

Powerlink Queensland

Stakeholder Update 2019





Message from the Interim Chief Executive Kevin Kehl

The energy industry continues to change and Powerlink is certainly changing with it. In this period of transition, our primary focus is on the continued safe, cost effective and reliable operation of the power system to ensure we continue to deliver for more than four million Queenslanders and our directly-connected customers. We recognise the price of electricity continues to be a key issue, so we remain committed to drive efficiencies across our business and ensure that customers are at the centre of everything we do.

In line with this, Powerlink is proudly a foundation signatory in the industry-led whole-of-sector initiative, the Energy Charter. The Energy Charter focuses on driving a customer-centric culture in energy businesses to create price and service delivery improvements for customer benefit. Our first Energy Charter Disclosure Statement will be released in October and we encourage you to read more about how we are shifting to a customer-centric culture at Powerlink.

In 2018/19, we connected one of Australia's largest wind farms to our network, along with a further eight renewable energy connections, which together added 1,135MW of generation capacity to the system. During this period, we also managed more than 120 connection enquiries and responded to more than 40 applications from generators totalling about 8,000MW.

The rapid increase in renewables seeking to connect to the National Energy Market (NEM) is creating challenges. To manage these impacts, Powerlink is working closely with proponents, suppliers and the Australian Energy Market Operator (AEMO) to provide more information on the operation and planning of our network to help progress projects in a safe and timely way.

We also worked with other transmission businesses and Energy Networks Australia to initiate a different approach with Rule changes to allow publication of basic project information for connection enquiries and applications. This information is currently required to be treated as confidential and its publication will significantly

improve transparency of activity across the electricity system for generation and other project proponents.

The 2018/19 summer in Queensland set a new record demand on 13 February 2019, with operational 'as generated' demand reaching 10,044MW, passing the previous record of 9,796MW set last summer. This was the first time on record that demand surpassed the 10,000MW mark. In this year's Transmission Annual Planning Report (TAPR), Powerlink has flagged future use of AEMO demand and energy forecasts for its planning processes. The changing energy system is presenting clear opportunities for Powerlink to work more closely with AEMO, other market bodies and network businesses to deliver better value to our customers.

The Queensland transmission network experienced significant growth in the period from the 1960s to the 1980s. Managing emerging risks related to these assets now reaching the end of technical service life represents the majority of Powerlink's program of work in future. In line with customer and stakeholder expectations, we are focusing on ensuring that asset reinvestment considers the enduring need, optimal timing for decisions and delivery of the most cost-effective option. Our TAPR also provides information on transmission grid capability and potential network and non-network developments required to meet demand. We have developed a 30-year Network Vision to provide guidance for our strategic direction.

This is just a snapshot of what's been happening. I hope you find our first Stakeholder Update a useful resource in understanding how we are delivering for customers and stakeholders, and focusing on the future in how we operate our network across Queensland.

A handwritten signature in black ink that reads "Kevin Kehl".

Kevin Kehl – *Interim Chief Executive*
Powerlink Queensland



Undertaking important maintenance work on transmission towers.

About us

Powerlink Queensland is a Government Owned Corporation that owns, develops, operates and maintains the electricity transmission network in Queensland. Our transmission network runs approximately 1,700km from Cairns down to New South Wales.

With electricity being a key enabler of the economy and supporter of our modern lifestyles, we have an important responsibility as part of delivering electricity to more than four million Queenslanders.

Powerlink's role in the electricity supply chain is to transport high voltage electricity, generated at major power stations, through its transmission grid to the distribution networks owned by Energex and Ergon Energy (part of the Energy Queensland Group) and Essential Energy (in northern New South Wales) to supply customers.

We also transport electricity to high usage industrial customers such as rail companies, mines and mineral processing facilities, and to New South Wales via the Queensland/NSW Interconnector transmission line.

Our network

Not only do we play a part in safely delivering electricity to more than four million Queenslanders, we also play a key role in powering the Queensland economy. Across the state, our network supports:

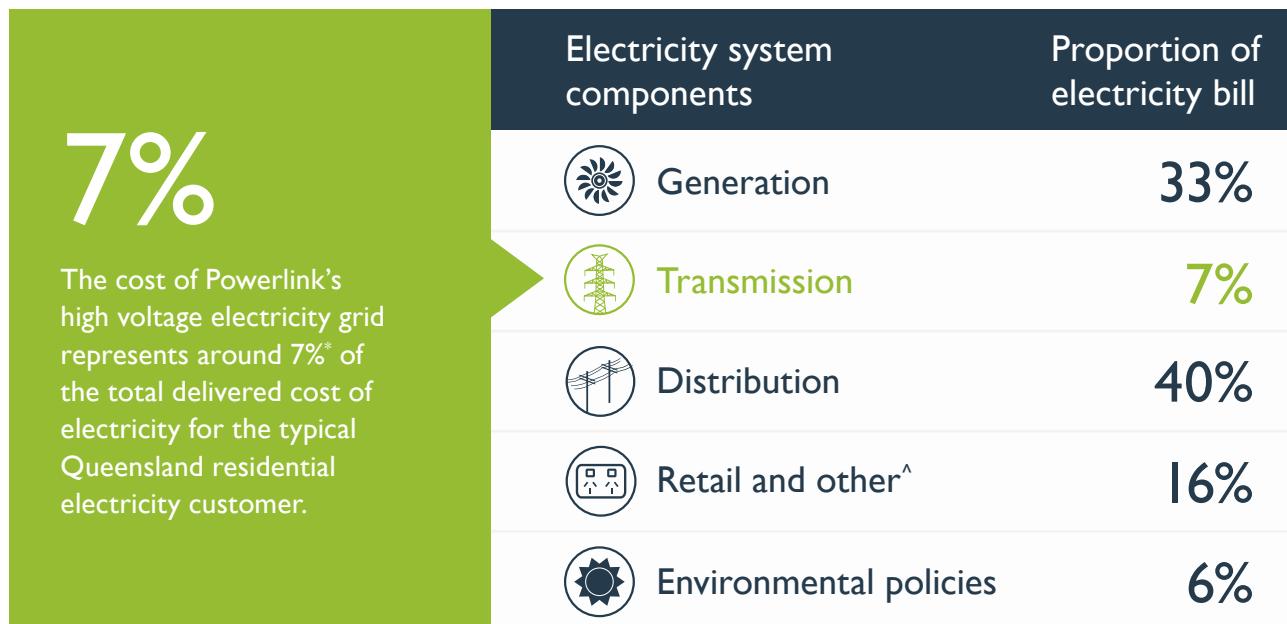


*Figures accurate as at 29 July 2019

Downward pressure on electricity prices

Powerlink recognises the price of electricity continues to be a key issue for Queenslanders.

For the average Queensland residential electricity customer, Powerlink's transmission network represents around seven per cent of the total delivered costs of electricity. While this is relatively small in what makes up the whole electricity bill, we are mindful of our contribution and strive to ensure our transmission services are delivered as cost effectively as possible.



*2018 Residential Electricity Price Trends Report

[^]Includes costs associated with retail, losses and errors in the estimated value of all other supply chain cost components. The AEMC 2018 Residential Price Trends Report refers to this overall component as residual.

Powerlink is committed to engaging with customers

Engaging with customers is a core focus for us at Powerlink as it enables us to ensure services better reflect customer values, priorities and expectations.

During 2018/19 Powerlink:

- commenced early engagement regarding Powerlink's 2023-27 Revenue Determination process being the first network business to use a co-design process with customers and stakeholders to develop our engagement approach
- hosted four Customer Panel meetings, to gain insights from a range of sectors including energy industry, resources, community advocacy groups, customers and research organisations
- held the Transmission Network Forum to receive stakeholder input on investment and forecasting considerations on a number of key topics, including renewable connections and improving network utilisation
- jointly hosted a webinar with TransGrid regarding the Regulatory Investment Test for Transmission (RIT-T) being undertaken for increasing transmission transfer capacity between Queensland and New South Wales
- worked with Energex and Ergon Energy to jointly conduct the Queensland Household Energy Survey to improve understanding of customer behaviours and intentions.



Stakeholder discussion at the 2018 Transmission Network Forum.

Transmission Annual Planning Report (TAPR) 2019

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

The TAPR's purpose is to provide information about Queensland's electricity transmission network to everyone interested or involved in the NEM – including AEMO who operate the NEM, Registered Participants (entities registered with AEMO who participate in trading activities or provide services for the operation of the market), and interested parties.

The TAPR also provides broader stakeholders with an overview of Powerlink's planning process and decision-making on future investments, which offers market insights to a range of interested parties.

The TAPR includes information on:

- electricity demand and energy forecasts
- performance of the existing transmission network
- committed generation and network developments
- forecast network capability
- potential future network developments and non-network developments (e.g. demand side management alternatives).



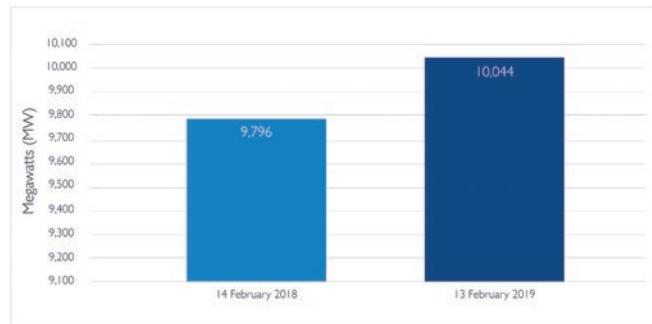
Our demand forecasting methodology

Transmission network planning is a complex process that requires detailed analysis performed by our specialist planning engineers. The team recognises the external pressures shaping the future of our business and look at two major components when developing our forecasts – demand (instantaneous electricity usage) and energy (electricity usage over a full year).

Powerlink adopted its 2018 TAPR forecasts for the planning analysis of the 2019 TAPR and will be using AEMO's forecasts in future, with the next forecast update being released late September 2019.

Our demand and energy forecast

Queensland's 2018/19 summer set a new maximum delivered demand record on 13 February 2019, when 8,969MW was delivered from the transmission grid. The highest operational demand (as generated) record was also set reaching 10,044MW, breaking the 2018 record of 9,796MW.



The forecasts presented in the 2019 TAPR indicate low growth (0.5% per annum) for maximum demand and a decline (average annual rate 0.7% per annum) in energy consumption over the next 10 years.

It is expected that Queensland's transmission delivered energy will decline over the next 10 years due to the committed and uncommitted solar farms and wind farms connecting to the distribution networks in response to market and policy incentives.

Demand forecast

The information presented in the 2019 TAPR indicates maximum demand is forecast to increase at an average rate of 0.5% per annum over the next 10 years. This is illustrated in Figure 1.

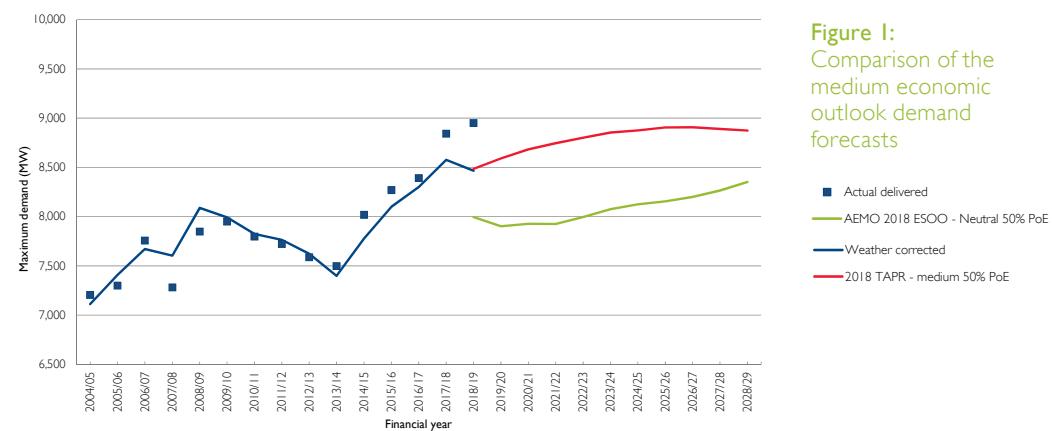


Figure 1:
Comparison of the medium economic outlook demand forecasts

Energy forecast

Energy consumption is forecast to decrease at an average annual rate of 0.7% per annum over the next 10 years. This is illustrated in Figure 2.

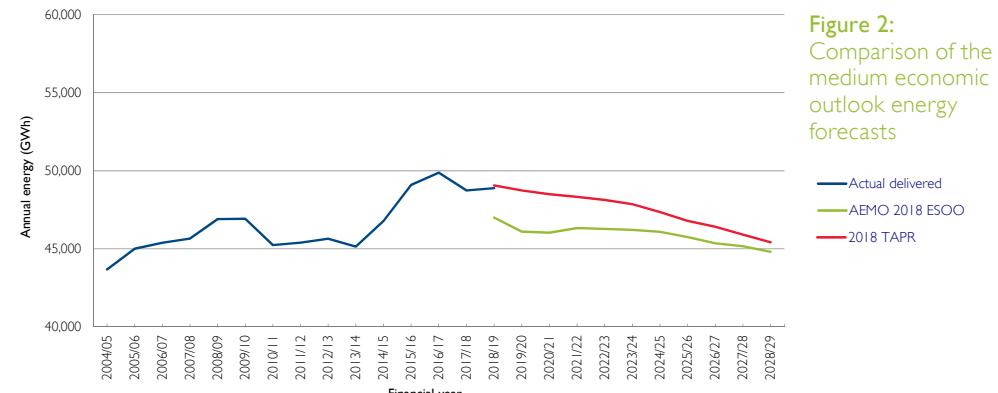


Figure 2:
Comparison of the medium economic outlook energy forecasts

Focusing on customer network connections

How we are working with customers to facilitate connections

Renewable generation is a key focus for Powerlink as generation transitions to a cleaner energy future. We need to be aware of the changing role of the transmission network as part of that transition and focus on providing safe, cost effective and reliable transmission services.

In the last 12 months Powerlink has completed the connection of nine large-scale solar and wind farm projects in Queensland, adding 1,135MW of generation capacity to the system. During this period, we also managed more than 120 connection enquiries and responded to more than 40 applications from generators totalling about 8,000MW.

Overview of Powerlink's existing network connection process



Since the implementation of the Australian Energy Market Commission's (AEMC) Final Determination on the Transmission Connections and Planning Arrangements Rule from July 2018, Powerlink has continued to refine publicly available information and update processes as needed to meet the new Rule requirements and provide clearer information to customers.

Powerlink remains focused on delivering a timely and transparent connection process for proponents seeking to connect to the transmission network, which includes supporting them through the physical connection works, Generator Performance Standards and system strength requirements.

Powerlink is working with proponents, suppliers and AEMO to enhance its integrated system strength model for the Queensland network.

Powerlink is applying this integrated system strength model to existing and new connection applications and will continue to engage with customers to better understand the potential for additional generation looking to connect in Queensland as well as managing asynchronous generation in the wider power system.

Proponents who wish to connect to Powerlink's transmission network are encouraged to contact BusinessDevelopment@powerlink.com.au. Further information regarding Powerlink's network connection process is available on our website www.powerlink.com.au.



Strong input and feedback at our Engagement Co-Design Workshop.

Engaging our customers

Powerlink has a strong focus on engaging customers, consumer advocates, government, regulators and industry to ensure our business is delivering valued outcomes.

Our Customer Panel has played an important role in providing customer and stakeholder insights to help improve Powerlink's decision making. These engagements are focused on discussing aspects of Powerlink's services and operations that can be influenced through engagement.

Engagement Co-Design Workshop for the 2023-27 Revenue Determination Process

Powerlink recently hosted a workshop to 'co-design' the engagement approach for our upcoming Revenue Determination process. It is the first time a network business in Australia has used this approach.

Our Customer Panel members were joined by directly connected customers, industry, government and consumer advocates to collaborate with representatives of Powerlink's Board, Executive and subject matter experts to gain insights into:

- overarching engagement approach
- engagement scope
- engagement techniques
- communications to support engagement
- engagement evaluation.

A key lesson from the workshop was the importance of Powerlink creating a business narrative. Attendees were clearly seeking this type of 'whole of business' view, so positions put forward in the Revenue Determination process can be viewed in the context of future business risks and opportunities. Building levels of trust and transparency were also identified as key areas.

Powerlink used the inputs from the workshop to develop a draft Engagement Plan that was circulated to workshop participants for comment, which then assisted us in further refining our approach.

Presentations and a summary of the workshop are available at www.powerlink.com.au/engagement-forums.



As a foundation signatory to the Energy Charter, we have signalled our commitment to playing our part in delivering energy for a better Australia. Our participation in the Energy Charter mirrors our corporate focus of strengthening Powerlink's business-wide customer-centric approach and strong engagement as key components of our everyday culture and business practices.

The Energy Charter will help us review and report on the actions we have taken and are planning to take, and identify gaps in our areas of focus, to create real improvements that benefit customers and ensure we meet their expectations. The associated Energy Charter principles provide a roadmap to underpin our customer focus.

Principle One: We will put customers at the centre of our business and the energy system

- Powerlink's vision is to be innovative and customer focused, with a stronger business and reputation. 'Customer' is one of our core values. As a transmission business, we need to continue to bring our customers 'to life' within our business and demonstrate the importance of the service we provide.

Principle Two: We will improve energy affordability for customers.

- We know that affordability is a prime concern for customers. We commit to ensuring the costs for transmission, which comprise seven per cent of the average Queensland residential electricity bill, are economical, efficient and effective.

Principle Three: We will provide energy safely, sustainably and reliably.

- A safe, cost effective and reliable supply of energy is at the core of our operations. We also have a role to play in shifting to a cleaner energy future through connecting renewable energy sources to the network, noting existing regulations require us to be generation-type neutral.

Principle Four: We will improve the customer experience.

- Powerlink is fully committed to improving the customer experience, set within the context of a transmission business that has no direct relationship with households and most businesses. We have a dedicated team who engage with generators and high-use industrial customers who connect directly to the transmission network.

Principle Five: We will support customers facing vulnerable circumstances.

- As a transmission business, Powerlink has no direct relationship with residential and small business customers who may be facing vulnerable circumstances, so some aspects of this principle are outside of our ability to influence in a direct and tangible way. However, we will work closely with businesses connected directly to our network, who may find themselves in vulnerable circumstances, to understand their situation and assist where appropriate.

We encourage you to view our inaugural Energy Charter Disclosure Statement, which will be published in October and contains more detailed commentary on these principles and opportunities for improving our customer focus.



At Powerlink, the safety of our people, communities and contractors is essential.

Stakeholder perception survey feedback

Powerlink has conducted its biannual Stakeholder Perception Survey, with survey results finalised in early 2019. This survey generates quantitative and qualitative information on stakeholder perceptions to track performance, inform decision-making processes, guide our engagement planning and provide insights into what matters most to our stakeholders.

More than 95 interviews were undertaken for the survey across 11 stakeholder categories including landholders, environment and community groups, government, utilities, contractors and suppliers, industry associations, unions, advocacy groups, customers and regulators.

The survey measured Powerlink's Social Licence to Operate (SLO), an internationally recognised standard that measures the level of acceptance or approval granted to Powerlink by its stakeholders. Powerlink's SLO improved in 2018, scoring 3.98 out of 5 which falls into the high approval band.

The survey also measured stakeholders' perceptions of key issues with the three most mentioned issues including:

Consultation and collaboration	Comments about improvements to, or the importance of, the flow of communication between Powerlink and stakeholders.
Pricing	Concerns about the price of electricity, and the role that Powerlink can play in keeping downward pressure on costs.
Reliability of the network	Ensuring the continuous supply of electricity to customers, now and in the future.



We are focused on putting customers at the centre of our decision making.

Powerlink also updated its Stakeholder Engagement Framework which details our commitment to genuine and timely engagement that leads to improved decision-making and better outcomes for our stakeholders. It is underpinned by the feedback received in the survey around improving customer service, transparency and further strengthening relationships with stakeholders.

The framework outlines our delivery promise and standards, and is aligned with our Customer Service Charter commitments.

For more information on the survey findings and how Powerlink is responding visit www.powerlink.com.au/engagement-framework.

Regulatory Investment Test for Transmission (RIT-T) engagement

We have continued to implement our RIT-T Stakeholder Engagement Matrix to enhance the value and outcomes of this process for customers and stakeholders. The matrix describes the level of engagement activities we will action, triggered by the project characteristics. The tool offers some flexibility, with the final strategy for each project decided on a case-by-case basis.

The likelihood of non-network options is a key characteristic that helps to categorise the level of engagement we will undertake for each RIT-T. A high likelihood of non-network options can trigger engagement activities such as a dedicated engagement forum to analyse project options and additional documentation to inform and assist interested parties.

The matrix is applied to all RIT-Ts issued by Powerlink. To date, the most complex and highest levels of engagement have been undertaken for two RIT-Ts – expanding transmission transfer capacity between Queensland and New South Wales, and maintaining reliability of supply for Clare South to Townsville South.

We host a range of general engagement forums and webinars to share information with customers and stakeholders. These help to inform the future development of the transmission network and assist Powerlink to provide services that align with the long-term interests of customers.



Powerlink, Ipswich City Council and Healthy Land and Water representatives mark the completion of our five-year koala habitat rehabilitation project at Grandchester.

Supporting our communities

Over the past 12 months Powerlink continued its investment in local communities through our sponsorships and partner programs. Our philosophy is to support projects with a strong focus on empowering communities, protecting and conserving the environment, and supporting safety and wellbeing.

We have been particularly proud over the past year to help deliver essential response equipment to Queensland State Emergency Service (SES) groups across the state so they can do what they do best, as part of our equipment program sponsorship in partnership with Energy Queensland. We recently signed on to a further 12 months of this partnership to deliver important equipment to SES groups across Queensland in 2019/20.

We continued our long-standing support of Engineers Australia, celebrating their centenary this year, and the Australian Power Institute's University of Queensland Women in Engineering program further supported our involvement in attracting women into the engineering profession.

Sponsorship of the Local Government Association of Queensland's annual conference provides us with an opportunity to engage with customers and stakeholders around the changing future of energy and working with Powerlink. We also supported a range of smaller, grass-roots groups and organisations who deliver important services in their local communities.

Our focus on projects with strong educational and industry components, plus activities which benefit areas traversed by our transmission infrastructure have assisted Powerlink to build its reputation and establish stronger relationships with customers and stakeholders.



Powerlink's recently completed substation to connect the Mt Emerald Wind Farm to the transmission network.

Our Network Vision

We know the future of energy won't be the same as it is today, so Powerlink is actively monitoring and participating in the external environment. We must anticipate, influence and navigate changes coming our way. And that's where our new 30-year Network Vision is already giving us guidance. It ensures that Powerlink is prepared to be an active participant in the ongoing development and evolution of the role transmission will play in the energy industry in Australia. This will help Powerlink and our network adapt to its future role in electricity supply for our customers, stakeholders and Queensland communities.

Seven key drivers were identified:

- large-scale renewable generation, particularly asynchronous
- distributed energy resources
- end-use customer expectations
- changes in mobility
- changes in industrial and commercial loads
- energy export industry
- network design and operations



Signposts help and guide us in an ongoing way to track how each of the future scenarios and trends are progressing. They will help us understand when critical impacts might occur and when potential opportunities may arise. Powerlink is envisioning the future to inform what we do today.

Project highlights

Innovation applied to insulator replacement

Our new Innovation Framework is already bringing safety and efficiency improvements to a significant program of transmission line insulator replacement across our network.

Powerlink's insulator replacement program was the perfect test case for the new innovation process as approximately double the number of insulator replacements are needed over the next 10 years (compared to the previous 10), requiring a more innovative approach to safely get the work done.



As part of a pilot innovation workshop, more than 20 staff came up with 102 ideas that could potentially bring about a safer and faster rollout of the replacement program. Of the 102 initial ideas generated from a group of internal and external stakeholders, we shortlisted six for experimentation and testing, including options such as flexible rostering, family support and helicopter support.

Out of the workshop, the team successfully trialled aerial transfer of staff onto each tower for work, supplemented with transport for lines team members as part of the aerial transfer to site.

The outcome of the trial showed significant productivity and safety benefits. Productivity rates have doubled with staff now able to complete necessary work on four towers a day rather than two towers.

Importantly, helicopter transport removes the risks associated with long distance driving and reduces fatigue levels, with an 80% reduction in driving time. Traditionally our people would have driven up to 2,000 kilometres every fortnight as part of undertaking this work.

Highly skilled team conducts unique live maintenance work

Powerlink commenced using live substation work practices 18 years ago and is still the only transmission utility in Australia to use these innovative techniques.

This year, a key substation on Brisbane's northside underwent important maintenance work under 'live' conditions, which minimised power supply impacts on customers. The fully energised work is a highly specialised technique unique in Australia to Powerlink.



Undertaking maintenance work while a substation remains fully energised minimises potential customer impacts by reducing the need for planned outages. This type of maintenance work, called the 'hot-stick method', was based on the principle that the live work specialist always maintains a safe minimum working distance from any energised piece of equipment.

A long insulating pole extends several metres in the air with different attachments to enable our staff to complete essential maintenance on the live equipment.

Our live substation teams are highly experienced and are committed to continually developing, implementing and refining their methods and techniques to safely perform this specialised work.

The maintenance works ensures the ongoing safety and reliability of the transmission network.

Soil stabilisation work in the Wet Tropics

Wet season rain in March 2018 saw 485 millimetres fall within 24 hours in an environmentally significant Wet Tropics area of the state's Far North. The significant rain events exposed the footings of four transmission towers, with the damage identified during maintenance inspections in the area. In response, important works to secure the critical 275kV transmission line west of Cairns began. Since work commenced onsite in September 2018, Powerlink has battled an additional 3,000 millimetres of rain, hampering ongoing efforts to stabilise the ground onsite and complete work on the tower footings.



The unusual nature of this work highlights the unique and challenging locations some of the state's 1,700 kilometre transmission network operates in. Our focus remained on ensuring safe and reliable power supply is maintained to Cairns and surrounding areas.

This essential work was conducted efficiently and safely without any impact on power supply, while meeting stringent environmental requirements due to the importance of this Wet Tropics area. The remote location and constrained access to these transmission towers added a layer of complexity in delivering these repairs. There was significant weather damage to the main access track connecting these towers and a creek crossing to negotiate, which required meticulous logistical planning and the development of a site-specific management plan.

Our project team used highly specialised techniques to safely secure tower footings using soil nails and concrete, in tandem with customised gabion baskets, or welded mesh stone walls.

This project demonstrated Powerlink's technical expertise in delivering an innovative, cost effective and long-lasting solution, while keeping customers and the environment top of mind.

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