

3. Electricity Supply

3.1 SUPPLY AVAILABILITY AND QUALITY

The electricity supplied to a customer's premises is subject to interruptions in availability and is also subject to fluctuations and other disturbances that affect supply quality.

Customers should be aware that some electrical equipment might have inadequate tolerance to variations in the electricity supply. Customers may also need to ensure that specific equipment has sufficient immunity to extreme voltage fluctuations such as those caused by storms and lightning. The purchase of special protective equipment may be necessary.

3.2 SUPPLY VOLTAGES

3.2.1 SUPPLY AT 230/400 VOLTS (LOW VOLTAGE)

The electricity supply is alternating current of approximately sinusoidal waveform. It alternates at a frequency of 50Hz with a nominal voltage of 230/400 volts from a three-phase four-wire distribution system. The nominal 50Hz waveform is sinusoidal but may be modulated by other frequencies for electricity distribution control and communication purpose.

The Tasmanian Electricity Code requires Aurora Network to provide supply at a voltage of 230 volts (phase to neutral) at a steady state average over a 5-minute period of within plus 10% (253 volts) and minus 6% (216 volts) and at a frequency of 50Hz.

Under normal conditions Aurora Network generally desires to maintain a 5-minute steady state average voltage of plus 10% and minus 2% at the point of supply.

3.2.2 SUPPLY AT 230/460 VOLTS (LOW VOLTAGE)

In outlying areas, the supply may be from a single (split)-phase 230/460 volt three-wire distribution system. The single-phase voltage range is the same as when provided from a 230/400 volt four-wire system. (Splitting a phase provides two single-phase supplies with a vector of 180 degrees instead of the normal 120 degrees.)

3.2.3 SUPPLY AT HIGH VOLTAGE

Electricity supply may also be provided at higher voltages if required. Contact Aurora Network for advice on supply arrangements.

3.3 RATING OF CUSTOMERS' MAINS

3.3.1 GENERAL

Aurora Network's connection agreement and the National Electricity Rules require that a customer's installation (includes consumer's mains) is adequately designed and effectively coordinates with Aurora's supply.

The consumer's mains conductor size is to be selected so that it does not exceed its design limits for the load and that protection coordinates with Aurora Network's distribution service protection device.

3.3.2 PROSPECTIVE FAULT CURRENT

Prospective fault currents vary depending on the location of a customer's point of supply in the distribution system and the type of assets supplying the customer – i.e. size of transformer, size and length of service wire, type of service protection.

Where a customer's installation is supplied from a distribution network along a public road or in a rural environment, the prospective fault current at the connection point will not exceed the following:

Up to 100 A single phase or three phase service 6kA unless otherwise informed by Aurora Energy:	6 kA unless informed otherwise by Aurora.
Greater than 100 A single phase or three phase service:	Consult Aurora Network System Performance Team on 1300 13 7008.

3.3.3 SERVICE PROTECTION DEVICES

3.3.3.1 Types of service protection devices

Aurora Network may provide a service protection device at the point of supply or elsewhere. If provided, the protection device will *generally* be one of the following:

Service Capacity Required	Protection Device
Not exceeding 80 A per phase	80 A High Rupturing Capacity fuse
80 A up to 100 A per phase	100 A High Rupturing Capacity fuse
Above 100 A per phase	Refer to Aurora Network

Table 3-1 Service Fuse Rating

Note: Aurora Network may vary the service protection device or rating. The customer may be required to contribute to the cost of alternative protection devices.

3.3.3.2 I²t characteristics of LV fuses

Characteristics of LV fuses used by Aurora as service protection devices are given in AS/NZS 60269 Low Voltage Fuses – fuses with enclosed fuse links (Parts 1 and 3). Pre-arcing I²t characteristics of fuses conforming to AS/NZS 60269 are as follows:

Fuse Rating	Range of Operation	
	Min	Max
	I ² t (A ² .s.1000)	I ² t (A ² .s.1000)
80 A	16	46
100 A	27	86

Table 3-2 Service Fuse Operation

Note: Although at times Aurora's service fuse may provide protection on the consumer's mains, from overload and short circuit, the purpose of the service protective device is to prevent detrimental effects on the distribution system.

3.4 POINT OF SUPPLY

The Point of Supply is the electrical connection point at the interface of Aurora Network's distribution system and the customer's installation. For a more detailed explanation see [Definitions](#).

For most installations, it is the junction between Aurora Network's service mains and the consumer's mains.

The Point of Supply shall normally be one of the following points, as appropriate to the particular property and method of supply:

AURORA NETWORK'S UNDERGROUND SERVICE CABLE:

The Point of Supply is the load-side terminals of Aurora Network's service protection equipment, found at the end of Aurora Network's underground cable (generally within a turret, pit or cabinet).

AURORA NETWORK'S OVERHEAD SERVICE WIRES:

The Point of Supply is:

- a) the first Point of Attachment of the electricity service wire within the property, or
- b) where the power line is carried onto the land by one or more poles. The first pole on the land carrying that power line will be designated as the Point of Supply. (**Note:** the pole is generally a customer-owned pole situated on private property).

Note: For this to be acceptable to Aurora Network, the private service pole is to be positioned such that Aurora Network can erect a single span of overhead electricity service cable from Aurora Network's overhead distribution mains in the street.

CUSTOMER'S UNDERGROUND MAINS ATTACHED TO AURORA NETWORK'S POLE

- c) The load-side terminals of Aurora Network's protection equipment at the beginning of the customer's consumer's mains.
- d) See [Underground Supply – Consumer Mains Cable Attachments to Aurora Network Assets](#).

AN AURORA NETWORK CONSUMERS MAINS LINE AND SUBSTATION WITHIN THE PROPERTY

As for aerial service cable/wires or underground cable.

A PRIVATE HV LINE

- e) The first pole on the land carrying that power line; (note: the pole is customer-owned pole) and
- f) The consumer's mains terminals of the substation providing the customer's low-voltage supply. (Note the substation pole, transformer and structure are Aurora Network-owned and can only be accessed by authorised Aurora personnel).

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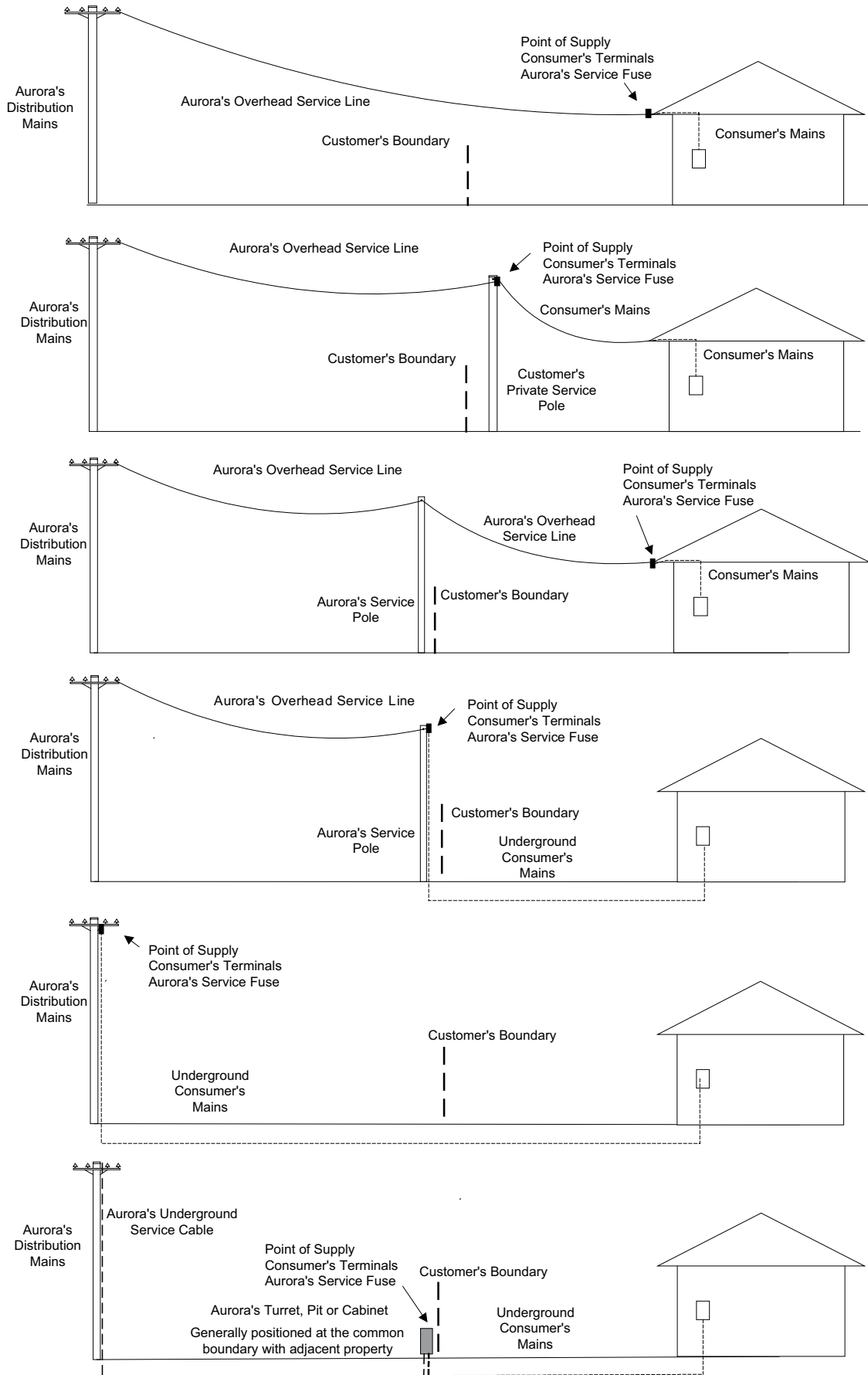


Figure 3-1 Point of Supply

3.5 NUMBER OF SUPPLIES

3.5.1 ONE POINT OF SUPPLY

3.5.1.1 General

Under normal conditions, Aurora Network will provide only **ONE** Point of Supply to a customer's property.

A development on one or more adjacent titles or a multi-tenanted development including strata titles, whether staged development or not, will be provided with a single point of supply.

3.5.1.2 Exceptional circumstances

Aurora Network **may** agree to a customer's **written request** for the provision of an additional Point of Supply to a property under the following **exceptional circumstances**:

- a) Where the magnitude of the customer's load is such that it would be sound engineering practice to consider more than one point of supply.
- b) Where the distance separating the relevant electrical installations is such that it would be sound engineering to consider more than one point of supply. A distance greater than **200m** from the existing point of supply would need apply before a second point of supply is considered.

In general, the **customer is required to pay the cost involved in providing the additional supply**. This may include Aurora Network distribution system augmentation or any extension works and any transformer.

Aurora Network must be consulted before the commencement of work.

AS/NZS 3000 Wiring Rules have conditions that require compliance when multiple supplies are involved.

3.5.2 STRATUM-TITLED DEVELOPMENTS

3.5.2.1 General

Aurora Network treats stratum-titled developments as one electrical installation. Aurora Network will normally only provide **ONE underground service** to a stratum-titled development.

Aurora Network's Point of Supply will generally be a turret, pit or cabinet preferably located at the boundary with an adjacent block. Site restrictions may dictate other locations for the Point of Supply. Permanent supply for a stratum-titled development is considered a "Complex Connection".

3.5.2.2 Installation options

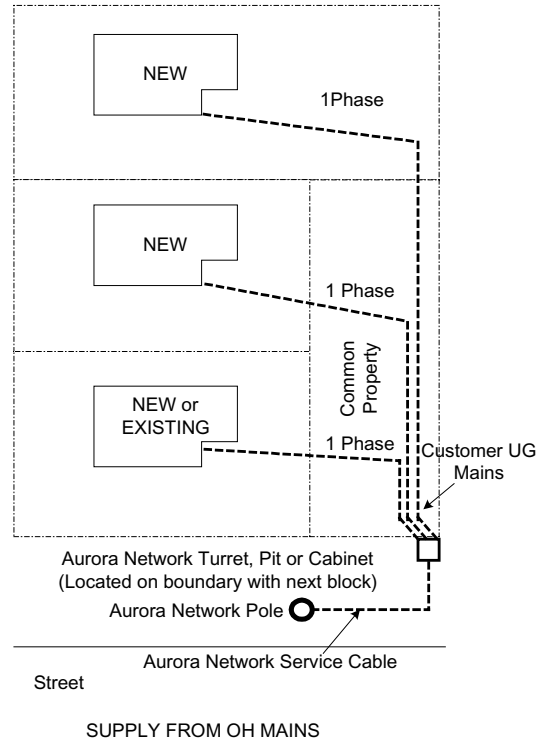
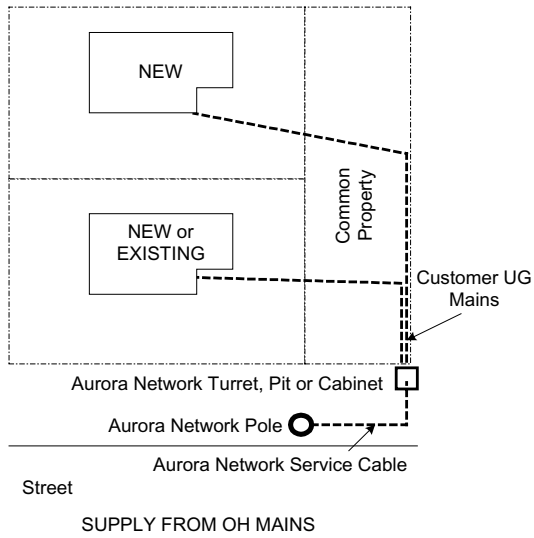
(See [Fig 3-2](#)).

3.5.3 EXISTING PROPERTIES WITH MORE THAN ONE POINT OF SUPPLY

Owners of properties provided with multiple points of supply, will generally be required to rationalise the points of supply to one when a major upgrade or addition to the installation(s) is undertaken.

This also applies where properties with individual points of supply are combined into one development.

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Three units with one of the units 2 or 3 Phase

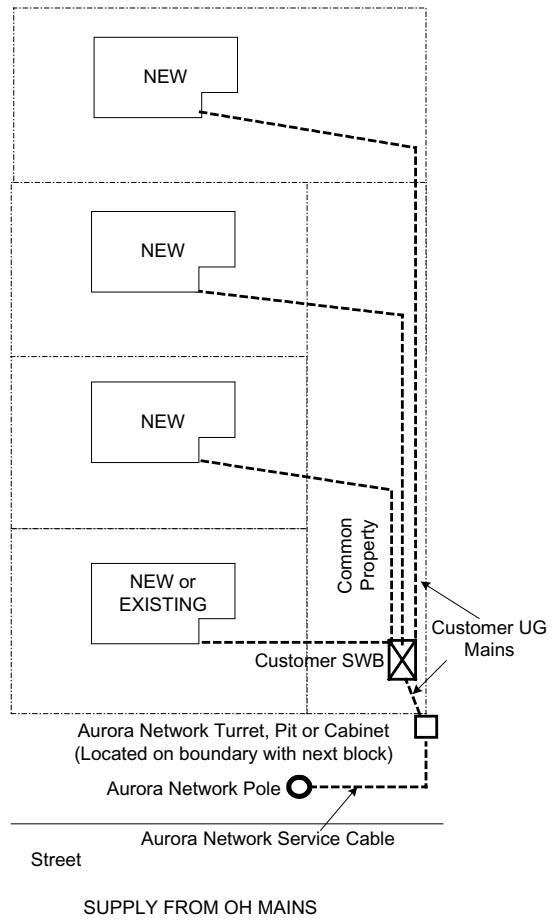
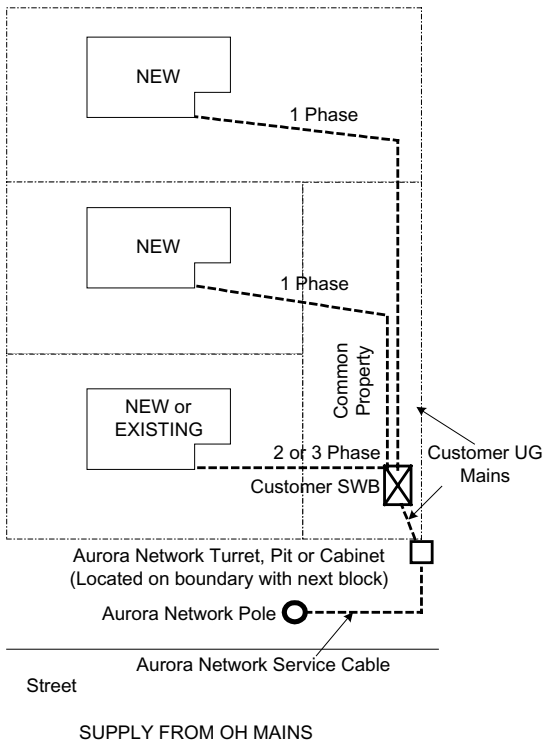


Figure 3-2 Stratum Title

3.6 ASSET INSTALLATION AND OWNERSHIP RESPONSIBILITIES

3.6.1 WHAT IS INSTALLED, OWNED AND MAINTAINED BY AURORA NETWORK

One span of overhead service wire from Aurora's distribution assets in the street to the customer's Point of Supply.

or

One span of overhead service wire from an Aurora-owned substation, installed in an Aurora-owned HV power line on private property.

Note: In the past it was common for single-customer HV powerlines on private property to be customer-owned. In such installations, Aurora owns and maintains the associated substation and substation pole. The customer is responsible for the power line and any consumer's mains. This includes the service wire from the transformer.

Aurora *may* install conduit from Aurora Network's turret, pit or cabinet to property boundary. The customer will own and maintain the conduit after installation.

Connecting overhead or underground consumer's mains to Aurora distribution system or terminals of an Aurora transformer.

The installation of any transformer and its associated support pole and hardware installed on private or public property.

Service poles on public property if required.

Aurora will manage meters and equipment on meter panel.

Note: Meter panels are initially purchased and installed by the electrical contractor at cost to the customer.

Service fuses and service fuse fittings.

Clearing of vegetation around Aurora service wires on public property. See also – [Vegetation Management](#).

3.6.2 WHAT IS INSTALLED BY CONTRACTOR AND OWNED AND MAINTAINED BY CUSTOMER

Temporary or permanent service poles on private property.

Note: In some cases, where the power line supplies multiple customers on private property, Aurora Network may own LV power lines on private property.

Any conductors (consumer's mains) after Aurora's service span.

Mains connector box.

Switchboard and switchboard enclosure.

The customer will make the initial purchase of the meter panel and provide installation. Aurora undertakes future maintenance of this panel.

The customer retains the maintenance and ownership responsibilities of conduit from turret pit or cabinet to property boundary if in Underground Residential Subdivision (Aurora **may** provide and install).

The customer must ensure that vegetation is clear of service wire and consumer's mains on private property. See [Vegetation Management and Maximum Conductor Span Lengths](#).

Any raiser bracket.