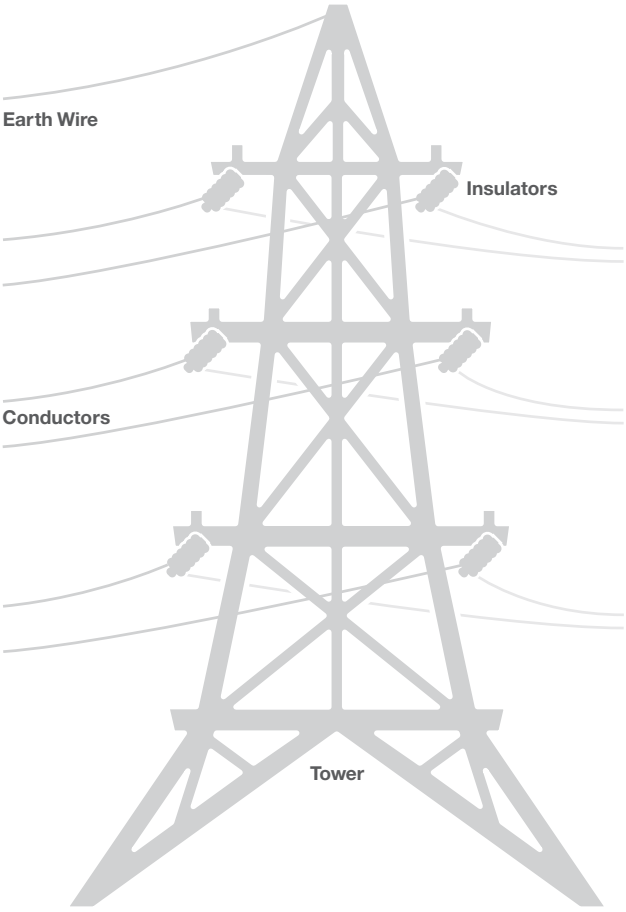
ElectraNet

TRANSMISSION LINES

ElectraNet's South Australian network includes over 5,600 circuit kilometres of overhead transmission lines, operating at 275,000, 132,000 and 66,000 Volts (275, 132 and 66 kV), which extend across 200,000 square kilometres of diverse and rugged terrain.



A small number of underground transmission cables also operate in metropolitan Adelaide, primarily to provide high-voltage power supplies to the City of Adelaide.

These transmission lines and cables operate at high voltages to reduce energy losses as they move electricity between generators in South Australia and interstate, over long distances to where it is needed.

The common components of transmission line corridors include:

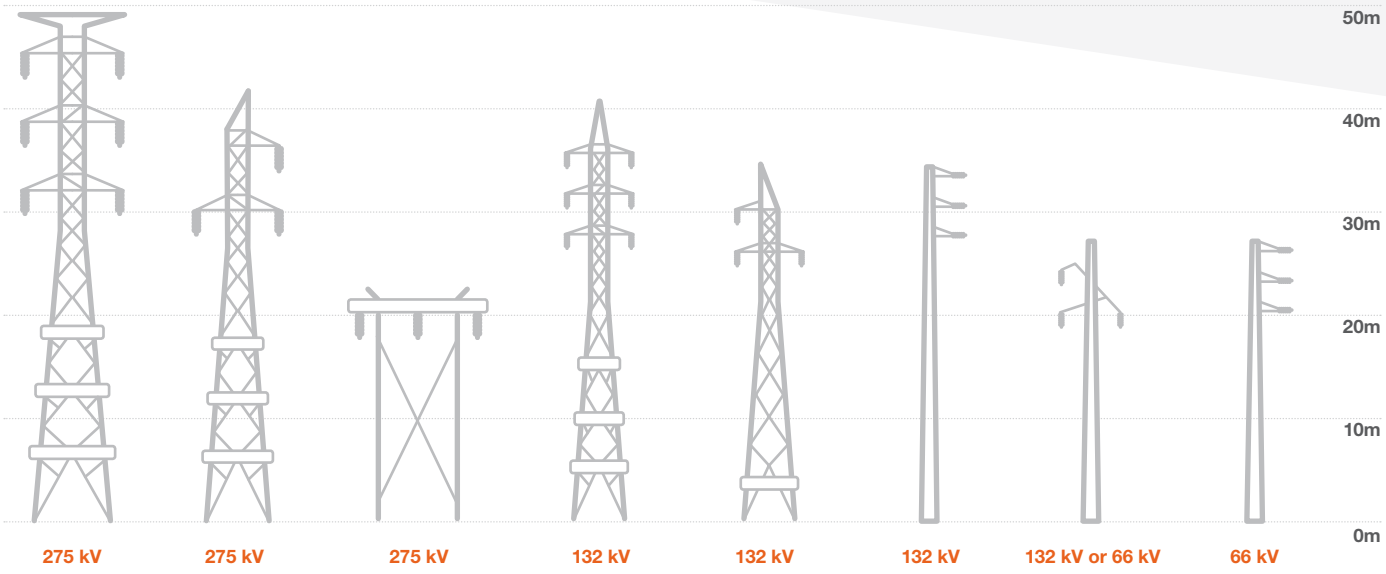
Towers or poles, which are made from steel and concrete and are individually designed and positioned to ensure conductors are safely out of reach. The type of tower or pole is dependent on the line's voltage and the safe clearance distance required around the conductors.

Conductors (or wires), which are typically made of aluminium alloy strands that are wound around a steel core, to form a cable. These carry the electricity and are attached to towers or poles with insulators. Transmission towers may also carry an earth wire to reduce the likelihood of direct lightning strikes to the conductors.

Insulators, which prevent the transfer of electricity to the tower or pole. Insulators are made from glass, porcelain or composite polymer materials and are suspended in a string, with the number of 'caps' increasing with the line's voltage.

Easements in the form of registered agreements (grants) that appear on a landowner's Certificate of Title, or authorisation by an Act of Parliament. Easements do not grant title over the land, but allow ElectraNet certain rights of access and may restrict the activities a landowner or occupier can conduct within the easement area to ensure the safe operation and maintenance of the line.

Transmission lines emit a 'crackling or buzzing' noise called Corona which is the leakage of electricity into the air (which is a natural insulator). Often difficult to hear, damp weather increases its audibility.



Overhead transmission lines are supported by a number of unique structure types, including steel lattice towers and masts, and several different pole designs, including a super-sized version of the well-known concrete and steel Stobie pole.

The diagram above shows the types of transmission structures most commonly used in South Australia and their typical voltages.

It is important to Look Up and Live, when working near any sort of powerline. Making contact with a powerline can cause personal injury, property damage and even death. Information about safe clearance distances for building and working near powerlines is available from the Office of the Technical Regulator.

The energy passing through conductors can create temperatures of up to 100°C, which is naturally cooled by the surrounding air. In hot weather, this cooling effect is reduced and the conductors can sag lower as the metals they are made of heat up and temporarily expand.