



Network Connection Standards



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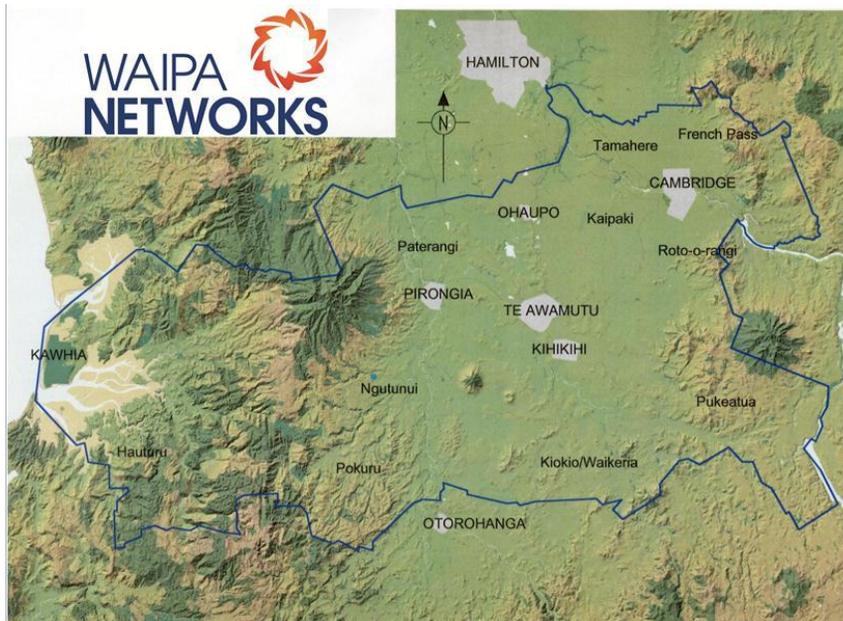
1. INTRODUCTION

1.1 Disclaimer

This document is subject to change and can be updated without notice. For the latest version of the document please visit our website www.waipanetworks.co.nz.

1.2 Introduction and Purpose of This Document

Waipa Networks is an electricity lines company that delivers electricity to customers in the Waipa and Kawhia areas, as indicated in this map:



Our activities include:

- Ownership and operation of the electricity network that delivers power to customers in the area shown on the map.
- Electrical contracting services such as service mains, new subdivisions, and inspections.
- Tree maintenance services, both general arborist work and specialist maintenance near power lines.

The purpose of this document is to cover aspects relating to the ownership and operation of the electricity NETWORK and the delivery of electricity to our customers. It does not cover any contracting work carried out by Waipa Networks.

1.3 Scope of This Document

This document sets out the standards associated with a connection to our NETWORK. Connection to our NETWORK implies acceptance of, and compliance with, the standards in this document. This document should be considered in conjunction with any applicable law, rule or regulation. It should also be considered alongside any ELECTRICITY RETAILER SUPPLY AGREEMENT. Where there is an apparent conflict in standards or terms you should contact Waipa Networks for clarification.



1.4 Definitions

The following are some common terms used in this document and what they mean.

<i>Capital Contribution</i>	<i>An amount of money determined by Waipa Networks that is payable by an external party to facilitate work such as supply to a new subdivision, or upgrade of capacity for an existing connection.</i>
<i>Electricity Retailer (or Retailer)</i>	<i>A Company that sells electricity to customers. Electricity is delivered to customers on behalf of Electricity Retailers by Waipa Networks through the Network.</i>
<i>Emergency</i>	<i>Any event that poses an immediate or imminent threat to the safety of persons or property, or which may significantly interrupt or adversely affect the operation of the Network.</i>
<i>Faults Service</i>	<i>The customer help line provided by Waipa Networks for the purpose of reporting Network faults and emergencies. The phone number is published on our website and in the local telephone directories.</i>
<i>ICP</i>	<i>Installation Control Point is the point at which the electrical supply is deemed to supply an individual customer account. For most customers this will be the point where their service main connects to the power pole or pillar in the road reserve.</i>
<i>Network</i>	<i>The equipment Waipa Networks uses to deliver electricity to customers. This includes overhead and underground power lines (except service mains), transformers, service fuses, and other associated equipment.</i>
<i>Network Connection Point (NCP)</i>	<i>The same as POC (refer below).</i>
<i>POC</i>	<i>Point of Connection (POC) is defined in the Electricity Industry Participation Code 2010 (Code). It means a point at which electricity may flow into or out of a network. For the purposes of this document it refers to the point where a customer Service Line connects to our Network.</i>
<i>POS</i>	<i>Point of Supply (POS) is defined in section 2(3) of the Electricity Act 1992. It generally means the point or points on the boundary of the property at which exclusive fittings enter that property, with a few exceptions (refer to the Act for details).</i>
<i>Registry</i>	<i>The registry is a national database that contains information on every Point of Connection on a network from which electricity is supplied to a site. These Points of Connection are referred to as Installation Control Points (ICPs). Each ICP has a unique identifier. The registry is the electricity industry's database of record of all ICPs.</i>
<i>Utility Disputes</i>	<i>Utility Disputes Limited is an independent complaints resolution service available to electricity consumers and land owner/land occupiers. Utility Disputes was formerly called the Electricity and Gas Complaints Commission.</i>



- Service Main* *This consists of an overhead or underground power line, usually sited on private property, which connects a customer to the Network and is owned by the customer. In general, any line on private property exclusively supplying that property is deemed to be a Service Main. See Appendix A for examples of Waipa Networks owned lines (the Network) versus privately owned equipment (Service Main).*
- Supply Agreement* *The agreement between a customer and an electricity retailer for the supply of electricity to an ICP.*



2. YOUR CONNECTION

2.1 Your Electricity Retailer

Waipa Networks does not sell electricity direct to customers. Instead, we deliver electricity on behalf of ELECTRICITY RETAILERS. Your RETAILER is responsible for connecting your supply to the NETWORK and billing you for the power you use. You must not be connected to the NETWORK unless you have registered for supply with an ELECTRICITY RETAILER. A current list of ELECTRICITY RETAILERS supplying customers on our NETWORK can be found on our website.

2.2 Access To Your Property

You must provide Waipa Networks reasonable access to inspect, maintain, upgrade, or repair any of our equipment located on your property. Waipa Networks will reasonably attempt to advise you of our intention to enter your property. Waipa Networks is not required to advise you of our intention to enter your property in the event of an EMERGENCY.

2.3 Looking After Your Equipment

You must keep the electrical equipment on your property sufficiently maintained to prevent risk to persons, property, or the operation of the NETWORK. This includes keeping your service main free from damage by trees, tree roots, or other external interference.

Electrical supply can be prone to interruptions and voltage fluctuations. You should ensure that all your sensitive electronic equipment such as computers, audio visual devices, dishwashers, security systems, and garage door openers are protected by surge protection devices. You should also ensure that any 3-phase motors are protected should a phase be lost. Your electrician will be able to advise you on how to protect the equipment on your property.

Flickering power (usually indicated by flickering lights) can be a sign that your supply is about to be lost, and can cause damage to sensitive electronic equipment. If you notice your lights flickering immediately turn off any sensitive appliances at the wall and phone our FAULTS SERVICE.

Insurance

Surge protectors prevent exposure of your appliances to most surges you are likely to encounter. Unfortunately extremely high voltage or current can sometimes be brought into contact with the low voltage lines as result of an accident or lightning strike. In these cases the voltage is usually too high for surge protectors to work effectively so it is important to make sure your property is insured for this type of damage. Please contact your insurance company to confirm the electrical damage coverage your policy offers.

2.4 Looking After Our Equipment

You must ensure any equipment owned by Waipa Networks at your property is free from external interference.



2.5 Power Factor

You must ensure the power factor at your ICP is not less than 0.95 lagging. Your electrician will be able to test and offer advice regarding your power factor. Waipa Networks reserves the right to apply penalty lines charges to any ICP that does not comply, or in some cases, instigate disconnection proceedings.

2.6 Interfering with the Operation of Waipa Networks Network or Other Installations

Connected users must not use any appliances or equipment that adversely affects the quality of supply of electricity to another connected user. Any changes required to the network to mitigate any interference caused will be at the cost of the causer. The causer of interference can arrange and pay for a totally independent power supply from the network which is suited to their own requirements.

Some common sources of interference and power quality problems can arise from motor starting, welding sets and capacitors.

Motor Starting

Direct-on-line starting is acceptable for AC motors of the capacity and in locations as specified in the following table.

Type of Motor	Location and Rating		
	Rural	Urban	
		Residential	Non-Residential
Single-phase	Not exceeding 0.75 kW	Not exceeding 1.5kW	Not exceeding 2.2kW
3-phase 400V	Not exceeding 4.0kW	Not exceeding 4.0kW	Not exceeding 7.5kW

Direct-on-line starting is not permitted for motors exceeding the capacity in locations shown in the above table.

Any motor Variable Speed Drive (VSD) that is greater than 20kW capacity shall have mitigating equipment to limit harmonic distortion (THDi) to a maximum of 10%.

Welding sets

Welding set capacity and performance must conform with the following table:

Welders exceeding 5kVA input and up to 10kVA should have a power factor of not less than 0.8pf with a secondary voltage of 30V while operating at full load
Welders exceeding 10kVA input should have a power factor of not less than 0.8pf with a secondary voltage of 30V while operating at half full load.

If the requirements above prove to be inadequate to mitigate interference and cause power quality problems, the causer will be required to arrange and pay for a totally independent power supply from the network which is suited to their requirements.



Capacitors

Sufficient power factor correction capacitors must be installed to ensure that the average power factor of a connected user's load, measured at the NCP as the ratio of kWh to KVAh consumed during any 30 minute period, is not less than 0.95 lagging.

Power factor correction capacitors may interfere with the networks ripple controls signals and/or cause harmonic resonance problems. Connected users must configure and operate capacitors so that they do not interfere with the electricity network or the operation of our ripple control system.

2.7 Trees

All power distribution networks are governed by the Electricity (Hazard from Trees) Regulations 2003 with respect to trees. To view these regulations visit www.legislation.govt.nz. A summary brochure explaining both your and Waipa Networks rights and responsibilities under the act is available from us on request or from our web site.

Trees growing close to power lines present a real danger to public safety. They also cause a significant number of power cuts and voltage problems. If a tree makes contact with a power line, a current can flow through the tree to the earth. This current could electrocute anyone near or touching the tree. People at highest risk are anyone maintaining the tree, and children playing around or in the tree.

You must ensure trees on your property are kept clear from power lines both on your property and in the road reserve. Do not attempt to clear any foliage near power lines without consulting with Waipa Networks first.

If you have any concerns about a tree on your property or on the road reserve please call Waipa Networks.

2.8 Electrical Compliance

Connections

All electrical installations must be inspected and certified by a qualified inspector who is registered with the Electrical Workers Registration Board (EWRB). Refer to AS/NZS 3000:2007 for details on wiring standards. Once inspected, an installation will have an Electrical Certificate of Compliance. Waipa Networks has its own inspectors that can be of assistance to you.

Properties that have been disconnected for more than 6 months

If a property has been disconnected from the NETWORK for more than 6 months then a full inspection of the installation is required before it may be reconnected. Refer to NZS 3019 for full details of this process.

Disconnection for safety

Waipa Networks reserves the right to disconnect any ICP or property if it is electrically unsafe. This can be through the building not complying with relevant standards, or alterations to the existing installation that create an unsafe environment. An example of this would be the incorrect installation of a backup generator to a house or shed. Waipa Networks takes safety seriously and if a situation is found that can cause harm to persons or significant damage to property then we will disconnect the property until such time as the problem has been remedied.



2.9 Safety

Electricity is dangerous. For this reason, care must be taken around power lines, especially if a line is damaged, or in a state that is abnormal. There should be no attempt to isolate a line, climb an electrical structure, or alter a power line configuration without Waipa Networks knowledge and permission. When around power lines, care should be taken so that no objects make contact with the power line. Items such as sport balls, sticks, and kites are items that are at high risk of causing damage to the line, and potentially cause electricity to flow to earth endangering anyone in close proximity to it.

If you notice that a line is faulty, hanging low, or on the ground then leave the line and the area around it clear. Broken power lines are in many cases still live. Call our FAULTS SERVICE and we will be able to assist.

2.10 Cable Locations & Safety Disconnections

Cable Locations

If you intend to carry out any digging or other earthworks at your property or in the road reserve it is important to make sure you know the location on any underground services. Waipa Networks provides a cable location service where one of our field service team will attend the site and mark out the approximate location of underground cables.

Safety Disconnections

If you need to carry out maintenance (such as painting, tree trimming) near your SERVICE MAIN it is important that you have the power temporarily disconnected to prevent the risk of electrical shock to persons or damage to property. Waipa Networks can carry out the disconnection and reconnect the property when you have finished the work.

Please contact our office for more information on either of these services.

2.11 Permanent Disconnections

If you no longer require an electrical supply to your property please phone your ELECTRICITY RETAILER in this first instance to advise them. They will organise for their equipment to be removed and your service line to be cut away from our pole or pillar. If the power has already been disconnected for quite some time and you are unsure of who the ELECTRICITY RETAILER is then contact us for further assistance.

2.12 Customer Complaints

Complaints

Waipa Networks is proud of the services we provide. If you have a complaint about our service you are welcome to use our free Complaints Resolution Process. If you would like information regarding this process, or wish to lodge a complaint, please contact our Customer Services Manager.

Utility Disputes

Utility Disputes Limited is a free and independent complaints resolution service available to electricity customers and land owner/land occupiers. Waipa Networks is a member of this scheme, and should you not be satisfied with the outcome of our free internal Complaints Resolution Process you are able to make use of this service. For information about Utility Disputes please visit www.utilitiesdisputes.co.nz.



3. New Connections & Upgrades

3.1 Introduction

If you need a new connection or upgrade to an existing connection it is important to contact us at the planning stage. Where a POINT OF CONNECTION (such as a distribution pillar) and sufficient capacity exist then approval will normally take up to 10 working days. If however a NETWORK extension, upgrade, or reconfiguration is required the time it takes to approve the connection will vary considerably.

Any new connection will need to comply with all the requirements of this document.

3.2 New Connections

If you want a new connection to our NETWORK (eg to supply a new house, cowshed, etc) the process is as follows:

1. Complete an Application for Network Connection (refer to our website or contact our office) and return it to us.
2. A New Connection Administration fee will be paid and a site assessment will be made of the new connection point to determine if a NETWORK extension or upgrade is required. If this is the case, a CAPITAL CONTRIBUTION (see below) is usually required as a condition of approval. We will advise you if this is required.
3. Once approved, we will forward the Application for Network Connection to your nominated ELECTRICITY RETAILER. For a current list of ELECTRICITY RETAILERS operating in our area refer to our website.
4. The ELECTRICITY RETAILER will register the connection details in their system and organise for meters to be hung, inspected, and the connection livened.

Notes:

- A new connection cannot be livened unless approval has been given by both Waipa Networks and an ELECTRICITY RETAILER.
- Each new connection should have an individual service line and POINT OF CONNECTION to the NETWORK. Special approval may be given for new connections with a shared service line dependent on the individual circumstances. Contact our office for further details.

3.3 Upgrades to Existing Connections

If you intend to significantly increase the load for an existing connection you must complete an Application for Network Connection. Waipa Networks will then assess the new load to determine if any reconfiguration or increase in NETWORK capacity is required to facilitate the upgrade. A CAPITAL CONTRIBUTION (see below) may be required in some circumstances.

3.4 Capital Contributions

What is a Capital Contribution?

When a customer connection, either new or existing, requires a NETWORK extension, upgrade, or reconfiguration then there is a cost in carrying this out. A CAPITAL CONTRIBUTION is the amount Waipa Networks requires from the customer towards the cost of the work. In most cases this will be the full cost of carrying out the required work. The principle behind this charge is that Waipa Networks believes that the cost of the work should be borne by the party requesting the work rather than the customer base as a whole.



How are the costs calculated?

Waipa Networks reviews its charge out rates for labour, mileage, materials, and markup annually or as required. The CAPITAL CONTRIBUTION amount will be based on the charge out rates applicable at the time the quote is issued. The quote will have an expiry date, and should the quote be accepted after the expiry date or a revised quote is requested then the charge rates will be based on whatever is current at the time of the revision. CAPITAL CONTRIBUTIONS are required to be paid in full prior to work commencing.

Who owns the equipment?

Although the customer pays a CAPITAL CONTRIBUTION, Waipa Networks retains ownership of the installed equipment up to the point where it joins to the customers' equipment. Waipa Networks will be responsible for the maintenance of the equipment once commissioned.

Can I use an independent contractor to carry out the work?

No.

New Connections

Most District Councils have requirements as per their district plans and resource consent process, that subdividing owner(s) or developer(s) must provide a power NETWORK CONNECTION POINT to the boundary or frontage of every lot.

An underground fuse pillar is normally situated on the common boundary of 2 Lots and this provides the NETWORK CONNECTION POINT for both Lots or alternatively a NETWORK CONNECTION POINT can be from an existing pole on the road frontage of a Lot.

CAPITAL CONTRIBUTIONS are the full costs incurred in establishing a NETWORK CONNECTION POINT to the boundary of any Lot.

Any new works that are within a public road reserve or cross through 1 or more Lots to supply other Lots will be vested to Waipa Networks. They will become part of the NETWORK and be maintained by Waipa Networks.

A CAPITAL CONTRIBUTION quotation is provided to the developer after receiving a registered surveyor's subdivisional scheme plan which shows the total number of lots being created, their dimensions, and any proposed new roads.

This CAPITAL CONTRIBUTION amount is required to be paid in full and in advance before any works associated with the reticulation to the boundaries of each subdivisional Lot is commenced.

Any easements and associated costs are the responsibility of the developer.

The design of reticulation must comply with the Waipa Networks Design Manual (available to view upon request).

Upgrades to Existing Connections

A CAPITAL CONTRIBUTION may be required if your electricity supply requirements mean Waipa Networks is required to upgrade its equipment (for example, increase transformer capacity or a higher rated cable). This will be assessed on a case-by-case basis, and can depend on factors such as the number of customers supplied by that equipment, and any scheduled works/upgrades Waipa Networks already has planned. Should you require an upgrade please contact Waipa Networks to discuss it.



Allocation of Capital Contributions / Refunds

When more than one customer wishes to connect at the same time then the CAPITAL CONTRIBUTION is shared among them.

Once a CAPITAL CONTRIBUTION has been paid by a customer(s) any additional customers that wish to connect off that same line must pay a proportion of the cost of the line (less amortisation) to Waipa Networks who will refund this amount to the original customer(s). Lines are amortised over a 10 year period.

This procedure is illustrated by the following example:

- Customer A requires a \$25,000 NETWORK extension to supply their installation and being the only customer to be supplied by that line at the time he/she must pay the full amount.
- A year later Customer B wishes to connect off that line. The line after one year is now worth \$22,500 (\$25,000 less \$2,500 or 1 year's amortisation). The cost of the line will now be split equally between two customers and we will charge Customer B \$11,250 to connect and refund this amount to Customer A.
- Another year later Customer C and Customer D wish to connect. The line is now 2 years old and worth \$20,000. As there are now 4 customers using the line they are responsible for \$5,000 each. We would charge Customer C and Customer D \$10,000 (\$5,000 each) and refund half to Customer A and half to Customer B.
- And so on until 10 years has passed (and the line has been fully amortised) and any customers connecting after that will not be required to pay a contribution nor will there be any refunds.

If a property is entitled to a CAPITAL CONTRIBUTION refund and that property has since been sold and has a new registered owner, then the payment will be made to that new registered owner.

Waipa Networks will make all reasonable attempts to contact the current owner of a property entitled to a CAPITAL CONTRIBUTION refund. If the current owner cannot be contacted, then that portion of the refund will be held by Waipa Networks until such time the owner makes contact with the Company. However, if the owner has still not claimed a held refund by the time the line has been fully amortised then the refund will be void and the funds reinvested in the NETWORK.

3.5 Connection of Distributed Generation

Waipa Networks welcomes inquiries regarding distributed generation. Please refer to our website for information regarding the connection process.

3.6 Easements

Easements are required for all NETWORK equipment located in or on private property installed after 1 January 1993. NETWORK equipment that was installed prior to 1 January 1993 is considered 'existing works' and therefore no easement is required. Please refer to the Electricity Act 1992 for clarification on existing works and access.

Easements are not required for underground or overhead mains that are totally contained within a road reserve or land that will become a road reserve upon deposit of a Plan of Division.



Where an easement is required the general rules are:

- When an applicant is lodging a survey plan in conjunction with a development, the applicant will fund and be responsible for creating an easement in gross favour of Waipa Networks.
- The applicant must liaise with Waipa Networks to ensure that the proposed design and the preferred easement meet Waipa Networks' requirements.
- Unless otherwise agreed, all easements are to be surveyed by a registered surveyor and pegs placed in position before the work commences. The pegs must delineate the easement and the boundaries of blocks before, during and after the electricity distribution assets are installed.
- All easements must be surveyed and lodged with Waipa Networks' drawing office and a copy of the land transfer plan showing easements in place.

3.7 Network Design

Network Extension and Maintenance

Waipa Networks is continually exploring options to increase its reliability and the quality of power to our customers. For this reason, we are constantly looking for areas that may produce a restriction to the conveying of quality electricity. Once identified, these areas are studied and plans are developed to strengthen, lengthen or rebuild the line to remove foreseeable restraints. This is an accepted part of the management of our NETWORK and all projects are clearly outlined in our Asset Management Plan that can be found on our website. This work is carried out by Waipa Networks staff.



4. Interruptions

4.1 Planned Interruptions

Waipa Networks may need to turn the power off to your property on occasion to carry out testing, maintenance, upgrades, or other work involving our NETWORK operations. We will notify you of a planned interruption by the following means:

- 1) A notification provided to your ELECTRICITY RETAILER, who will in turn notify you under the terms of your SUPPLY AGREEMENT,
- 2) If you have signed up to our e-mail notification system, an e-mail will be sent to you (refer to our website for details on this service),
- 3) If there are special circumstances (such as urgent maintenance) we may give you a written notice delivered to your property.

The shutdown notification will advise you of the reason for the shutdown, the time and date, and an alternative time and date (should the work be unable to be completed on the planned date).

Shutdowns cause inconvenience for customers and where possible we will try and schedule them in a manner as to keep this inconvenience to a minimum. However, it is difficult to accommodate all customers and so shutdowns will only be rescheduled in special circumstances. If you receive a shutdown notification and believe you have sufficient reason for it to be rescheduled please contact us immediately.

4.2 Unplanned Interruptions

Sometimes the supply to your property will be interrupted due to circumstances outside of our control. These include, but are not limited to, the following:

- Adverse weather
- Motor vehicle accidents
- Animals
- Trees
- Equipment failure
- Other external interference

If the power to your property goes off unexpectedly then please call our FAULTS SERVICE. This service will advise you if there are any reported faults currently on our NETWORK and also gives you the opportunity to report a fault.

In the event of an unplanned interruption our staff will make all reasonable attempts to have the power back on to your property as soon as possible. During a major storm this may take longer than usual, and we recommend you call our FAULTS SERVICE periodically for updates.

In the event of an unplanned interruption:

- Turn off any sensitive appliances at the wall.
- Make sure you have a cellphone or non-powered landline phone handy.
- Call our FAULTS SERVICE for information or to log a fault.
- Leave a light on so you know when the power has come back on.
- If your neighbour's power comes back on and yours doesn't then call our FAULTS SERVICE.



4.3 Faults Service

Waipa Networks operates a FAULTS SERVICE. The FAULTS SERVICE typically covers the following types of problems:

- Full or partial loss of power supply.
- Flickering power.
- Failure of ripple control devices (commonly affecting the hot water supply).
- Trees touching or threatening power lines.
- Other external event affecting power lines.
- Any other safety issue affecting power lines.

Our FAULTS SERVICE numbers are published in the local telephone directories and are available on our website.

Note - if we attend a fault at your property and the cause is found to be internal to your property there will in most cases be a charge for the service.



5 General

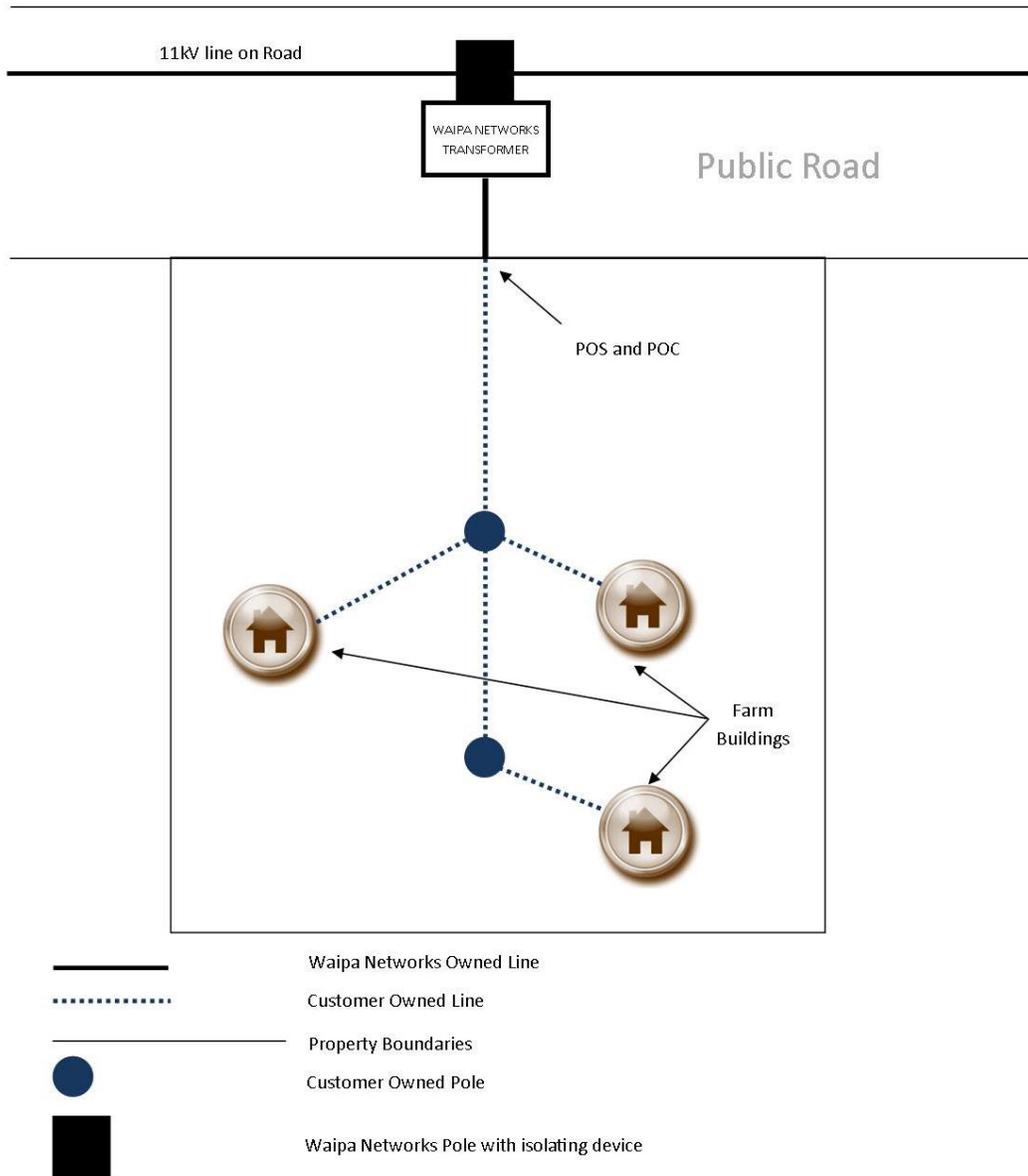
5.1 High / Oversize Loads

A High Load Application is required to be completed for all loads that will exceed 4.25m in overall height. Some loads will require an escort and may require power to be disconnected to customers. You should submit an application a minimum of 14 days prior to the planned moving date to allow sufficient time to assess the requirements of the application. Once the application has been processed a permit will be issued along with any specific conditions. Application forms are available upon request from our office.



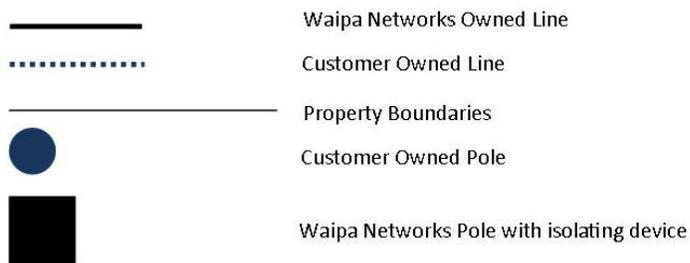
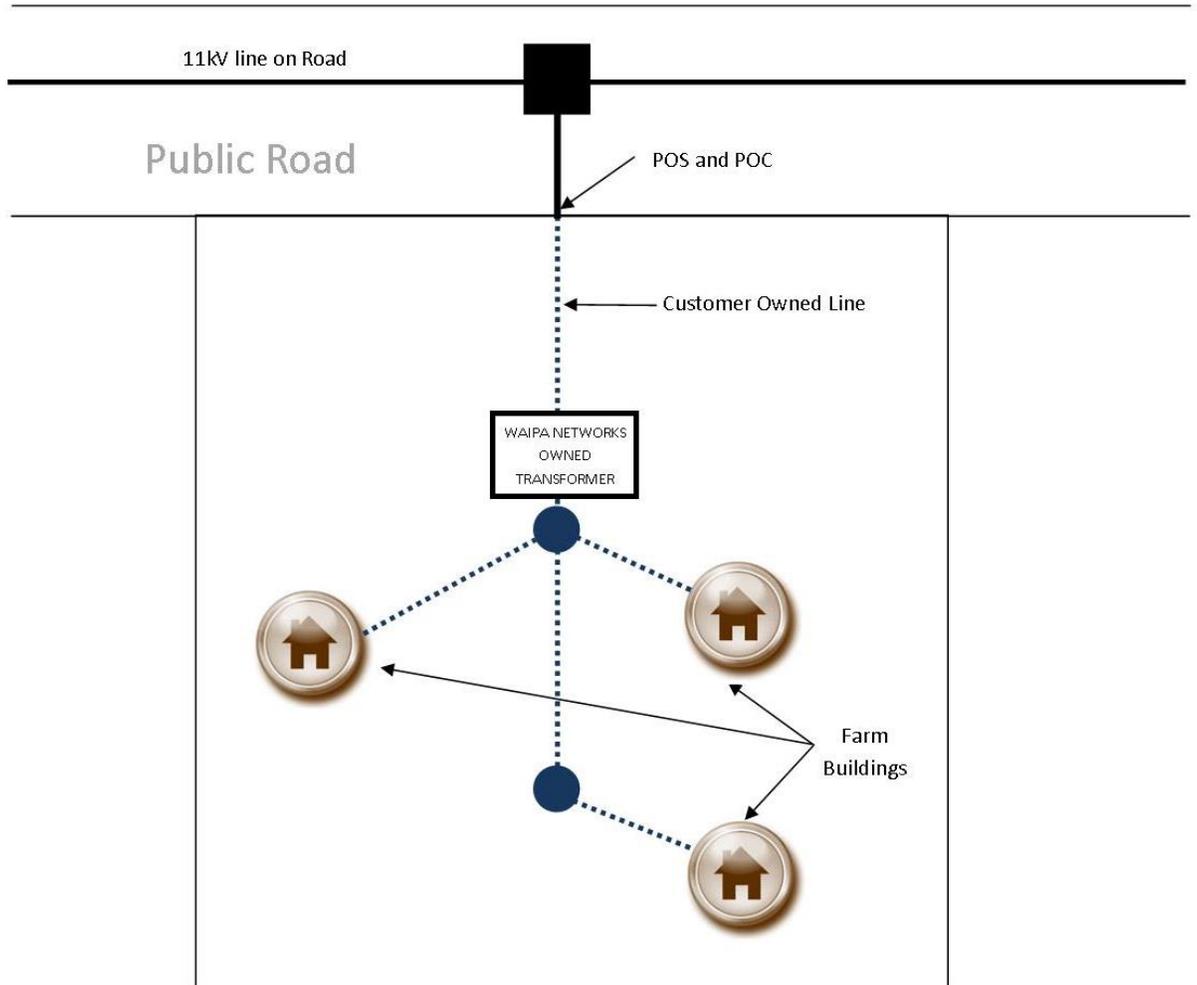
Appendix A – Point of Supply and Point of Connection diagrams

Farm supplied at 230/400volts



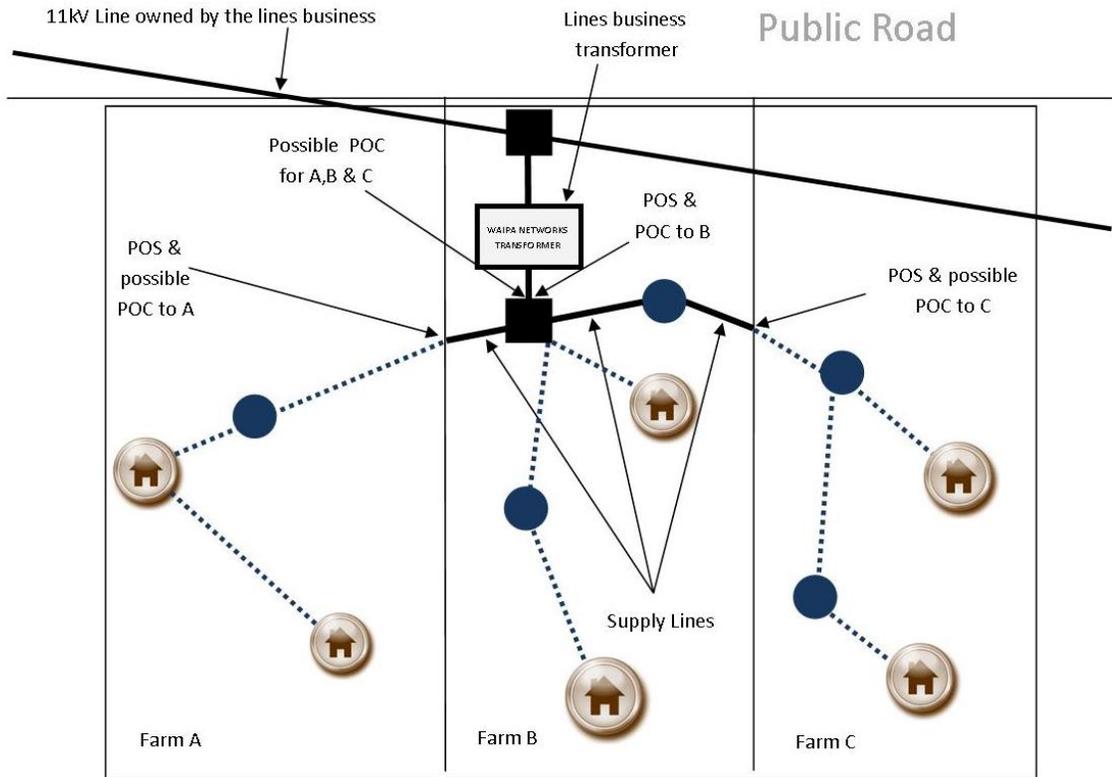


Farm supplied at 11,000 volts





Rural 11kV supply, with 11kV and 230/240V lines on private property



Waipa Networks Owned Line

Customer Owned Line

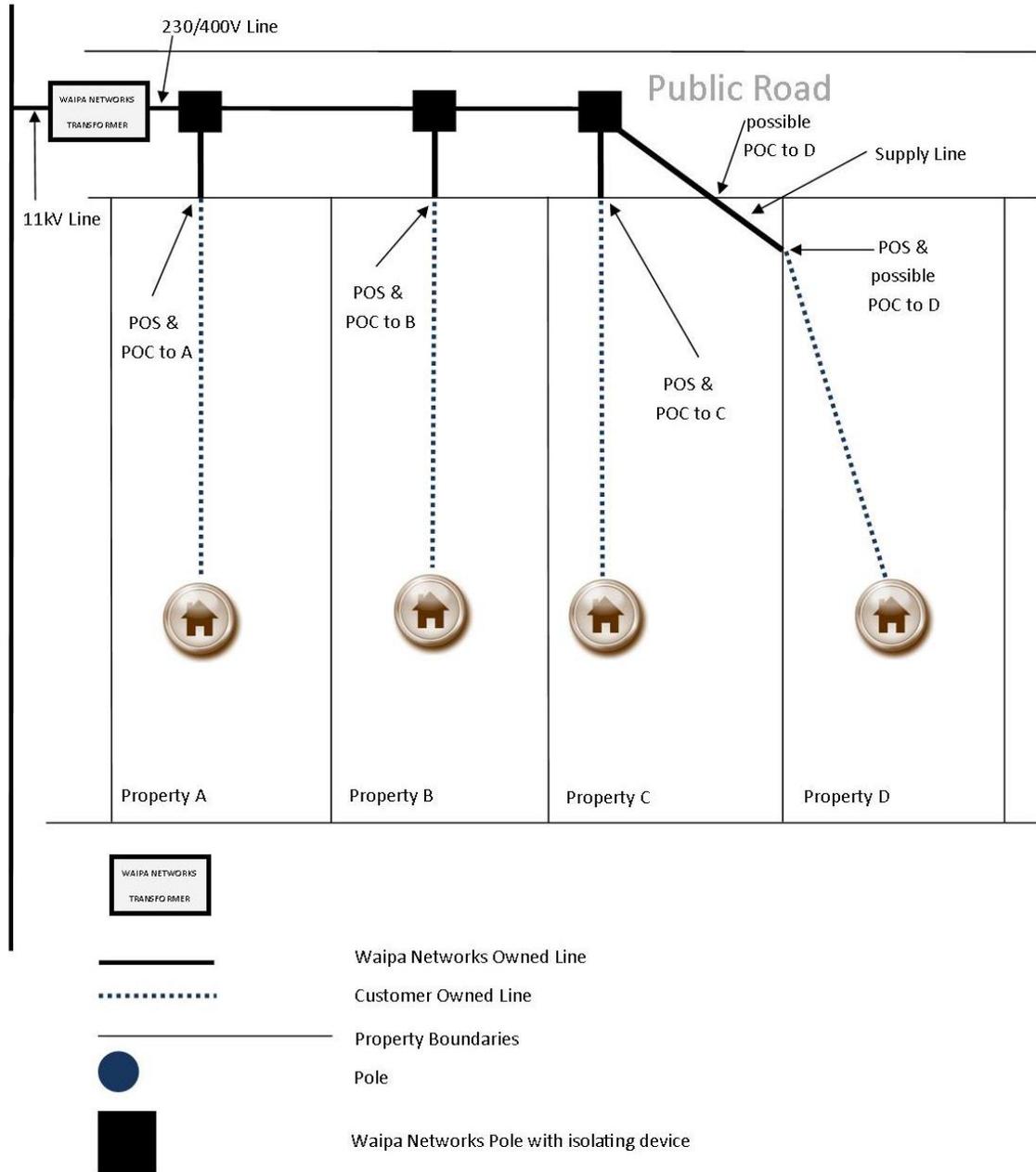
Property Boundaries

Pole

Waipa Networks Pole with isolating device

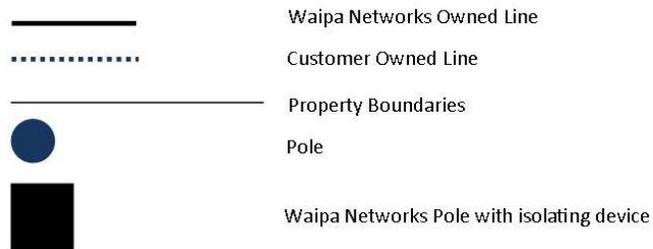
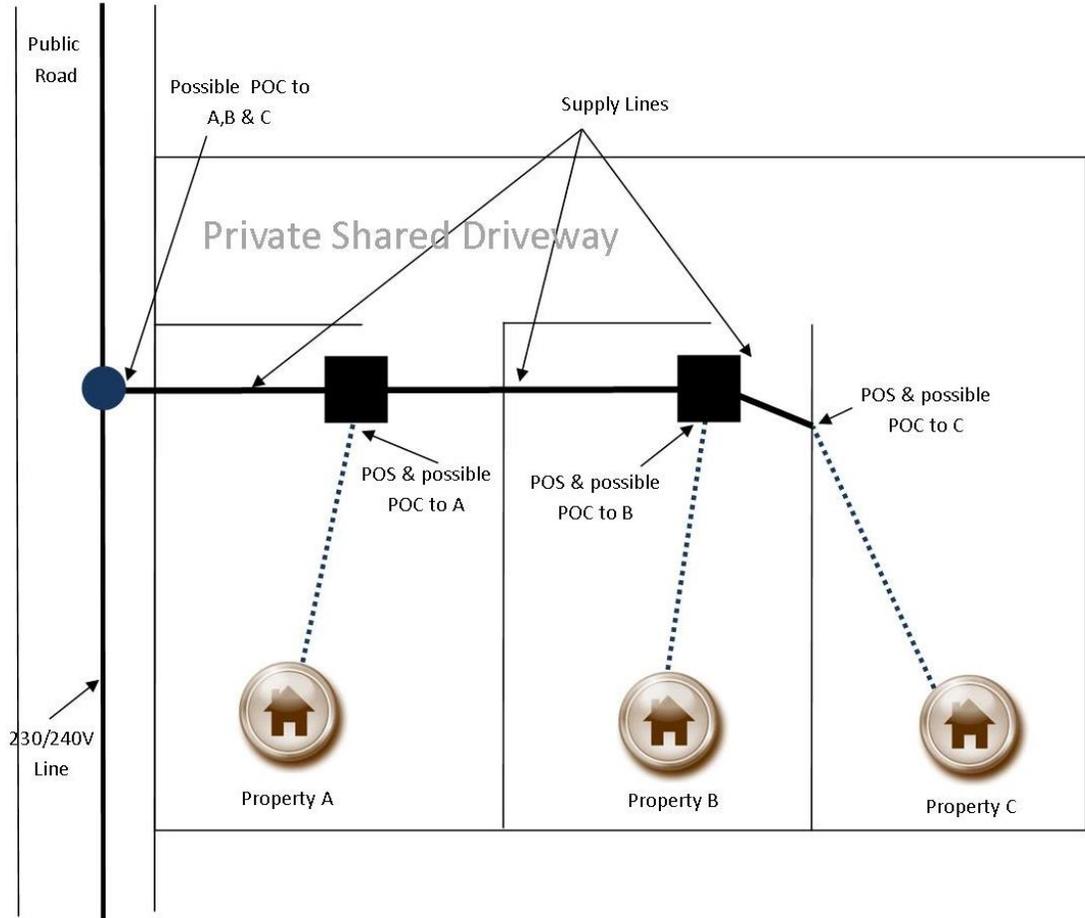


Supply to single urban property





Supply to three houses where lines cross private property





Supply to consumer with supply line crossing neighbor's property

