

Selecting new transmission line routes



Building for the future



Key Points

- When undertaking a new transmission line or substation project, we follow an approved process under the *Sustainable Planning Act 2009 (SPA)* which requires a comprehensive Environmental Impact Assessment (EIA) and associated community consultation.
- We begin work as early as practicable to select a new transmission line route – early planning provides more certainty to landowners about the location of future transmission lines and substations and allows better land use planning by councils, developers and government departments.
- The process for selecting transmission line routes carefully assesses factors such as existing and future land use, the location of homes, the environment, existing electricity infrastructure corridors, industrial development and topography.
- We consult with landowners and the public throughout the route selection process – this includes asking for your feedback on an Environmental Impact Statement (EIS) report.
- After a Final EIS recommends a location for the transmission line or substation, we seek State Government planning approval and work with directly-affected landowners to acquire the land or easements required.

Why are high voltage transmission lines and substations needed?

Powerlink's high voltage transmission network provides the backbone for the electricity supply chain in Queensland. Our transmission lines and substations connect power stations, where electricity is generated, to the State's electricity distribution networks (owned by Energex and Ergon Energy) which supply households and businesses.

As Queensland grows, so too does the demand for electricity. The development of more homes and industries, and the increased use of air conditioning all contribute to increased electricity demand.

We need to build new transmission lines and substations to reliably meet forecast electricity demand. We may also need to build new transmission lines when a major industrial customer (such as a generator or mine) needs to connect into the electricity network.

In the future, our network will have an important role in facilitating lower emissions generation by transporting electricity produced by large-scale renewable sources and other low emissions generators to major population centres. The transmission network will also assist the provision of system support required due to the intermittent nature of renewable generation sources. Regardless of the source of generation, (e.g. coal fired power stations or renewable sources) high voltage transmission lines are required to securely transport bulk electricity supply.

Each year in June we produce an Annual Planning Report (APR) that examines the drivers of growth in electricity demand, including forecast economic growth and planned industrial and residential development. We work closely with Energex and Ergon Energy when determining demand forecasts for the APR. The APR takes into account expected impacts of energy efficiency and conservation initiatives that individuals are using to save energy in their home – such as using more solar and gas or switching to energy efficient light bulbs.



The key measure that drives the need for new transmission lines and substations is peak demand for electricity. Peak demand is the maximum electricity demand which occurs at a specific point in time, and is different from overall or daily electricity demand. In Queensland, peak demand occurs on very hot and humid summer days when the use of air conditioners is highest. We have a legal obligation to develop our electricity network so that it can reliably meet peak demand.

The forecast for Queensland's electricity needs over the next 10 years indicates sustained growth in demand. We are committed to developing our network ahead of demand, while meeting our obligations under the National Electricity Rules (NER). The NER require Powerlink to deliver network solutions that reliably meet electricity demand, at the lowest long-run cost to consumers, while taking into account environmental and community factors.

We begin work as early as practicable to select new transmission line routes or new substation sites, once a need has been identified. This helps provide certainty to landowners about the location of future infrastructure and allows better land use planning by councils, developers and government departments.

What's involved in selecting a transmission line route?

Selecting a new transmission line route or substation site, and the associated consultation and Environmental Impact Assessment (EIA) is undertaken in accordance with Powerlink's SPA-approved process. The EIA is a comprehensive process that involves desktop and field studies to examine the environmental, community and economic aspects of a proposed project. This includes a professional environmental service provider developing an Environmental Impact Statement (EIS) – a written report that examines the potential impacts of the project and recommends the overall suitability of a proposed alignment. The EIS includes an Environmental Management Plan (EMP), which outlines how Powerlink would manage and mitigate any identified impacts during and after construction. This process also involves a comprehensive consultation process – including advertising the EIS for public comment.

When selecting substation sites the size of the parcel of land we need can vary. We consider factors such as topography, how accessible the site is and the technical feasibility of how transmission lines will be able to feed into and out of the site. The process outlined in this information sheet mainly refers to the selection process for transmission line routes. However, we take similar steps when selecting a site for a new substation.

When selecting transmission line routes, Powerlink generally follows this process:

1. Assessing constraints within a Study Area

Once the need for a new transmission line is identified we start initial investigations within a broad Study Area. At this stage we undertake desktop research and consult with key stakeholders such as local and State Government agencies.

The key factor at this early stage of a project is identifying any obvious physical, environmental, economic and social constraints in the area and potential impacts of the proposed project. The factors we consider include, but are not limited to, existing and future land use, the location of homes, existing electricity infrastructure corridors, other industry, vegetation and topography.

2. Identifying a Study Corridor and starting community consultation

A professional environmental service provider selects a Study Corridor, which is determined after investigating the constraints within the wider Study Area. While we generally only need a 40 – 120m wide easement for transmission lines, Study Corridors are normally between 1 – 3km wide, which gives us some flexibility in establishing where the final location of the line will be.

The environmental service provider reviews environmental and social constraints based on maps, satellite imagery and local government planning schemes. They also undertake some field investigations, which may include walking, driving, and/or sometimes flying over the corridors. The key objective of these investigations is to select the corridor which, on balance, has the least overall impact on the community and the environment, while still achieving technical feasibility and cost efficiency.

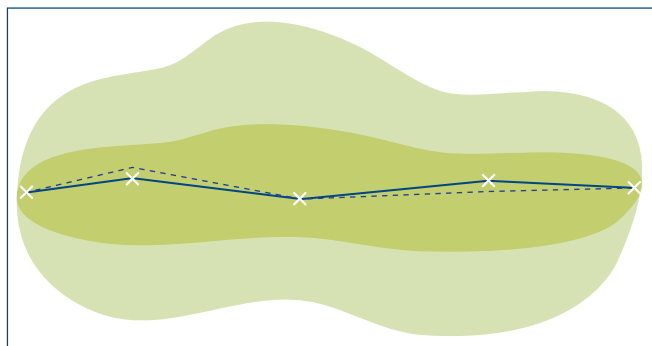


The environmental service provider then identifies a Preliminary Alignment within a wider Study Corridor as a starting point for consultation and discussions with affected landowners and the community. This is the alignment that is examined in the Draft EIS, and on which the community is asked to formally provide feedback. The Preliminary Alignment may be refined and changed as a result of detailed consultation and environmental investigations.

3. Community consultation and environmental assessment process

We consult with directly-affected landowners, the wider community, environmental groups, Aboriginal parties, government representatives and other interested stakeholders to refine the Preliminary Alignment. After the external consultant completes the ecological assessments, incorporates feedback from initial stakeholder consultation and finalises other investigations, a Draft EIS report is released for public comment. Feedback on the report from the various stakeholders is assessed and incorporated into the Final EIS, and further refinements are made to the alignment as required. The Final EIS is then released, providing the overall environmental assessment and the recommendation of the final alignment for the transmission line.

For more information about our EIA process and the associated consultation process please see our *Consultation and Environmental Impact Assessments* information sheet. See the diagram below for a visual representation of steps 1, 2 and 3 as well as the Study Area, Study Corridor, Preliminary Alignment and Final Alignment.



■ Study Area ■ Study Corridor - - - Preliminary Alignment — Final Alignment

What happens once a route is selected?

Following the release of the Final EIS, we start work on acquiring easements and seeking State Government planning approval for the project. Powerlink acquires easements so that we can construct and maintain our transmission lines. Easements provide a legal 'right of way' over a portion of land, while the landowner continues to retain the rights and responsibilities of ownership. Planning approval involves having the easements designated for community infrastructure by a State Government Minister (usually we submit our application to the Minister responsible for Energy) under the *SPA 2009*.

The restriction of rights to the resumed land is converted into a legal right to claim compensation. For more information about compensation please see our *Easement compensation* information sheet.

To help ensure community safety and the security of electricity supply there are some restrictions on the owner's use of land in the easement area. However, most activities can continue as normal. For more information about what you can and can't do on an easement, please see our *Easement co-use* information sheet, and contact our Network Property department for advice.

After the easement is acquired, Powerlink adds it to our mapping system and to local government planning schemes to provide the community with certainty about the location of future infrastructure.

Timing of construction is dependent upon the need for the infrastructure. It can commence any time after the land and/or easements have been designated and resumed. Where practicable, we designate and resume easements well in advance to provide long-term planning certainty for the community. For information about how we work with landowners during construction please see our *Building a new transmission line* or *Building a new substation* information sheets.



Explanations and frequently used terms

Environmental Impact Assessment (EIA)

An Environmental Impact Assessment (EIA) is the process to ensure any environmental, community or economic impacts associated with the project are identified and managed.

Environmental Impact Statement (EIS)

The written report that is produced as part of the EIA process. An Environmental Impact Statement (EIS) examines the environmental, community and economic aspects of proposed projects and identifies ways to manage any impacts. The EIS is an important part of Powerlink's consultation process and is advertised for public comment. Included in the EIS is an Environmental Management Plan (EMP).

Environmental Management Plan (EMP)

An EMP documents the actions Powerlink must take to manage environmental and social impacts that might result from the design, construction or operation of the transmission line. The EMP is developed as part of the Environmental Impact Statement (EIS).

Study Area

Identifying a Study Area is the first step in selecting an alignment for a proposed transmission line. A Study Area is normally a broad area of land between the proposed end points for the transmission line. It is the area within which various corridors are identified and in which one is ultimately selected for further investigation.

Study Corridor

Study Corridors are generally between 1 and 3km wide – much wider than the width ultimately required for new easements – this provides flexibility to choose an alignment that minimises overall impacts. The Study Corridor is selected following careful consideration of criteria such as existing land use, topography, environment and cost.

Substation

The role of a substation is to monitor and control the flow, stability, quality and voltage of electricity on the transmission lines connected to the facility. Equipment located within the substation is used to transform the voltage of electricity, protect the network, measure the (flow) of the electricity, and switch electricity between the different transmission lines and transformers on the grid. A substation is not a power station – it does not generate electricity.

Sustainable Planning Act 2009 (SPA)

The *Sustainable Planning Act 2009 (SPA)* is legislation which seeks to manage the process and effects of developments and ensure coordination and integration of local, regional and state planning.

Transmission line

A transmission line is a powerline which is capable of carrying large amounts of electricity at high voltages. Transmission lines are larger and taller than the everyday distribution power lines which deliver electricity to your home and business. Transmission lines are normally built on tall steel towers or concrete and steel poles.

Peak demand

Peak demand is the maximum (or 'peak') amount of electricity being used by consumers at a specific point in time. Powerlink must plan and develop its network so that it can supply the forecast peak demand.

Preliminary Alignment

A Preliminary Alignment is the starting point for consultation and detailed environmental studies. It is located within a wider Study Corridor, and is the draft alignment for the location of a new transmission line.



About Us

Powerlink Queensland is a State Government Owned Corporation which owns, develops, operates and maintains the high voltage transmission network in Queensland.

Our network of high voltage substations and transmission lines extends 1,700km from Cairns to the New South Wales border – approximately half of Australia's eastern seaboard.

Powerlink's transmission network is the central link in the electricity supply chain, transporting electricity from power stations where it is generated, to distributors Energex, Ergon Energy and Essential Energy that deliver electricity to around two million customers.

Powerlink also transports electricity directly to industrial customers and to New South Wales via the Queensland/New South Wales Interconnector transmission line.

Powerlink does not generate or buy or sell electricity – we simply transport it 'in bulk' from wherever it is generated across our high voltage transmission network to where it is needed. For more information see our *About Powerlink Queensland* information sheet.

Important note: The contents of this information sheet are current at the time of print and are indicative only. Powerlink reserves the right to change its policies and procedures from time to time. Before relying on this information you should contact Powerlink to check whether it is still current.

Printed on Monza Recycled – 30% pre-consumer, 25% post consumer waste and 45% forest managed fibre. Created by a mill that is 100% energy self-sufficient. Monza Recycled is Certified Carbon Neutral by The Carbon Reduction Institute (CRI) in accordance with the global Greenhouse Protocol and ISO 14040 framework.

More Information

Other useful guides can be accessed from www.powerlink.com.au including:

- *Easement compensation*
- *Understanding designation for transmission line infrastructure*
- *Understanding resumptions for transmission line infrastructure*
- *Easement co-use*
- *Consultation and Environmental Impact Assessments*

Contact Us

- Call FREECALL 1800 635 369 (during business hours)
- Email us at website.enquiries@powerlink.com.au
- Visit www.powerlink.com.au, or write to:

Network Property
Powerlink Queensland
PO Box 1193
VIRGINIA QLD 4014