

# Proposed North West Transmission Developments

Construction, Operation and Maintenance





# Construction, Operation and Maintenance of Transmission Lines

**A transmission line comprises a series of tall structures to which conductors (or wires) are connected. The most common type of structure is a self-supporting steel lattice tower. These are extremely robust and have a typical lifespan of around 80 years in Tasmania.**

Construction of the North West Transmission Developments will be undertaken in stages. The timeframe for each stage will vary depending on a range of factors including the amount of vegetation to be cleared, length of access tracks to be installed, geological conditions and the number of towers that may be constructed. All this is determined through the Design and Approvals phase of the project, currently underway. Generally, each stage of construction may take from 1 to 4 weeks per tower, however, this will be refined as part of detailed planning closer to the construction period. Landowners will be consulted regarding access requirements.



# Stage 1: Clearing and Access

**This first stage of construction involves marking out the location of the towers and any areas of vegetation to be cleared to allow the transmission line to operate safely.**

The proposed location of the towers is discussed with landowners and where possible, they are designed and located to minimise impacts on property operations. Mitigation measures may include:

- locating towers close to fence lines or away from farm infrastructure such as laneways and dams
- in areas of high visual amenity, reducing structure heights and 'dulling' the galvanised steel to reduce the prominence of the transmission line.

The amount of vegetation to be cleared is dependent on terrain, vegetation type and significance, and landowner requirements.

The aim is to clear vegetation sufficient to meet TasNetworks safety, reliability and operational requirements for the transmission line. For some areas, the most effective and efficient method for vegetation clearing is by machine while in others, other less intrusive methods may be used such as hand clearing where safe. The amount of clearing and method to be used is discussed with landowners to understand whether they have any special requirements to retain areas of vegetation within their property.

Also during this stage, property access points are established and gravel tracks constructed to each tower site. Where possible, existing access points and tracks are upgraded to minimise impacts on the property, however, it may be necessary to construct new access points and tracks and their location will be discussed and agreed with landowners prior to construction.



## Stage 2: Foundations

**Once the location of the towers has been set out, any vegetation cleared and access tracks installed, foundations are then excavated using heavy machinery. Benching may also be required in steep terrain to provide a flat platform for the structure.**

The type of foundation is guided by geotechnical assessment, however, bored foundations are typically used with excavated soil spread around the base of the tower site. The stub of the tower leg is then placed into the hole with reinforcing steel and concreted in place.

During this phase, a range of heavy and light vehicles need access to each tower site and a temporary laydown area of around 60 x 50 metres is established around each tower to store equipment. This temporary laydown area is remediated at the end of the construction period. In native vegetation, the temporary laydown area is remediated and allowed to revegetate, apart from an area approximately 5 metre wide around the tower, which is required for inspection and maintenance purposes.

## Stage 3: Tower Assembly and Erection

**Steel members for each tower are fabricated, galvanised, sorted and bundled off site and then delivered to each location typically by semi-trailer.**

The tower is then assembled in sections and lifted into place by a large mobile crane.



## Stage 4: Conductor Stringing

**The process to connect the conductor (or wires) to the transmission line tower is known as conductor stringing. This requires the use of specialist equipment and is briefly explained here:**

- a powerful winch is set up at one end of the stringing section and a brake at the other end
- pulleys are fixed to the tower at each location where the conductor will be attached

- a helicopter then draws out a winch rope and drops it into the pulleys along the stringing section
- the winch rope is connected to the conductor and pulled out under tension through the pulleys and through to the winch, and
- the conductor is then attached to the tower and adjusted to give the required sag (clearance to ground) before being clamped into position.

During this phase, it is necessary to keep people and stock away from the equipment to ensure their safety. We will work closely with landowners during construction to minimise any impacts. Landowners will be given prior notice of these types of activities to allow sufficient time to move them to a suitable location.

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## Stage 5: Site Rehabilitation

**Following the completion of the stringing process, all temporary work sites, tower pads and tracks are remediated to provide a stable matrix for vegetation to regrow and minimise erosion.**



## Stage 6: Operations and Maintenance

### **Operations and maintenance commences following the completion of construction and commissioning activities.**

For the operating and maintenance phase, the amount of activity onsite decreases dramatically. Normal practice is for maintenance staff to carry out periodic inspections of the line, easement vegetation and access tracks per TasNetworks' standard schedules and procedures. This is typically done once or twice per year. Inspections are generally undertaken by vehicles, with helicopters sometimes used. Additional inspections may be required to perform emergency repairs.

Easement vegetation management is typically undertaken once or twice per year to ensure the safe operation of the transmission line. The technique adopted for each area takes into account a number of issues including landowner requirements, type of vegetation, extent of regrowth, terrain and the local environmental conditions.

Maintenance of access tracks is undertaken on an 'as needed' basis to ensure that vehicle access to structure sites is available for inspections and structure maintenance.



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