



North West Transmission Developments

Substations - construction and upgrades

What are the North West Transmission Developments?

TasNetworks plans to strengthen the transmission network in North West Tasmania. The proposed North West Transmission Developments (NWTDD) project will include 240km of new and upgraded transmission lines and other energy infrastructure including substations and switching stations.

The developments will allow Tasmania's power system to remain strong and stable while providing the increased capacity needed to accommodate new and existing renewable energy developments in the region, including Mariner Link.

What is a substation?

A substation is a facility that manages the flow and voltage level of electricity around the network to provide stable and reliable electricity supply to residential customers and businesses. Substations convert electricity voltages from high to low, and low to high, connecting electricity generators, the transmission network, and the distribution network.

What equipment is in a substation?

An electrical substation typically contains a variety of equipment designed to control, protect, and transform electrical power as it moves through the transmission and distribution system. Some of the key equipment found in a substation includes:

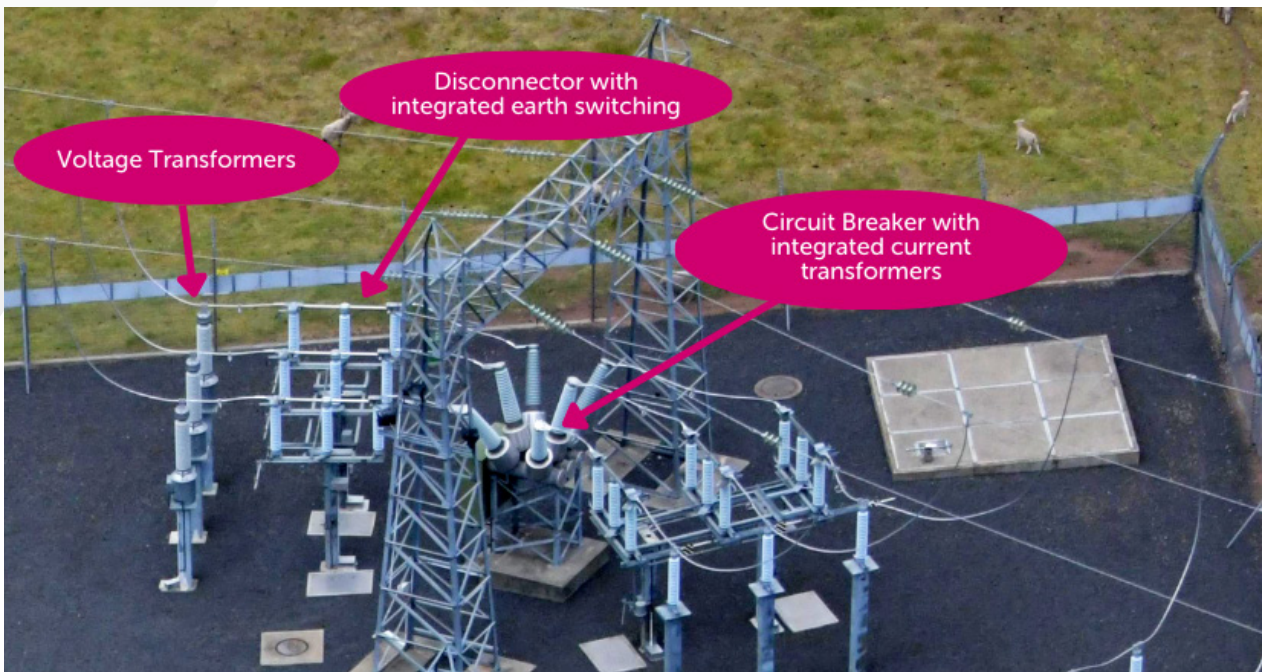
Transmission line terminal equipment consisting of measurement devices and switching equipment.

- Measurement devices such as current and voltage transformers are installed to measure the current and voltage of a particular circuit for protection or metering purposes.
- Switching devices are used to control, protect, and isolate electrical equipment to allow for safe operation and maintenance of the network. Switching devices include:
 - Disconnecter switches for isolating electrical circuits;

- Earth switches for making circuits safe to work on; and
- Circuit breakers for rapid interruption and separation of circuits under fault or control conditions.

Protection and control systems provide remote monitoring and control of the electrical equipment and systems in the substation. When an abnormal condition (such as an overload or short circuit) is detected, the protection relay sends a signal to the circuit breakers to disconnect the faulty circuit and protect the system.

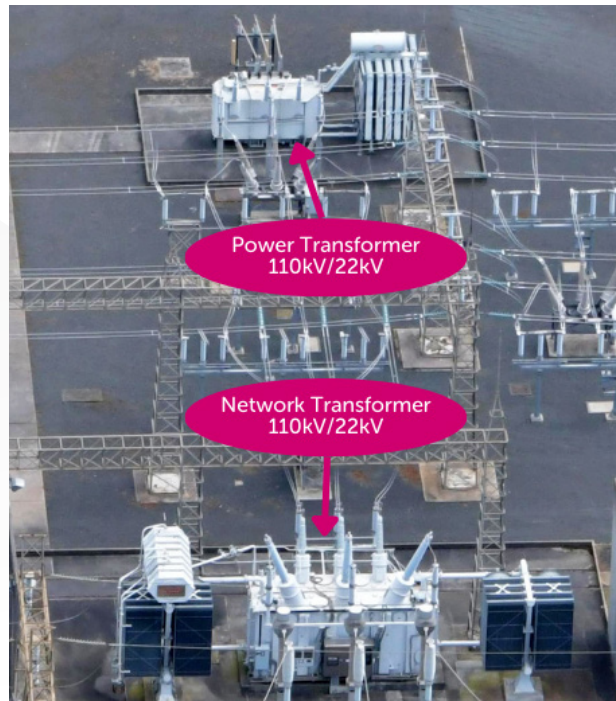
Substations also include buildings for staff facilities and technology for protection and control systems. This allows the site to be remotely monitored and operated from our central control room in Hobart.



Pictured: Transmission line terminal equipment

Transformers come in varying shapes and sizes and are often the largest single piece of equipment in a substation. They are used to either increase or decrease the voltage of electricity to match the requirements of the transmission lines or end consumers. There are two types of transformers:

- Network Transformers increase voltage for long-distance transmission between substations
- Power Transformers reduce voltage to a safe level for distribution to homes and businesses or industrial loads (such as hospitals).



Pictured: Transformers

Medium voltage distribution equipment, also referred to as High Voltage Switchboards, are used to connect and distribute power across multiple circuits, using measuring devices and switchgear.



Pictured: Medium voltage distribution equipment

Substation upgrades for the North West Transmission Developments project

Sheffield substation upgrade

The Sheffield substation is a critical piece of infrastructure in the transmission network as it enables large cross flows of energy between the West Coast, North West, and George Town, which host major industrial loads and Basslink. With the addition of Marinus Link and other energy developments in the region, it is critical that the substation be upgraded to ensure sufficient network capacity and reliability. The Sheffield substation will be expanded to accommodate the installation of electrical equipment to connect the new NWTd transmission lines.

Palmerston substation upgrade

The Palmerston substation provides the only high capacity (220kV) electrical connection between the north and south of the state. As part of the NWTd upgrade, equipment will be installed to support the new high-capacity transmission lines. The upgrade will use reserved space within the existing footprint of the substation.

Burnie substation upgrade

The Burnie substation is responsible for power flow between the North West and Far-North West regions of Tasmania, including residential and major industrial customers and wind energy generators. The Burnie substation will be upgraded to accommodate two new transmission circuits. New equipment including a new 220kV/110kV network transformer will be installed to increase the performance and reliability of the North West network. Reserved space within the existing footprint of the substation will be utilised for the upgrade.

Construction of the Heybridge switching station

The Heybridge switching station will be an entirely new addition to the 220kV electricity network. The switching station will be the Tasmanian connection point of the Marinus Link interconnector, enabling bi-directional power flow between the Victorian and Tasmanian power system via Marinus Link.

The Heybridge switching station will be constructed in close vicinity to the Marinus Link converter station, and both are located at the legacy site known locally as the old Tioxide factory. This was a significant industrial site that operated for several decades, primarily focused on the production of titanium dioxide (TiO₂), a substance used in various industries, including the production of paint, plastics, and paper.

Want to know more or stay informed?

TasNetworks is committed to working with landholders and communities as the North West Transmission Developments project progresses.



Visit tasnetworks.com.au/nwtd



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