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 2018 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 2019 TAPR identifies key areas of the transmission network in Queensland forecast to require expenditure in the 10-year outlook period.
- Based on Powerlink's most recent planning review and information currently available, the 2019 TAPR also provides substantial detailed technical data (TAPR templates), available on Powerlink's website, to further inform stakeholders on potential transmission network developments.

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 (HV) 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 and TAPR templates.

This 2019 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 2019 TAPR builds upon work undertaken by Powerlink since 2016, embedding 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), Electricity Statement of Opportunities (ESOO), National Transmission Network Development Plan (NTNDP) and Integrated System Plan (ISP).

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. The inaugural ISP which integrated generation and grid development outlooks was released in July 2018.

[1] For the purposes of Powerlink's 2019 TAPR, Version 122 of the NER in place from 30 May 2019.

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 both the 2018 ISP and NTNDP, as the most recent versions published, are considered in this TAPR and more generally in Powerlink's planning activities.

Interested parties may benefit from reviewing Powerlink's 2019 TAPR in conjunction with AEMO's 2018 EFI and the 2019 ESOO and NTNDP, which are anticipated to be published in September and December 2019 respectively. The next ISP is currently anticipated for release in mid-2020.

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 those interested or involved in the NEM including AEMO, Registered Participants and interested parties. The TAPR also provides 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 and supporting TAPR templates are 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 (NSP), 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 continues to adapt and respond by:

- committing to the industry-led and world-first whole-of-sector initiative – The Energy Charter
- ongoing active customer and stakeholder engagement for informed decision making and planning
- implementing and adopting the recommendations of various reviews
- adapting to changes in electricity customer behaviour and economic outlook
- 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 Regulatory Investment Test for Transmission (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[2] (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 to transmission investment proposals for augmentations to the transmission network and the replacements of network assets over $6 million. 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.

[2] NER Clause 5.16.3 (a) (5).

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).

Powerlink must maintain its current network so that the risks arising from the condition and performance of existing assets are appropriately managed. Powerlink undertakes a program of asset condition assessments to identify emerging asset condition 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, including future renewable generation. 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 reinvestment in assets is not necessarily undertaken on a like-for-like basis. Rather, asset reinvestment strategies and decisions are made taking into account enduring need, the inter-related connectivity of the high voltage (HV) 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:

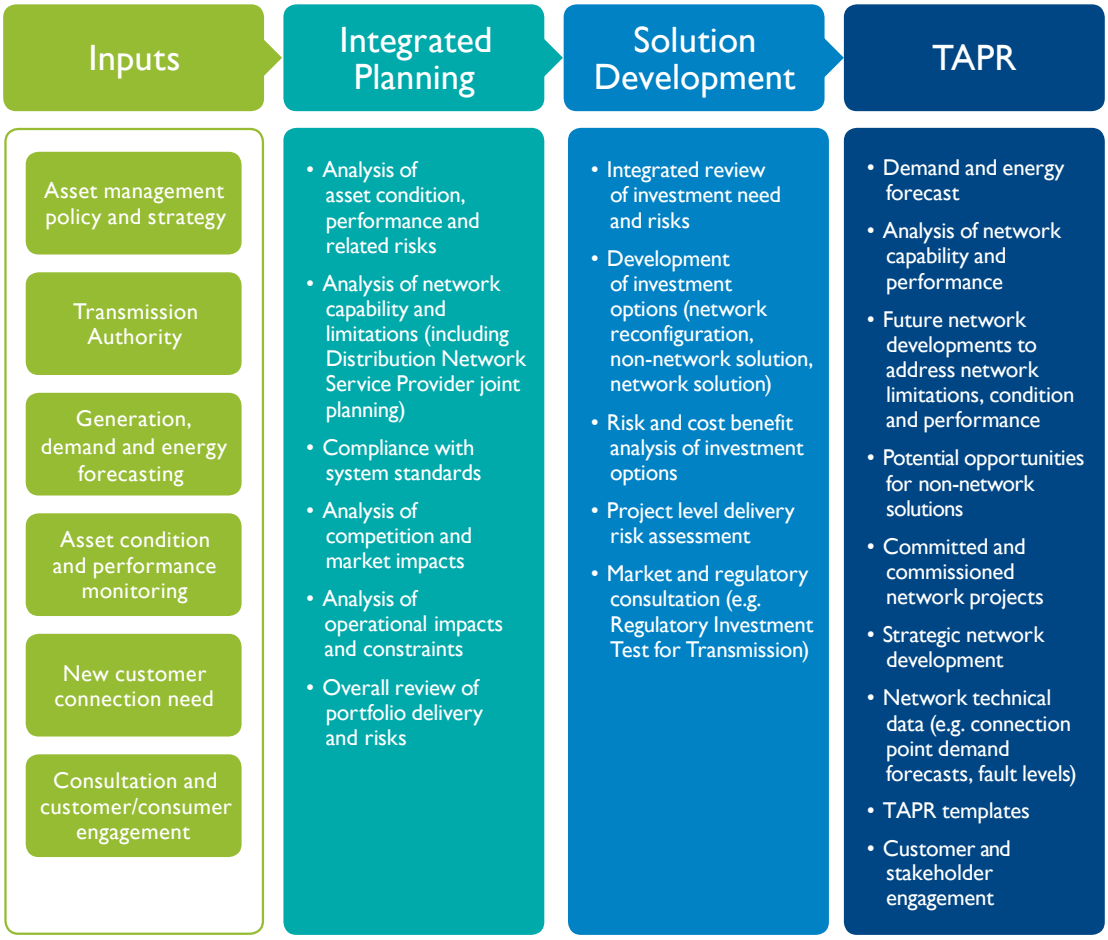
- retiring or decommissioning assets where there is unlikely to be an ongoing future need
- refurbishing to extend the service life of assets
- replacing assets of different capacity or type
- changing the topography of the network
- implementing non-network solutions.

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 and TAPR templates. 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 and Appendix B.

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 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 focussed 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 2018 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 were 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 the current RIT-T being undertaken by TransGrid and Powerlink to consider expanding NSW-Queensland transmission transfer capacity, 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 in 2014 to allow for increased flexibility. 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 customers.

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 customers and stakeholders using a range of engagement methods. Customers are defined as those who are directly connected to Powerlink's network and 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 and customer understanding and awareness of our business practices, including load forecasting and transmission network planning.

1.9.1 Customer and stakeholder engagement

Powerlink is committed to proactively engaging with stakeholders and customers 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 2018, the survey provides comparisons between baseline research undertaken in 2012 and year-on-year trends to inform engagement strategies with individual stakeholders. The latest survey also sought specific insights from existing directly-connected customers and renewable proponents on aspects of customer service and delivery, and Powerlink's responsiveness.

2018/19 Stakeholder engagement activities

Since the publication of the 2018 TAPR, Powerlink has engaged with stakeholders and customers in various ways through a range of forums as outlined below.

Transmission Network Forum

In September 2018, more than 100 customer, community advocacy group, government and industry representatives attended Powerlink's annual Transmission Network Forum. The forum provided an update on the state of the network, followed by interactive breakout sessions on managing demand peaks and hollows to improve network utilisation and customer outcomes, navigating the renewable connection process, and the development of Powerlink's Transmission Network Vision.

Customer Panel

Powerlink hosts a Customer Panel that provides an interactive forum for our stakeholders and customers to give input and feedback to Powerlink regarding our decision making, processes and methodologies. Composed of members from a range of sectors including the energy industry, resources, community advocacy groups, customers 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 2018 and March 2019 to discuss and explore topics including the RIT-T for replacement projects and process for expanding the NSW-Queensland transmission transfer capacity, development of Powerlink's 30 year Transmission Network Vision, updates on the regulatory environment, asset management strategies, AEMO's next ISP, and planning for Powerlink's next Revenue Determination process.

2018 TAPR webinar

Powerlink held a webinar on 31 July 2018 to share the key findings of the 2018 TAPR and to provide an opportunity for stakeholders to ask questions. The webinar focussed on:

- the energy, demand and generation outlook for the 10-year outlook period
- the publication of the inaugural ISP and identification of potential Renewable Energy Zones (REZ) in Queensland
- Powerlink's approach to asset management and integrated planning approach
- possible future network developments and the RIT-T consultation process.

Stakeholder engagement for RIT-Ts

Powerlink recognises the importance of transparency for stakeholders and customers, particularly when undertaking transmission network planning and engaging in public consultation under the RIT-T process.

In relation to engagement activities for RIT-Ts, Powerlink is committed to a balanced approach in the public consultation process as determined with its Customer Panel. In addition, Powerlink will utilise and be guided by the AER's Stakeholder Engagement Framework and Consumer Engagement Guideline for Network Service Providers as the benchmarks when consulting as part of the RIT-T process.

Taking this into account, the appropriate level of engagement for RIT-Ts may most easily be identified through feedback received from stakeholders on proposed investments identified in the TAPR, discussion and consideration of the context of the proposed investment. Engagement activities for RIT-Ts are assessed 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.

Major stakeholder activities undertaken for RIT-Ts since the publication of the 2018 TAPR include:

- Expanding NSW – Queensland transmission transfer capacity RIT-T stakeholder webinar

  Powerlink and TransGrid held a joint webinar in February 2019 to share key information contained in the Project Specification Consultation Report (PSCR), Expanding NSW-Queensland Transmission Transfer Capacity, as the first stage of the RIT-T process. The webinar provided an opportunity outside of the formal consultation process to engage with and respond to questions from a wide range of stakeholders including consumer advocates, customer representatives, and market participants.

- North Queensland RIT-T stakeholder webinar

  Powerlink initially planned to host a forum in Townsville in February/March 2019 to share key information contained in the PSCR for Maintaining reliability of supply between Strathmore and Townsville, which was published at the end of November 2018. Due to the unprecedented floods experienced by the Townsville region's community and customers, and impact on stakeholder availability, Powerlink conducted a webinar for interested stakeholders in March 2019. Powerlink will continue to maximise engagement opportunities to ensure interested parties in the North Queensland region are proactively engaged with throughout the RIT-T consultation process.

It is anticipated that the provision and exchange of early information through engagement activities such as these will generate more opportunities for interactions with our customers and stakeholders, during formal or informal consultation processes.

More information on Powerlink's engagement activities is available on our 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 and more recently, in TAPR templates. 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, ending these in 2016.

Non-network solutions such as DSM will be essential in future years to avoid or delay the need to augment the transmission network in response to any increase in maximum demand.

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.

Powerlink's 2019 TAPR includes a compendium for non-network providers that highlights possible future non-network opportunities where there is more certainty around key areas of the transmission network in Queensland forecast to require expenditure in the next five years (refer to Appendix F). In addition, the TAPR templates published in conjunction with the 2019 TAPR provide detailed technical data on Powerlink's transmission connection points and line segments. This data may be of value to non-network providers when considering opportunities for the development of potential non-network solutions (refer to Appendix B). Powerlink will continue to engage and work collaboratively with non-network providers during the RIT-T process to arrive at the optimal solution for customers.

As discussed in Section 1.9.1, Powerlink has held various webinars to further assist non-network providers, particularly in relation to significant RIT-T consultations currently in progress. 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 hold webinars 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 2018 TAPR, Powerlink has continued its collaboration with the Institute for Sustainable Futures[3] 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.

[3] Information available at Network Opportunity Mapping.

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 advancement in technologies, existing and/or new generation or DSM initiatives (either as individual providers or aggregators).

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 2019 TAPR focuses on an integrated approach to future network development and contains detailed discussion on key areas of the transmission network forecast to require 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, optimisation and delivery 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, delivering better outcomes for customers.

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

The 2019 TAPR:

- provides information in relation to joint planning and Powerlink's approach to asset management (refer to chapters 3 and 4)
- discusses possible future network asset reinvestments for the 10-year outlook period (refer to Chapter 5)
- includes the most recent 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)
- continues the discussion on the potential for generation developments (in particular VRE generation) first introduced in 2016 (refer to Chapter 8)
- contains a quick reference guide on where to locate information on potential non-network opportunities in the TAPR, grouped by investment type (refer to 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 sections 1.9.2 and 5.7)
- introduces the TAPR templates and discusses the context, methodology and principles applied for the development of the Queensland transmission network data (refer to Appendix B).