2018 ISP and ESOO, which are anticipated to be published in June, July and August 2018 respectively.

1.3 Purpose of the TAPR

The purpose of Powerlink's TAPR under the NER is to provide information about the Queensland electricity transmission network to everyone interested or involved in the NEM including AEMO, Registered Participants and interested parties. The TAPR also provides broader stakeholders with an overview of Powerlink's planning processes and decision making on future investment.

It aims to provide information that assists to:

- identify locations that would benefit from significant electricity supply capability or demand side management (DSM) initiatives
- identify locations where major industrial loads could be connected
- identify locations where capacity for new generation developments exist (in particular VRE generation)
- understand how the electricity supply system affects their needs
- understand the transmission network's capability to transfer quantities of bulk electrical energy
- provide input into the future development of the transmission network.

Readers should note this document is not intended to be relied upon explicitly for the evaluation of participants' investment decisions.

1.4 Role of Powerlink Queensland

Powerlink has been nominated by the Queensland Government as the entity with transmission network planning responsibility for the national grid in Queensland, known as the JPB as outlined in Clause 5.20.5 of the NER.

As the owner and operator of the electricity transmission network in Queensland, Powerlink is registered with AEMO as a TNSP under the NER. In this role, and in the context of this TAPR, Powerlink's transmission network planning and development responsibilities include:

- ensuring the network is able to operate with sufficient capability and if necessary, is augmented to provide network services to customers in accordance with Powerlink's Transmission Authority and associated reliability standard
- ensuring the risks arising from the condition and performance of existing assets are appropriately managed
- ensuring the network complies with technical and reliability standards contained in the NER and jurisdictional instruments
- conducting annual planning reviews with Distribution Network Service Providers (DNSPs) and other TNSPs whose networks are connected to Powerlink's transmission network, that is Energex and Ergon Energy (part of the Energy Queensland Group), Essential Energy and TransGrid
- advising AEMO, Registered Participants and interested parties of asset reinvestment needs within the time required for action
- advising AEMO, Registered Participants and interested parties of emerging network limitations within the time required for action

- developing recommendations to address emerging network limitations or the need to address the risks arising from ageing network assets remaining in-service through joint planning with DNSPs and TNSPs, and consultation with AEMO, Registered Participants and interested parties, with potential solutions including network upgrades or non-network options such as local generation and DSM initiatives
- examining options and developing recommendations to address transmission constraints and economic limitations across interconnectors through joint planning with other TNSPs and Network Service Providers, and consultation with AEMO, Registered Participants and interested parties, with potential solutions including network upgrades, development of new interconnectors or non-network options
- assessing whether or not a proposed transmission network augmentation has a material impact on networks owned by other TNSPs, and in assessing this impact Powerlink must have regard to the objective set of criteria published by AEMO in accordance with Clause 5.21 of the NER
- undertaking the role of the proponent for regulated transmission augmentations and the replacement of transmission network assets in Queensland.

In addition, Powerlink participates in inter-regional system tests associated with new or augmented interconnections.

1.5 Meeting the challenges of a changing external environment

Powerlink is responding to dynamic changes in the external environment by:

- implementing and adopting the recommendations of the Finkel and other reviews
- adapting to changes in electricity consumer behaviour and economic outlook.

Powerlink is responding to these changes by:

- continuing to adapt its approach to investment decisions
- placing considerable emphasis on an integrated and flexible analysis of future reinvestment needs
- supporting diverse generation connection
- continuing to focus on developing options that deliver a secure, safe, reliable and cost effective transmission network.

1.6 Overview of approach to asset management

Powerlink's asset management system captures significant internal and external drivers on the business and sets out initiatives to be adopted. The Asset Management Policy forms the foundation of the Asset Management Strategy. Information on the principles and approach set out in these documents which guide Powerlink's analysis of future network investment needs and key investment drivers is provided in Chapter 4.

1.7 Overview of planning responsibilities and processes

1.7.1 Planning criteria and processes

Powerlink has obligations that govern how it should address forecast network limitations. These obligations are prescribed by *Queensland's Electricity Act 1994* (the Act), the NER and Powerlink's Transmission Authority.

The Act requires that Powerlink "ensure as far as technically and economically practicable, that the transmission grid is operated with enough capacity (and if necessary, augmented or extended to provide enough capacity) to provide network services to persons authorised to connect to the grid or take electricity from the grid".

It is a condition of Powerlink's Transmission Authority that it meets licence and NER requirements relating to technical performance standards during intact and contingency conditions. The NER sets out minimum performance requirements of the network and connections, and requires that reliability standards at each connection point be included in the relevant connection agreement.

New network developments and reinvestments are proposed to meet these legislative and NER obligations. Powerlink may also propose transmission investments that deliver a net market benefit when assessed in accordance with the RIT-T. The requirements for initiating solutions to meet forecast network limitations or the need to address the risks arising from ageing network assets remaining in-service, including new regulated network developments or non-network solutions, are set down in Clauses 5.14.1, 5.16.4 and 5.20.5 of the NER.

While each of these clauses prescribes a slightly different process, at a higher level the main steps in network planning for transmission investments subject to the RIT-T can be summarised as follows:

- Publication of information regarding the nature of network limitations, the risks related to ageing network assets remaining in-service and the need for action which includes an examination of demand growth and its forecast exceedance of the network capability (where relevant).
- Consideration of generation and network capability to determine when additional capability is required.
- Consultation on assumptions made and credible options, which may include:
  - network augmentation
  - asset replacement
  - asset retirement
  - network reconfiguration and/or
  - local generation or DSM initiatives

  together with classes of market benefits considered to be material which should be taken into account in the comparison of options.
- Analysis and assessment of credible options, which include costs, market benefits, material inter-network impact and material impact on network users (where relevant).
- Identification of the preferred option that satisfies the RIT-T, which maximises the present value of the net economic benefit to all those who produce, consume and transport electricity in the market.
- Consultation and publication of a recommended course of action to address the identified future network limitation or the risks arising from ageing network assets remaining in-service.

1.7.2 Integrated planning of the shared network

Powerlink is responsible for planning the shared transmission network within Queensland, and inter-regionally. The NER sets out the planning process and requires Powerlink to apply the RIT-T promulgated by the Australian Energy Regulator (AER) to transmission investment proposals. The planning process requires consultation with AEMO, Registered Participants and interested parties, including customers, generators, DNSPs and other TNSPs. Section 5.6 discusses current consultations, as well as anticipated future consultations, that will be conducted in line with the processes prescribed in the NER.

Significant inputs to the network planning process are the:

- forecast of customer electricity demand (including DSM) and its location
- location, capacity and arrangement of new and existing generation (including embedded generation)
- condition and performance of assets and an assessment of the risks arising from ageing network assets remaining in-service
- assessment of future network capacity to meet the required planning criteria and efficient market outcomes.

The 10-year forecasts of electrical demand and energy across Queensland are used, together with forecast generation patterns, to determine potential flows on transmission network elements. The location and capacity of existing and committed generation in Queensland is sourced from AEMO, unless modified following advice from relevant participants and is provided in tables 6.1 and 6.2. Information about existing and committed embedded generation and demand management within distribution networks is provided by DNSPs and AEMO.

Powerlink examines the capability of its existing network and the future capability following any changes resulting from committed network projects (for both augmentation and to address the risks arising from ageing network assets remaining in-service). This involves consultation with the relevant DNSP in situations where the performance of the transmission network may be affected by the distribution network, for example where the two networks operate in parallel.

Where potential flows could exceed network capability, Powerlink notifies market participants of these forecast emerging network limitations. If the capability violation exceeds the required reliability standard, joint planning investigations are carried out with DNSPs (or other TNSPs if relevant) in accordance with Clause 5.14.1 of the NER. The objective of this joint planning is to identify the most cost effective solution, regardless of asset boundaries, including potential non-network solutions (refer to Chapter 3).

In addition to meeting the forecast demand, Powerlink must maintain its current network so that the risks arising from the condition and performance of existing assets are appropriately managed. Powerlink routinely undertakes an assessment of asset condition to identify emerging asset related risks.

As assets approach the end of their technical service life, Powerlink examines a range of options to determine the most appropriate reinvestment strategy. Consideration is given to optimising the topography and capacity of the network, taking into account current and future network needs. In many cases, power system flows and patterns have changed over time. As a result, the ongoing network capacity requirements need to be re-evaluated. Individual asset reinvestment decisions are not made in isolation, and assets are not necessarily replaced on a like-for-like basis. Rather, asset reinvestment strategies and decisions are made taking into account the inter-related connectivity of the high voltage system, and are considered across an area or transmission corridor. The consideration of potential non-network solutions forms an important part of this integrated planning approach.

The integration of condition and demand based limitations delivers cost effective solutions that address both reliability of supply and risks arising from assets approaching end of technical service life. Powerlink considers a range of strategies and options to address emerging asset related condition and performance issues. These strategies include:

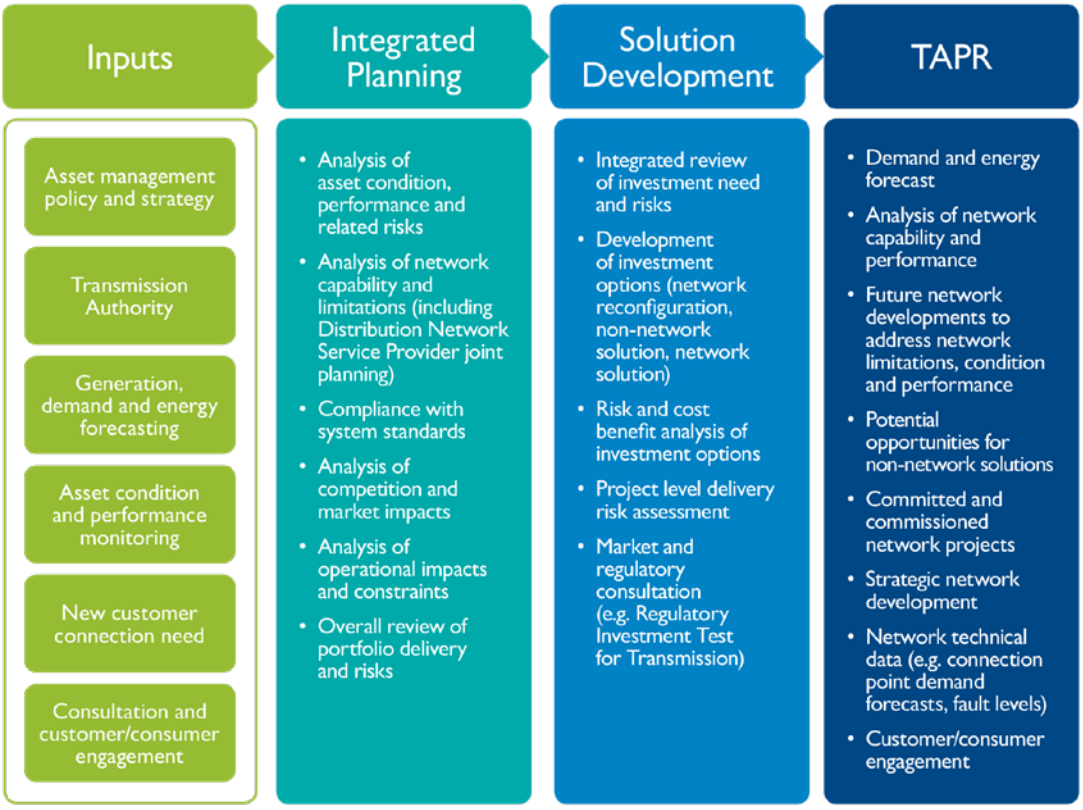
- retiring or decommissioning assets where there is unlikely to be an ongoing future need
- refurbishing to extend the service life of assets
- replacing assets of different capacity or type
- changing the topography of the network
- implementing non-network solutions.

Each of these options is considered in the context of future capacity needs.

Furthermore, in accordance with the NER, information regarding proposed transmission reinvestments within the 10-year outlook period must be published in the TAPR. More broadly, this provides information to the NEM, including AEMO, Registered Participants and interested parties (including non-network providers) on Powerlink's planning processes, anticipated public consultations, and decision making relating to potential future reinvestments. Further information is provided in Section 5.7.

A summary of Powerlink's integrated planning approach that takes into account both network capacity needs and end of technical service life related issues is presented in Figure 1.1.

Figure 1.1 Overview of Powerlink's TAPR planning process



1.7.3 Joint planning

Powerlink undertakes joint planning with other Network Service Providers (NSPs) to collaboratively identify network and non-network solutions which best serve the long-term interests of customers and consumers irrespective of the asset boundaries. This process provides a mechanism for providers to discuss and identify technically feasible network and non-network options that provide lowest cost solutions across the network as a whole, regardless of asset ownership or jurisdictional boundaries.

Powerlink's joint planning, while traditionally focused on the DNSPs (Energex, Ergon Energy and Essential Energy) and TransGrid, can also include consultation with AEMO, other Registered Participants, load aggregators and other interested parties.

Information on Powerlink's joint planning framework, and the joint planning activities that Powerlink has undertaken with other NSPs since publication of the 2017 TAPR is provided in Chapter 3.

1.7.4 Connections

Participants wishing to connect to the Queensland transmission network include new and existing generators, major loads and other NSPs. New connections or alterations to existing connections involves consultation between Powerlink and the connecting party to negotiate a Connection and Access Agreement (CAA). Negotiation of the CAA requires the specification and then compliance by the generator or load to the required technical standards. The process agreeing technical standards also involves AEMO. The services provided can be prescribed for DNSPs (regulated), negotiated or non-regulated services in accordance with the definitions in the NER or the framework for provision of such services.

From 1 July 2018 new categories of connection assets are defined, namely Identified User Shared Assets (IUSA) and Dedicated Connection Assets (DCA). All new DCA services, including design, construction, ownership and operation and maintenance are non-regulated services. IUSA assets with capital costs less than $10 million are negotiated services that can only be provided by Powerlink. IUSA assets with capital costs above $10 million are non-regulated services. Powerlink remains accountable for operation of all IUSAs and IUSAs above $10 million must enter into a Network Operating Agreement to provide operations and maintenance services. Further information in relation to the connection process is available on Powerlink's website (refer to Chapter 8).

1.7.5 Interconnectors

Development and assessment of new or augmented interconnections between Queensland and other States is the responsibility of the respective TNSPs. Information on the analysis of potential interconnector upgrades and new interconnectors, including anticipated regulatory consultations, is provided in Chapter 5.

1.8 Powerlink's asset planning criteria

There is a significant focus on striking the right balance between reliability and the cost of providing transmission services. In response to these drivers, the Queensland Government amended Powerlink's N-1 criterion to allow for increased flexibility from July 2014. The planning standard permits Powerlink to plan and develop the transmission network on the basis that load may be interrupted during a single network contingency event. The following limits are placed on the maximum load and energy that may be at risk of not being supplied during a critical contingency:

- will not exceed 50MW at any one time
- will not be more than 600MWh in aggregate.

The risk limits can be varied by:

- a connection or other agreement made by the transmission entity with a person who receives or wishes to receive transmission services, in relation to those services or
- agreement with the Queensland Energy Regulator (QER).

Powerlink is required to implement appropriate network or non-network solutions in circumstances where the limits set out above are exceeded or when the economic cost of load at risk of being unsupplied justifies the cost of the investment. Therefore, the planning standard has the effect of deferring or reducing the extent of investment in network or non-network solutions required. Powerlink will continue to maintain and operate its transmission network to maximise reliability to consumers.

As mentioned, Powerlink's transmission network planning and development responsibilities include developing recommendations to address emerging network limitations, or the need to address the risks arising from ageing network assets remaining in-service, through joint planning (refer to Section 1.7.3).

Energex and Ergon Energy were issued amended Distribution Authorities from July 2014. The service levels defined in their respective Distribution Authority differ to that of Powerlink's authority. Joint planning accommodates these different planning standards by applying the planning standard consistently with the owner of the asset which places load at risk during a contingency event.

Powerlink has established policy frameworks and methodologies to support the implementation of this standard. These are being applied in various parts of the Powerlink network where possible emerging limitations are being monitored. For example, based on the medium economic load forecast in Chapter 2, voltage stability limitations occur in the Proserpine area within the outlook period. However, the load at risk of not being supplied during a contingency event does not exceed the risk limits of the planning standard. In this instance the planning standard is deferring investment and delivering savings to customers and consumers.

The planning standard will deliver further opportunities to defer investment if new mining, metal processing or other industrial loads develop (discussed in Table 2.1 of Chapter 2). These new loads are within the resource rich areas of Queensland or at the associated coastal port facilities but have not yet reached the development status necessary to be included (either wholly or in part) in the medium economic forecast. The loads have the potential to significantly impact the performance of the transmission network supplying, and within, these areas. The possible impact of these loads is discussed in Section 7.2. The planning standard may not only affect the timing of required investment but also in some cases affords the opportunity for incremental solutions that would not have otherwise met the original N-1 criterion.

1.9 Stakeholder engagement

Powerlink shares effective, timely and transparent information with its stakeholders using a range of engagement methods. Two key stakeholder groups for Powerlink are customers and consumers. Customers are defined as those who are directly connected to Powerlink's network, while consumers are electricity end-users, such as households and businesses, who receive electricity from the distribution network. There are also stakeholders who can provide Powerlink with non-network solutions. These stakeholders may either connect directly to Powerlink's network, or connect to the distribution networks. The TAPR is just one avenue that Powerlink uses to communicate information about transmission planning in the NEM. Through the TAPR, Powerlink aims to increase stakeholder understanding and awareness of our business practices, including load forecasting and transmission network planning.

1.9.1 Customer and consumer engagement

Powerlink is committed to proactively engaging with stakeholders and seeking their input into Powerlink's business processes and objectives. All engagement activities are undertaken in accordance with our Stakeholder Engagement Framework that sets out the principles, objectives and outcomes Powerlink seeks to achieve in our interactions with stakeholders. A number of key performance indicators are used to monitor progress towards achieving Powerlink's stakeholder engagement performance goals. In particular, Powerlink undertakes a bi-annual stakeholder survey to gain insights about stakeholder perceptions of Powerlink, its social licence to operate and reputation. Most recently completed in November 2017, the survey provides comparisons between baseline research undertaken in 2012 and year on year trends to inform engagement strategies with individual stakeholders.

2017/18 Stakeholder engagement activities

Since the publication of the 2017 TAPR, Powerlink has engaged with stakeholders in various ways through a range of forums as outlined below.

Transmission Network Forum

In August 2017, more than 100 customer, consumer, government and industry representatives attended Powerlink's annual Transmission Network Forum. The forum provided an overview of Powerlink's 2017 TAPR, followed by interactive breakout sessions on delivering clean energy hubs in Queensland, how transmission can deliver secure, affordable and sustainable electricity in the future, and transmission network connections under the Transmission Connection and Planning Arrangements Rule change effective 1 July 2018.

Customer Panel

Powerlink hosts a Customer Panel that provides an interactive forum for our stakeholders to give input and feedback to Powerlink regarding our decision making, processes and methodologies. Composed of members from a range of sectors including energy industry, resources, community advocacy groups, consumers and research organisations, the panel provides an important avenue to keep our stakeholders better informed about operational and strategic topics of relevance. The panel met in December 2017 and April 2018 to discuss and explore topics including the RIT-T for replacement projects, AER's Rate of Return Guideline Review, asset management strategies, transmission pricing arrangements and Powerlink's new Customer Service Charter. The panel also conducted a site visit to the Belmont Substation in September 2017 to view Powerlink's infrastructure first-hand and raise awareness of how the transmission network operates.

Future Transmission Network webinars

Powerlink's first Future Transmission Network webinar for 2018 was held in March and tailored specifically for non-network providers. The webinar focused on:

- providing an update on recent regulatory changes to the TAPR and RIT-T, which increase transparency on transmission network planning and investment decision making
- discussing opportunities and proposed communication activities to broaden and extend engagement with non-network providers.

It is anticipated that the provision and exchange of early information through engagement activities such as this will generate more opportunities for interactions with non-network providers during formal or informal consultation processes.

Powerlink's second Future Transmission Network webinar for 2018 was held in May. The webinar provided an opportunity to:

- engage with a wide range of stakeholder groups as Powerlink develops and refines an approach to assessing and quantifying risk, particularly in relation to an ageing transmission network
- discuss how this approach to risk may be used to optimise future investment decision making and to assist in lowering the long run cost to consumers.

More information on Powerlink's stakeholder engagement activities is available on our website.

Stakeholder engagement activities for RIT-Ts

Powerlink recognises the importance of enhancing transparency to customers and consumers, particularly when undertaking transmission network planning and making investment decisions. In relation to stakeholder engagement activities for RIT-Ts, Powerlink is committed to a balanced approach in the public consultation process as suggested by the Customer Panel. In addition, Powerlink will leverage off and be guided by the AER's Stakeholder Engagement Framework as the benchmark when consulting with stakeholders as part of the RIT-T process. Taking this into account, the appropriate level of engagement for RIT-Ts may be most easily identified through discussion and consideration of the context of the proposed investment. Engagement activities for RIT-Ts will be considered on a case-by-case basis. This includes consideration of the:

- potential impacts on stakeholders
- opportunities for network reconfiguration or asset retirement
- estimated capital cost
- type of RIT-T process being undertaken (refer to Figure 5.1).

Detailed information on proposed engagement activities for RIT-Ts can be found on Powerlink's website.

1.9.2 Non-network solutions

Powerlink has established processes for engaging with stakeholders for the provision of non-network services in accordance with the requirements of the NER. These engagement processes centre on publishing relevant information on the need and scope of viable non-network solutions to emerging network limitations and more recently, in relation to the replacement of network assets. For a given network limitation or potential asset replacement, the viability and an indicative specification of non-network solutions are first introduced in the TAPR. As the identified need date approaches and a detailed planning analysis is undertaken, further opportunities are explored in the consultation and stakeholder engagement processes undertaken as part of any subsequent RIT-T.

In the past, these processes have been successful in delivering non-network solutions to emerging network limitations. As early as 2002, Powerlink engaged generation units in North Queensland to maintain reliability of supply and defer transmission projects between central and northern Queensland. Powerlink also entered into network support services as part of the solution to address emerging limitations in the Bowen Basin area, only ending these in 2016.

Powerlink is committed to the ongoing development of its non-network engagement processes to facilitate the identification of optimal non-network solutions:

- to address future network limitations or address the risks arising from ageing assets remaining in-service within the transmission network
- more broadly, in combination with network developments as part of an integrated solution to complement an overall network reconfiguration strategy
- to provide demand management and load balancing
- through the use of Powerlink's Non-network Solution Feasibility Study process to actively seek non-network solutions for proposed network reinvestments which fall below the RIT-T cost threshold of $6 million.

Informal feedback received from non-network providers since the publication of the 2017 TAPR continues to indicate the importance of early advice of possible non-network opportunities outside of a defined process and ensuring that any engagement process implemented is iterative in nature.

Powerlink's 2018 TAPR includes a compendium for non-network providers that indicates possible future non-network opportunities, for the next five years (Appendix F). It is anticipated that the majority of these opportunities will require a RIT-T to identify the preferred option. Powerlink will continue to engage and work collaboratively with non-network providers during the RIT-T process to ensure an optimal solution is reached.

As discussed in Section 1.9.1, a Future Transmission Network webinar was held in March 2018 for non-network providers. In addition to enabling the delivery of information and providing a discussion platform, other benefits provided through informal activities, such as webinars, include a broadening of communication channels to reach a wider audience and as an aid to fostering positive relationships with non-network providers. Powerlink will continue to build upon the Future Transmission Network webinar series on an ongoing basis as relevant and topical issues arise that are likely to be of interest to non-network providers and other interested stakeholders.

Since publication of the 2017 TAPR, Powerlink has continued its collaboration with the Institute for Sustainable Futures[4] and other NSPs regarding the Network Opportunity Mapping project. This project aims to provide enhanced information to market participants on network constraints and the opportunities for demand side solutions. These collaborations further demonstrate Powerlink's commitment to using a variety of platforms to broaden stakeholder awareness regarding possible commercial opportunities for non-network solutions and provide additional technical information which historically has only been discussed at a high-level in the TAPR.

[4] Information available at Network Opportunity Mapping.

The Non-network Solution Feasibility Study process, in conjunction with the publicly available data provided via the Network Opportunities Mapping project and informal information sessions such as the Future Transmission Network webinar, responds to previous feedback Powerlink has received from a number of stakeholders about the need to provide enhanced and earlier information on the potential value and timing of non-network solutions.

Non-network Engagement Stakeholder Register

Powerlink has a Non-network Engagement Stakeholder Register (NNESR) to inform non-network providers of the details of emerging network limitations and other future transmission network needs, such as the replacement of network assets, which may have the potential for non-network solutions. The NNESR is comprised of a variety of interested stakeholders who have the potential to offer network support through existing and/or new generation or DSM initiatives (either as individual providers or aggregators).

The NNESR was introduced to serve as a communication tool to achieve the following outcomes:

- leveraging off the knowledge of participants to seek input on process enhancements that Powerlink can adopt to increase the potential uptake of non-network solutions
- to provide interested parties with information prior to the commencement of formal public consultation as part of the RIT-T
- provide information on potential opportunities in relation to other network reinvestments or augmentation network investments which may fall outside of NER consultation requirements.

Potential non-network providers are encouraged to register their interest in writing to networkassessments@powerlink.com.au to become a member of Powerlink's NNESR.

1.9.3 Focus on continuous improvement

As part of Powerlink's commitment to continuous improvement, the 2018 TAPR focuses on an integrated approach to future network development and contains detailed discussion on key areas of future expenditure.

In conjunction with condition assessments and risk identification, as assets approach their anticipated replacement dates, possible reinvestment alternatives undergo detailed planning studies to confirm alignment with future reinvestment and optimisation strategies. These studies have the potential to deliver new information and may provide Powerlink with an opportunity to:

- improve and further refine options under consideration
- consider other options from those originally identified which may deliver a greater benefit to stakeholders.

Information regarding possible reinvestment alternatives is updated annually within the TAPR and includes discussion on the latest information as planning studies mature.

The 2018 TAPR:

- provides additional information in relation to joint planning and Powerlink's approach to asset management (refer to Chapters 3 and 4)
- discusses possible future network asset retirements for the 10-year outlook period (refer to Chapter 5)
- includes additional information for the proposed replacement of network assets which are anticipated to be subject to the RIT-T in the next five years (refer to Chapter 5)
- summarises possible network reinvestments in the next six to 10 years (refer to Chapter 5)
- includes information on network control facilities and the outcome of the inaugural Power System Frequency Risk Review (refer to Chapter 6)
- continues the discussion on the potential for generation developments (in particular VRE generation) first introduced in 2016 (refer to Chapter 8)
- includes commentary on recent changes to the network connection process (refer to Chapter 8)

- includes enhanced information with respect to forecasting data, sources of input and assumptions (refer to Appendices A and B)
- includes a quick reference guide on where to locate information on potential non-network opportunities in the TAPR, grouped by investment type (Appendix F) and discusses Powerlink's approach to assisting the development of non-network solutions – specifically, through the ongoing improvement of engagement practices for non-network solution providers and provision of information (refer to 1.9.2 and 5.7).

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