

Asset Reinvestment Review Working Group

Glossary of terms

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PUBLIC



PURPOSE

The purpose of this document is to define key asset management terminology to allow a shared understanding and improved insights for members of Powerlink’s Asset Reinvestment Review (ARR) Working Group. This document will be updated as required.

GLOSSARY OF TERMS

Built Section

A Built Section (BS) is a section of transmission line that was built/commissioned under a single project, and generally contains structures with identical or very similar characteristics.

Circuit

The individual electrical path connecting two or more substations, consisting of three electrical phases, where each phase is transmitted via a single conductor or a bundle of conductors. Powerlink’s overhead transmission lines carry either a single circuit or a double circuit.

Corrosion Levels

A standardised approach to classify the extent of corrosion on steel components of a transmission line, with grades 1 to 4 in order of increasing severity, as illustrated below.

Grade 1 (G1) – no significant corrosion observed



Grade 2 (G2) – galvanising layer starting to discolour/breakdown



Grade 3 (G3) – loss of greater than 50% of the galvanising layer and in the worst cases unprotected carbon steel corrosion is about to commence



Grade 4 (G4) – total loss of galvanising and the onset of unprotected carbon steel corrosion



Easement

An easement gives Powerlink the legal right to access land to carry out work to build, operate and maintain our transmission network. The easement is registered on the property title and the landholder retains ownership and responsibility for the land.

Refit / Life Extension

Refit, or life extension, is typically undertaken on transmission lines, and consists of the work collectively required to address end of life condition and compliance issues to improve an asset such that it is able to operate reliably past its normal end of economic life. There is typically no increase in capacity or functionality delivered by refit works.

Refurbishment

The activities required to bring an asset from a degraded state back to a serviceable operating condition, such that it is able to operate reliably to its normal end of economic life. Works may be very similar in nature to refit, but the timing of the works are earlier in the asset's life and no extension to its useful life is expected.

Replacement

The replacement of an asset with a current equivalent asset, either on a like-for-like basis or within an optimised arrangement. For transmission lines, replacement works may be rebuilt along a different route to facilitate the works.

Structural Members

The individual structural components of a transmission tower. These typically consist of angular steel sections within a transmission tower to form the lattice construction, and the associated fasteners, but may also consist of steel tube pole sections, composite material sections (steel/concrete) or reinforced concrete pole sections.

Substation

A substation is a specific site with a collection of equipment to control and manage the flow of power around the transmission network. A substation also provides the means for customers to connect to the transmission network.

Substation Equipment

The primary plant, secondary systems and infrastructure contained in a substation. Examples include:

Primary Plant

- Bus bars – conductors that connect primary plant items
- Transformers – plant that converts voltages of power
- Circuit breakers – switches to control the flow of power

Secondary Systems

- Relays – devices that monitor power flows and operate circuit breakers automatically in the event of a fault
- Supervisory control and data acquisition (SCADA) – devices that interface with primary plant and secondary systems to allow remote collection of data and operation of equipment

Infrastructure

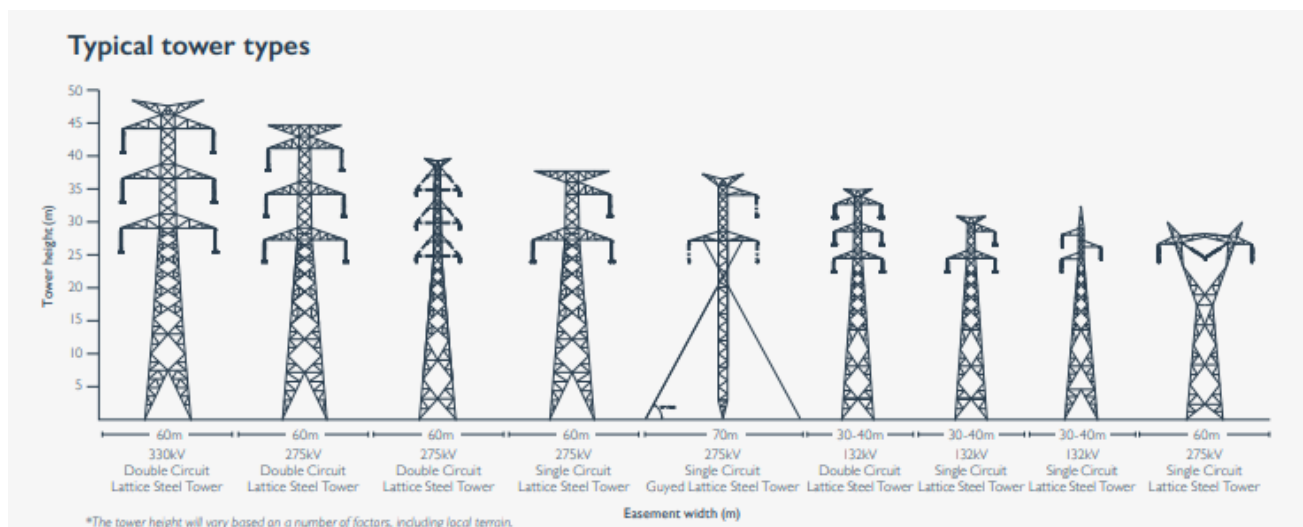
- Oil separation tanks – tanks to capture potential oil leaks and prevent leakage into the environment
- Control and amenity buildings – brick or demountable building housing secondary systems, etc.
- Substation lighting

Transmission Line

A power line capable of carrying bulk electricity at high voltages. In Queensland, transmission lines generally carry electricity at 132 kilovolts, 275 kilovolts or 330 kilovolts. Most of Powerlink’s network uses overhead transmission lines consisting of a series of conductors (metal wires) supported by transmission structures.

Transmission Line Towers

Transmission line towers support the conductors (metal wires) above the ground. The towers may be self-supporting lattice steel towers, or poles made of steel or concrete, or guyed steel structures. Powerlink uses a range of structures to maintain a safe electrical clearance between the conductors and the ground below. The following illustration shows some examples.



Transmission Tower Elements

Earth wires

One or two earth wires are attached to the top of each structure to shield the conductors from direct lightning strikes. Some earth wires may contain optic fibre for communications purposes, enabling Powerlink to remotely monitor, control and protect the transmission network.

Insulators

Strings of insulators support the conductors and create an insulated safe distance between the high voltage electricity and the structure. Insulators are generally made of porcelain, glass or polymer materials.

Conductors

Conductors are the wires that carry electricity. They are made of aluminium alloy or steel-reinforced aluminium and are installed at a height to allow for safe electrical clearance between the conductor and the ground.

Anti-climbing devices and signage

To ensure public safety, Powerlink installs warning signs and anti-climbing features as a physical barrier on all transmission structures.

Foundations

A foundation is the mechanism that anchors the pole or tower leg into the ground. It is usually several metres deep to provide structural stability. The foundation type used is dependent on the soil properties. Individual foundations will support the four legs of a lattice type tower. In the case of a pole, a large single foundation is used.

Underground Cables

A power line consisting of an insulated conductor, or bundle of conductors, having a protective casing that is installed underground and is capable of carrying bulk electricity at high voltages.

