

## CHAPTER 1

# Introduction

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## 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 transmission network.
- Powerlink is responsible for planning the shared transmission network within Queensland, including the development of all new connections to the network.
- Rising to the challenge of a transforming energy system, Powerlink continues to take a proactive and integrated approach to network planning by connecting Queenslanders to a world-class energy future.
- Powerlink has developed the Integrated Electricity Pathways (IEP) to support the transformation to a new energy system, underpinned by clean, sustainable and reliable energy.
- Since publication of the 2020 TAPR, Powerlink has continued to proactively engage with customers and stakeholders and seek their input into Powerlink's network development objectives, network operations and investment decisions.
- The 2021 TAPR identifies key areas of the Queensland transmission network forecast to require expenditure in the 10-year outlook period and considers matters relevant to the Queensland transmission network highlighted in the Australian Energy Market Operator's (AEMO) 2020 Integrated System Plan (ISP).
- Based on Powerlink's most recent planning review and information currently available, the 2021 TAPR also provides substantial detailed technical data (TAPR templates), available within Powerlink's [TAPR portal](#), 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) 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, TAPR templates and [TAPR portal](#).

The 2021 TAPR includes information on electricity energy and demand forecasts, the existing electricity supply system, including existing and committed generation and transmission network developments and reinvestments, 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 economic solution (including non-network solutions provided by others) that satisfies the required reliability standard for customers into the future. As in previous years, and through the information and context provided, the 2021 TAPR continues to support the connection of variable renewable energy (VRE) generation to Powerlink's transmission network, enabling the transformation to a low carbon future.

Powerlink's annual planning review and TAPR play an important role helping to ensure the transmission network continues to meet the needs of Queensland electricity customers and participants in the NEM into the future.

## 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<sup>1</sup>.

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<sup>1</sup> For the purposes of Powerlink's 2021 TAPR, Version 169 of the NER in place from August 2021.

Information from this process is also provided to AEMO to assist in the preparation of its ISP. The ISP sets out a roadmap for the eastern and south-eastern seaboard's power system over the next two decades by establishing a whole of system plan for an efficient transformation to a renewables-based energy system. The ISP attempts to identify the optimal development path over this planning horizon for the strategic and long-term development of the national transmission system. The ISP identifies actionable and future projects, and informs market participants, investors, policy decision makers and customers on a range of development opportunities.

The 2021 TAPR incorporates AEMO's demand and energy forecasts, consistent with those published for the 2021 Electricity Statement of Opportunity (ESOO). The ESOO examines electricity supply and demand issues across all regions in the NEM.

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 is strategic and longer term. Further, the ISP, Network Support and Control Ancillary Service (NSCAS) Report, Inertia Report, System Strength Report and TAPR are intended to complement each other in informing stakeholders and promoting efficient investment decisions. In supporting this complementary approach, the current published versions of these documents and reports are considered in this TAPR and more generally in Powerlink's planning activities.

Interested parties may benefit from reviewing Powerlink's 2021 TAPR in conjunction with [AEMO's 2021 ESOO](#) which was published in August 2021. The most recent [ISP](#) was released on 30 July 2020. The draft 2022 ISP is due for publication in December 2021.

### 1.3 Purpose of the TAPR

The purpose of Powerlink's TAPR under the NER is to provide information about the Queensland transmission network to those interested or involved in the NEM including AEMO, Registered Participants and interested parties. The TAPR also provides customers and 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 customers and stakeholders 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 and [TAPR portal](#) are not intended to be relied upon explicitly for the evaluation of participants' investment decisions. Interested parties are encouraged to contact Powerlink directly for more detailed information.

### 1.4 Role of Powerlink Queensland

Powerlink has been nominated by the Queensland Government as the entity with transmission network planning responsibility in Queensland, known as the JPB as outlined in Clause 5.22.14 of the NER.

As the owner and operator of the 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

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- 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 including the requirement to maintain minimum fault levels as prescribed by AEMO
- 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
- 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 (including battery installation) and DSM initiatives
- examining options and developing recommendations to address transmission constraints and economic limitations across intra-regional grid sections and interconnectors through joint planning with other Network Service Providers (NSP), and consultation with AEMO, Registered Participants and interested parties
- assessing whether 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 or funded<sup>2</sup> 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 Opportunities arising from the energy system transformation

The pace and scale of change to Australia's energy system is one of the fastest in the world and it is widely recognised that the transmission network will play a key role in enabling the transformation to a low carbon future. This is presenting new opportunities for communities and local businesses throughout the State along with some technical challenges for transmission networks, as well as other parts of the electricity supply chain, which are moving to an electricity system with much greater levels of Variable Renewable Energy (VRE) generation.

Broadly these challenges include:

- System strength (refer to chapters 2, 6, 7, 8 and 10)
- Network congestion on the transmission network as generation patterns change (refer to chapters 2, 6, 7 and 8)
- Marginal Loss factors (MLF) (refer to Chapter 10)
- Requirements for large amounts of energy storage including batteries and pumped hydro (refer to Chapter 2)
- Minimum demand (refer to chapters 2, 3, and 4).

Powerlink developed the Integrated Electricity Pathways to explore key investment options for transmission, energy storage and renewable generation against a range of changing sensitivities such as rooftop photovoltaic (PV) installations, generation portfolios, load retirements and developments and future gas prices.

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<sup>2</sup> Where applicable, in accordance with Clause 5.18 of the NER.

Powerlink will continue to deliver a secure, safe, reliable and cost-effective service to customers while strategically planning, guiding and enabling opportunities for the development of Queensland's future transmission network by connecting Queenslanders to a world-class energy future during this period of energy transformation.

In August 2020 the Queensland Government committed \$145 million to establish three Queensland Renewable Energy Zones (QREZ) given the quality of resources available in regional Queensland and to facilitate the transformation to 50% renewable energy by 2030. The QREZ will be located in Northern (which includes the Far North Queensland region), Central and Southern Queensland. Subsequently in May 2021 it was announced that the Queensland Government would invest \$40 million in transmission line infrastructure in North Queensland to establish the Northern QREZ, with Neoen's Kaban Wind Farm identified as the foundational proponent.

Powerlink has recently completed a public consultation '[Developing the Northern Queensland Renewable Energy Zone](#)', receiving significant in-principle support from a broad range of stakeholders. It is anticipated the development of the Northern QREZ will deliver widespread benefits and increase the generator hosting capacity in the region by up to 500MW, opening up North Queensland for further investment. The Northern QREZ establishment works include a minor upgrade to the transmission network, converting one side of the existing coastal 132kV double circuit transmission line between Ross and Woree substations to permanently operate at 275kV.

Further detailed information on the energy transformation is provided in Chapter 2.

## 1.6 Commitment to connecting Queenslanders to a world-class energy future

Powerlink is committed to connecting Queenslanders to a world-class energy future, undertaking long-term network planning to ensure the optimal performance and utilisation of the transmission network in the State. Where appropriate, this includes the development of suitable Renewable Energy Zones (REZ) and associated network infrastructure, to ensure positive outcomes for our customers.

As well as responding safely to the ongoing impacts of the COVID-19 pandemic and maintaining reliability of supply, Powerlink is also continuing to:

- undertake ongoing active customer and stakeholder engagement for informed decision making and planning
- engage and influence various NEM rule changes and guideline reviews and then adopt and implement the recommendations
- adapt to changes in customer behaviour and economic outlook
- ensure its approach to investment decisions delivers positive outcomes for customers
- place considerable emphasis on an integrated, flexible and holistic analysis of future investment needs
- support diverse generation connections
- ensure compliance with changes in legislation, regulations and operating standards
- focus on developing options that deliver a secure, safe, reliable and cost effective transmission network.

## 1.7 Overview of approach to asset management

Powerlink is committed to sustainable asset management practices that consider and recognise its customer and stakeholder requirements, ensuring assets are managed in a manner consistent with overall corporate objectives to deliver cost effective and efficient services. Powerlink's asset management system captures significant internal and external drivers in the business and sets out initiatives to be adopted. The Asset Management Policy, Strategic Asset Management Plan and related processes guide Powerlink's network asset planning and reinvestment decisions. Information on the principles and approach which guide Powerlink's analysis of future network investment needs and key investment drivers is provided in Chapter 5.

## I.8 Overview of planning responsibilities and processes

### I.8.1 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, 5.16A, 5.20B, 5.20C and 5.22.14 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 may include:

- network augmentation
- asset replacement
- asset retirement
- network reconfiguration and/or local generation or DSM initiatives
- 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<sup>3</sup> (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.

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<sup>3</sup> NER Clause 5.16.3 (a)(5).

## 1.8.2 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 replacement of network assets over \$6 million. Powerlink continues to publish information and consult with potential providers of non-network solutions for the provision of system strength and inertia network services as notified by AEMO. Planning processes require consultation with AEMO, Registered Participants and interested parties, including customers, generators, DNSPs and other TNSPs. Section 6.6 discusses current consultations, as well as anticipated future consultations, that will be conducted in line with the relevant 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 existing, new and retiring generation (including embedded generation)
- condition and performance of assets and an assessment of risks arising from ageing network assets remaining in service
- assessment of future network capacity to meet the required planning criteria and efficient market outcomes, including limiting transmission losses to the extent possible, system strength and the potential to facilitate future storage requirements to help address minimum demand.

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 8.1 and 8.2. 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)
- the impact of coal-fired generation retirements on transmission network power flows
- existing and future renewable developments including REZ
- anomalies in Powerlink's operating environment or changes in technical characteristics such as minimum demand and system strength as the power system continues to evolve.

This includes 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 4).

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, applying a flexible and integrated approach which takes into account multiple factors. Consideration is given to optimising the topography and capacity of the network, taking into account current and future network needs, including future renewable generation and other developments associated with the transforming energy system.

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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 and characteristics of the HV system, and are considered across an area or transmission corridor. The consideration of potential non-network solutions forms an important part of this flexible and 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:

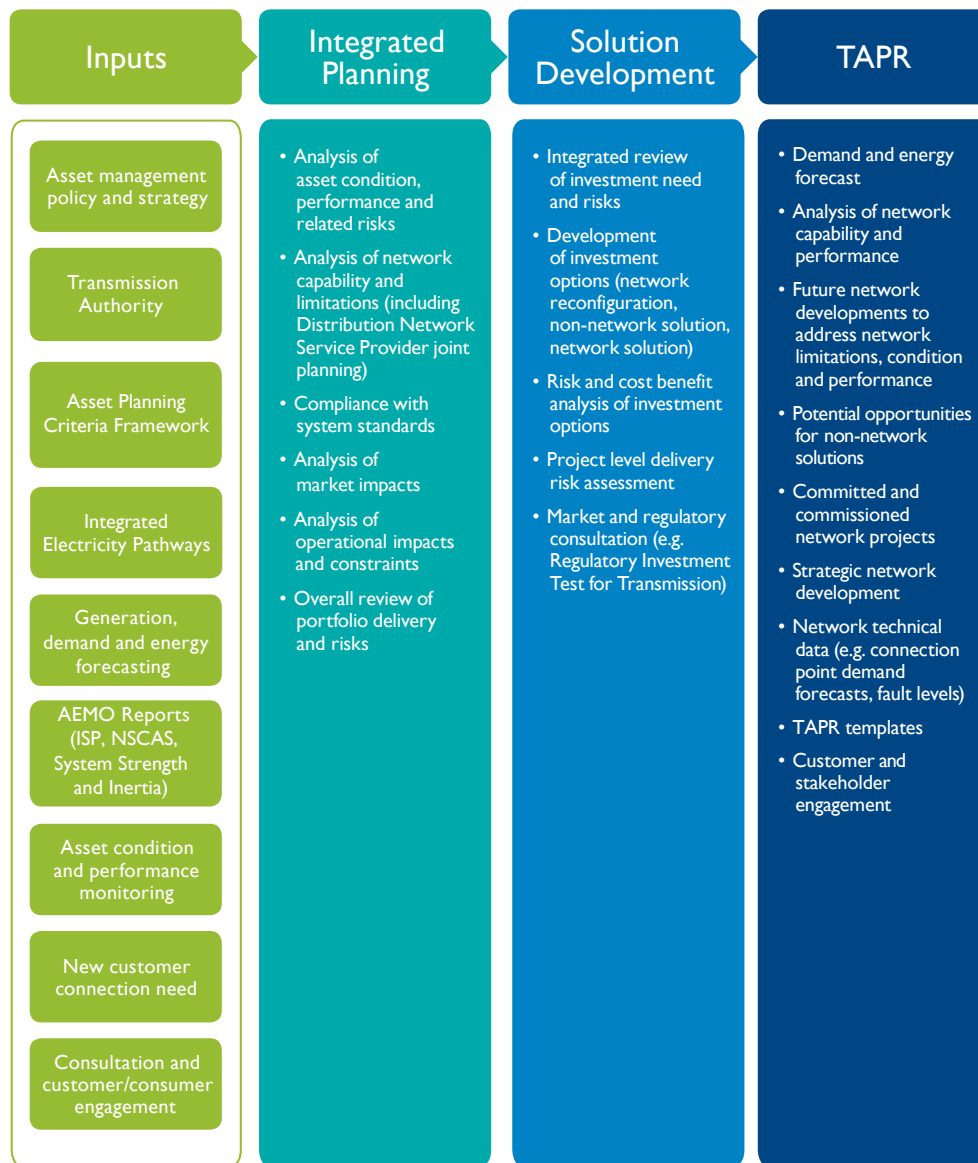
- retiring or decommissioning assets where there is unlikely to be an ongoing future need
- reinvesting to extend the service life of assets
- replacing assets of different capacity or type
- changing the topography of the network
- implementing non-network solutions.

Each of these options is considered in the context of future capacity. 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 6.7, Chapter 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 I.1.



Figure 1.1 Overview of Powerlink’s TAPR planning process



### 1.8.3 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. This process provides a mechanism 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, also includes consultation with AEMO, other Registered Participants, load aggregators and other interested parties.

Joint planning with AEMO is critical to ensure the best possible jurisdictional inputs are provided to the ISP process in the long-term interests of customers. These inputs include condition drivers for significant intra-regional infrastructure, possible development options and cost of options that increase capacity of critical intra and inter-regional grid sections, together with the associated capacity improvement.

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Also, Powerlink undertakes joint planning with AEMO to periodically assess the minimum fault level, system strength and inertia requirements for the Queensland jurisdiction. In April 2020, AEMO published a Notice of Queensland System Strength Requirements and Ross Fault Level Shortfall. AEMO declared an immediate fault level shortfall of 90MVA at the Ross 275kV fault level node. AEMO forecast that, if not addressed, this fault level shortfall would continue beyond 2024-25. In June 2021, as a result of retuning of solar farm inverters and an update of the control settings at Mt Emerald Wind Farm this fault level shortfall was addressed. Powerlink's solution to the declared fault level short fall is discussed further in sections 6.7.1 and 10.4.1.

Information on Powerlink's joint planning framework, and the joint planning activities that Powerlink has undertaken with other NSPs and AEMO since publication of the 2020 TAPR is provided in Chapter 4.

## 1.8.4 Connections

Participants wishing to connect to the Queensland transmission network include new and existing generators, storage, major loads and other NSPs. New connections or alterations to existing connections involves consultation in accordance with the NER Chapter 5 connection process between Powerlink and the connecting party to negotiate an Offer to Connect and 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 of agreeing to 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 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 any above \$10 million must enter into a Network Operating Agreement to provide operations and maintenance services.

From July 2021 Large Dedicated Connection Assets (DCA) were replaced with Designated Network Assets (DNA). A DNA is a radial transmission extension greater than 30km in length. DCAs remain for connections less than 30km. A DNA is not a connection asset, but rather transmission network. It differs to the shared transmission network as the design, construction and ownership of the DNA are non-regulated services. As for IUSAs, Powerlink remains accountable for operation and maintenance of all DNAs. A special access framework for DNAs is set out in the NER Chapter 5. Further information in relation to the connection process is available on Powerlink's website (refer to Section 10.5).

## 1.8.5 Interconnectors

As outlined in Section 1.2, the purpose of the ISP is to establish a strategic whole of system plan for a 20-year planning horizon for efficient power system development in the long-term interests of customers. The ISP also serves the regulatory purpose of identifying actionable projects to meet power system needs. These projects may relate to the potential development of new interconnectors or expanding the capacity of existing interconnectors or intra-regional grid sections. For actionable projects the responsible TNSPs are required to undertake a Regulatory Investment Test for Transmission (RIT-T) and publish a Project Assessment Draft Report (PADR) by a specified date. Under the NER, TNSPs also retain the ability to conduct RIT-Ts outside the ISP framework.

The 2020 ISP did not identify any actionable projects within Queensland. However, the 2020 ISP did identify several projects that may become actionable in future ISPs. Projects identified as part of the optimal development path nominated in the 2020 ISP which relate to Powerlink's transmission network, include:

- QNI Medium and Large interconnector upgrades
- Central to Southern Queensland reinforcement
- Gladstone Grid reinforcement.

Preparatory activity reports for these projects were provided to AEMO on 30 June 2021 (refer to Section 9.3).

## 1.9 Powerlink's asset planning criteria

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 not being supplied 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 1.8.3).

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.

## 1.10 Powerlink's reinvestment criteria

Powerlink is committed to ensuring the sustainable long-term performance of its assets to deliver safe, reliable and cost effective transmission services to customers, stakeholders and communities across Queensland. Powerlink demonstrates this by adopting a proactive approach to asset management that optimises whole of life cycle costs, benefits and risks, while ensuring compliance with applicable legislation, regulations, standards, statutory requirements, and other relevant instruments.

The reinvestment criteria framework defines the methodology that Powerlink uses to assess the need and timing for intervention on network assets to ensure that industry compliance obligations are met. The methodology aims to improve transparency and consistency within the asset reinvestment process, enabling Powerlink's customers and stakeholders to better understand the criteria to determine the need and timing for asset intervention.

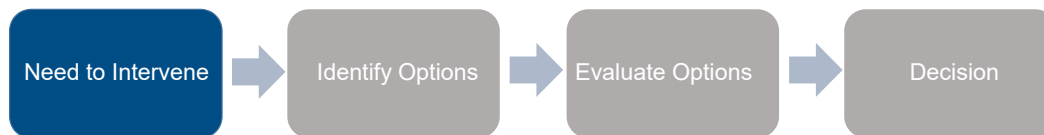
The reinvestment criteria framework is relevant where the asset condition changes so it no longer meets its level of service or complies with a regulatory requirement. This category of reinvestment is triggered when the existing asset has degraded over time and no longer provides the required standard of service as prescribed within applicable legislation, regulations and standards.

The trigger to intervene needs to be identified early enough to provide an appropriate lead time for the asset reinvestment planning and assessment process. The need and timing for intervention is defined when business as usual activities (including routine inspections, minor condition based and corrective maintenance and operational refurbishment projects) no longer enable the network asset to meet prescribed standards of service due to deteriorated asset condition.

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Powerlink's asset reinvestment process (refer to Figure 1.2) enables timely, informed and prudent investment decisions to be made that consider all economic and technically feasible options including non-network alternatives or opportunities to remove assets where they are no longer required. An assessment of the need and timing for intervention is the first stage of this process.

**Figure 1.2** Asset Reinvestment Process



## 1.11 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 consumers, such as households and businesses, who are supplied via 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. As an example, in December 2020 Powerlink continued the approach to ongoing informal discussions with multiple potential non-network solution providers in relation to the progress of the EOI for system strength services in Queensland to address the fault level shortfall at Ross.

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 its business practices, including load forecasting and transmission network planning.

### 1.11.1 Customer and stakeholder engagement

Powerlink is committed to proactively engaging with stakeholders and customers and seeking their input into Powerlink's business processes and decision making. All engagement activities are undertaken in accordance with our Stakeholder Engagement Framework which sets out the principles, objectives and outcomes Powerlink seeks to achieve in its interactions. A number of key performance indicators are used to monitor progress towards achieving Powerlink's stakeholder engagement performance goals. In particular, Powerlink undertakes a comprehensive biennial stakeholder survey to gain insights about stakeholder perceptions of Powerlink, its social licence to operate and reputation. Most recently completed as a comprehensive interview style survey with more than 100 stakeholders in November 2020, it 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.

#### *2020/21 Stakeholder engagement activities*

Since the publication of the 2020 TAPR, Powerlink has engaged with stakeholders and customers in various ways through a range of activities as outlined below.

### ***2023-27 Revenue Proposal***

Powerlink is required to lodge a Revenue Proposal to the AER every five years. As part of its 2023-27 Revenue Determination process, which commenced in 2019, Powerlink has conducted an extensive engagement program, and lodged its Revenue Proposal to the AER on 28 January 2021. Numerous workshops, forums and sessions have been hosted with customers, stakeholders, the AER's Consumer Challenge Panel and AER staff on all key elements of Powerlink's Revenue Proposal. This level of engagement with stakeholders by Powerlink will continue up until the Final Decision is released by the AER in April 2022. This engagement approach has been driven by Powerlink's overarching goal to deliver a Revenue Proposal that is 'capable of acceptance' by Powerlink's customers, the AER and Powerlink itself.

### ***Customer Panel***

Powerlink hosts a Customer Panel that provides an interactive forum for its stakeholders and customers to give input and feedback to Powerlink regarding decision making, processes and methodologies. Comprised of members from a range of sectors including industry associations, resources, community advocacy groups, directly connected customers and distribution representatives, the panel provides an important avenue to keep our stakeholders better informed about operational and strategic topics of relevance. The panel met in February, May, July and November 2020, and during 2021 met during March, May and June. Key topics for discussion included the 2023-27 Revenue Determination process, transmission pricing consultation, projects under the RIT-T process and Powerlink's most recent Energy Charter Disclosure Statement to customers and stakeholders.

### ***2020 TAPR webinar***

Powerlink hosted a [webinar](#) in November 2020 to share the TAPR's highlights and key energy industry updates with customers and stakeholders. The online format also provided an opportunity to openly engage with approximately 100 participants through an interactive question and answer session. A post webinar survey sought feedback about the webinar and content discussed. Feedback received from stakeholders was very positive, particularly around Powerlink's transparent approach to answering questions and the level of detail provided. The questions raised and answers discussed are available on Powerlink's [website](#).

### ***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 Australian Energy Regulator's (AER) 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 Section 6.6.1).

Detailed information on proposed engagement activities for RIT-Ts can be found on Powerlink's [website](#).

It is anticipated that the provision and exchange of early information through engagement activities 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](#).

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## I.11.2 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 TAPR templates. As the identified need date approaches detailed planning analysis is undertaken, and 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 or as more recently demonstrated in 2020, to assist in a short-term solution to address a system strength shortfall in north Queensland until a longer term solution could be assessed and implemented.

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 address voltage instability, inertia and system strength requirements, ensuring the secure operation of the transmission network
- to provide demand management and load balancing.

Powerlink's 2021 TAPR includes information for non-network providers that highlights possible future non-network opportunities in key areas of the transmission network in Queensland forecast to require expenditure in the next five years (refer to Chapter 7). In addition, the TAPR templates and [TAPR portal](#) published in conjunction with the 2021 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 or other consultation processes to arrive at the optimal solution for customers.

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 stakeholders. 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.

Since publication of the 2020 TAPR, Powerlink has continued its collaboration with Energy Networks Australia (ENA) and the Institute for Sustainable Futures<sup>4</sup> 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.

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<sup>4</sup> Information available at [Network Opportunity Mapping](#).

### ***Non-network Engagement Stakeholder Register***

Powerlink has a non-network Engagement Stakeholder Register (NNE SR) 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 NNE SR 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](mailto:networkassessments@powerlink.com.au) to become a member of Powerlink's NNE SR.

### **I.11.3 Focus on continuous improvement**

As part of Powerlink's commitment to continuous improvement, the 2021 TAPR focuses on an integrated approach to future network development, including the development of REZ, 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 positive 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 2021 TAPR:

- discusses emerging challenges as the power system transforms to much greater levels of VRE generation (refer to chapters 2, 3, 6, 9 and 10)
- provides information in relation to joint planning and Powerlink's approach to asset management (refer to chapters 4 and 5)
- discusses possible future network asset investments for the 10-year outlook period (refer to Chapter 6)
- 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 6)
- discusses the potential for generation developments (in particular VRE generation) and the challenges related to the management of system strength (refer to chapters 2 and 10)
- contains information on potential non-network opportunities in the next five years, grouped by investment type (refer to Chapter 7) 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 1.11.2 and 6.7)
- links to Powerlink's new [TAPR portal](#) website incorporating the 2021 TAPR templates and discusses the context, methodology and principles applied for the development of the Queensland transmission network data (refer to Appendix B).

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