

Does your new building need electricity?

To save you time and money, talk to us early about your power supply.

Our equipment will occupy ground space on your property. You need to consider the size and location of our equipment in your designs.



Key things to know

- you need to talk to us during the concept design phase about your building's electricity requirements to ensure you factor the correct required Orion network equipment into your plans
- electricity network equipment, such as substations and kiosks, in new commercial buildings cannot be positioned at basement level - network equipment must be at ground level
- our network equipment must be accessible 24/7
- you need to talk to us about the temporary electricity supply that is required for the construction phase.

We are here to help. Please contact us on **03 363 9898**, or click on the "Connecting to our network" link at **oriongroup.co.nz** to find out more.


*your*NETWORK

Introduction

The rebuild of Christchurch is on a scale rarely seen. Since the February 2011 earthquake, about 1,000 buildings have been demolished. As the lengthy process of rebuilding gets underway, Orion wants to ensure property owners, developers, architects and construction companies know how new commercial buildings will be connected to the electricity network and the impact this has on building design.

Who is this guide for?

This guide is relevant for anyone involved in the design and construction of new commercial buildings in Christchurch. They include:

- property owners
- developers
- architects
- planners
- construction companies
- commercial real estate companies.

What you need to know

Electricity is distributed in Christchurch via a network of underground cables. Pre-earthquake, many commercial buildings were connected to this network at basement level. Post-earthquake, these connections will need to be built at ground level to reduce the risk of underground flooding.

Your building's electricity requirements are site-specific. If you contact us at the start of your design process, we can assist you to assess your current and future electricity requirements. This early contact can save you time and money. Depending on the complexity of your project and the equipment required, it typically takes between three and nine months to get power to your new building.

Critical issues you need to consider

How much electricity is the building/property going to require?

You will need to consult an electrical engineering consultant or electrician. But, as a rule, typical retail and office spaces usually require 15 amps for every 100 square metres.

What level of electrical supply reliability is needed and is a back-up supply necessary during power outages?

The supply of electricity in Christchurch, and particularly in the CBD, is very reliable. However, there is no guarantee of supply 100% of the time. Network supply may fail or the connection point providing supply to your building may be unavailable due to routine maintenance.

Contingency plans will be needed if a more secure supply of electricity is required for your building.

An option to consider for more secure supply is a backup generator (usually diesel and synchronised into our network). Backup generators will likely require Environment Canterbury approval with regard to emissions and diesel storage etc. Alternatively, you could talk to us about additional supply security for your building being added through a second connection point.

What type of Orion-owned network equipment will be required to service the likely demand?

The type of electricity network equipment which we will need to install at your property depends on how much electricity your building requires. There are three types of electricity network equipment which we may need to install – substations, kiosks and distribution enclosures. Each is of a different size and occupies a different footprint. Further detail on these equipment types is provided in this guide.

Where can the network equipment be located?

You have flexibility as to where Orion's network equipment is located on your property provided it is:

- at ground level
- accessible by us 24 hours a day, seven days a week
- in a location large enough to allow access by heavy lifting equipment or the fire service
- unlikely to be damaged by vehicles accessing your property.

Location options include next to the footpath on the road boundary of the property, down the side of your building in an alley or lane way, or in a rear carpark.

Does your building comply with the regulated requirements for safe distances from our electricity network?

Recently there have been instances of buildings being built higher and closer to our existing overhead power lines and supports than specified in the NZ Electrical Code of Practice 34:2001.

To find out whether your building complies, talk to your architect and contact us early to determine whether the clearances from your building to our overhead power lines and supports are adequate. These clearances are mandatory and must be factored into your plans before construction starts.

Non-compliance could result in a costly delay to your project.



Types of equipment which we may need to install

The three types of electrical equipment which we may need to install at your property are:

- substation
- kiosk
- distribution enclosures – cabinets and boxes.

Each equipment type is of a different size. Given your building's electrical requirements, you need to consider the size of the unit you are likely to need and make allowance for it in the design of your site.

Substation

The primary function of a substation is to transform electricity from our street cable network's high voltage supply to a lower voltage suitable for buildings. In addition to transforming voltage, distribution substations also isolate faults in Orion's network and allow switching of points of supply to give extra resilience to our network and your supply.

A substation is generally used to supply buildings with an electrical requirement of 500 amps to 3000 amps.

Substations can be freestanding or incorporated into the sides of buildings. A substation is typically constructed of concrete block or concrete tilt slab. However, this can be covered with a more aesthetically pleasing facade if required, as shown in the photo below.

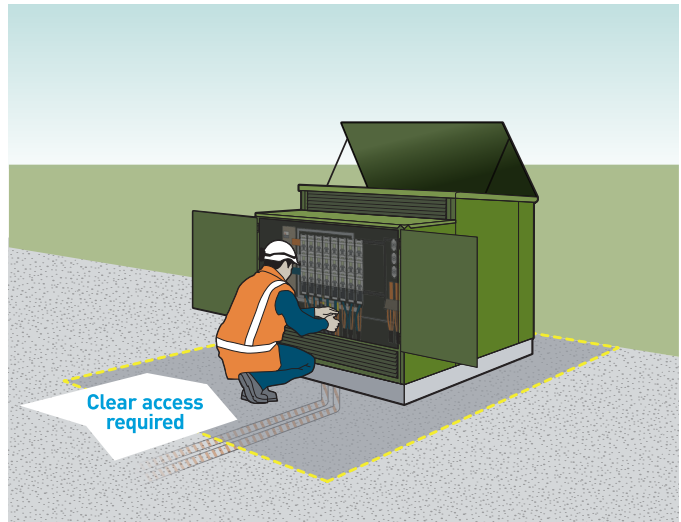
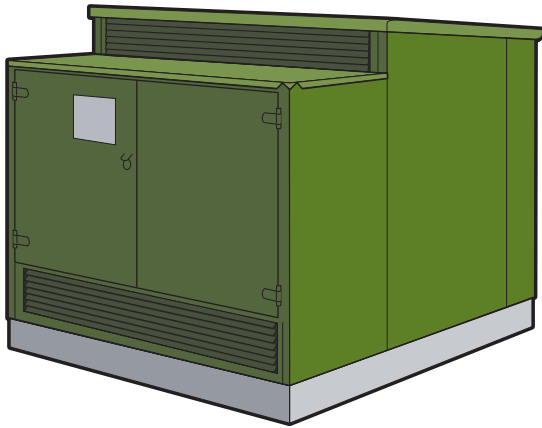


Kiosk

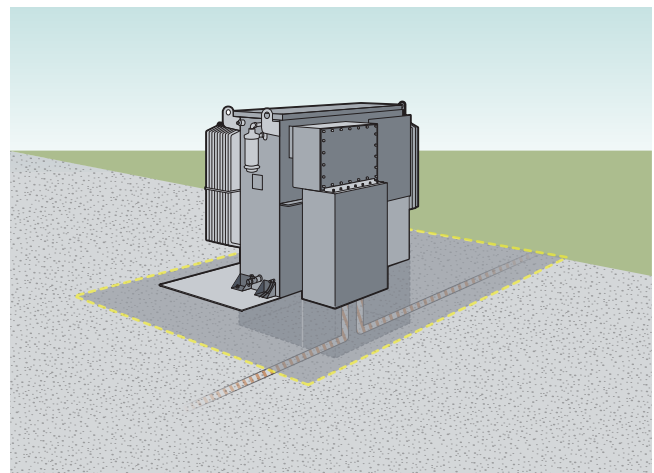
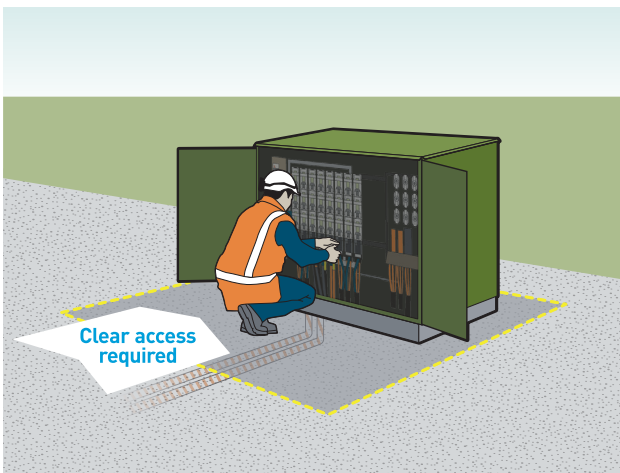
Kiosks contain high voltage and low voltage switchgear. They also contain, or have attached to them, electrical transformers. The transformer reduces the voltage of electricity supplied to a building from 11kV to 400V. A kiosk is generally used to supply buildings with an electrical requirement of 100 amps to 800 amps.

A kiosk's enclosure is fabricated steel with front opening doors and, if the transformer is located in the kiosk, a lift-up top for access purposes.

Kiosk with transformer in it

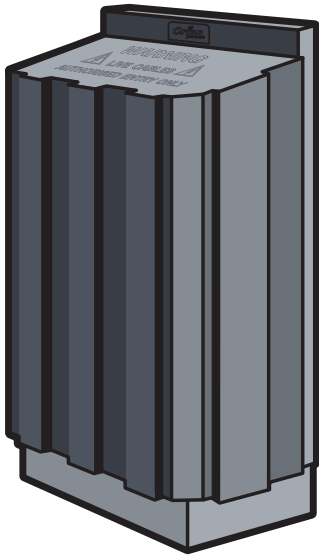


Kiosk with an external transformer. These are usually placed next to each other.

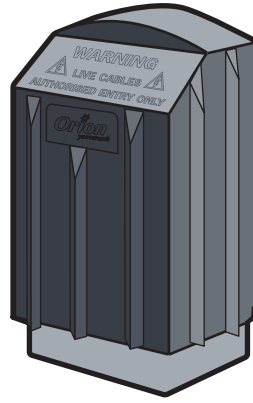


Distribution cabinet

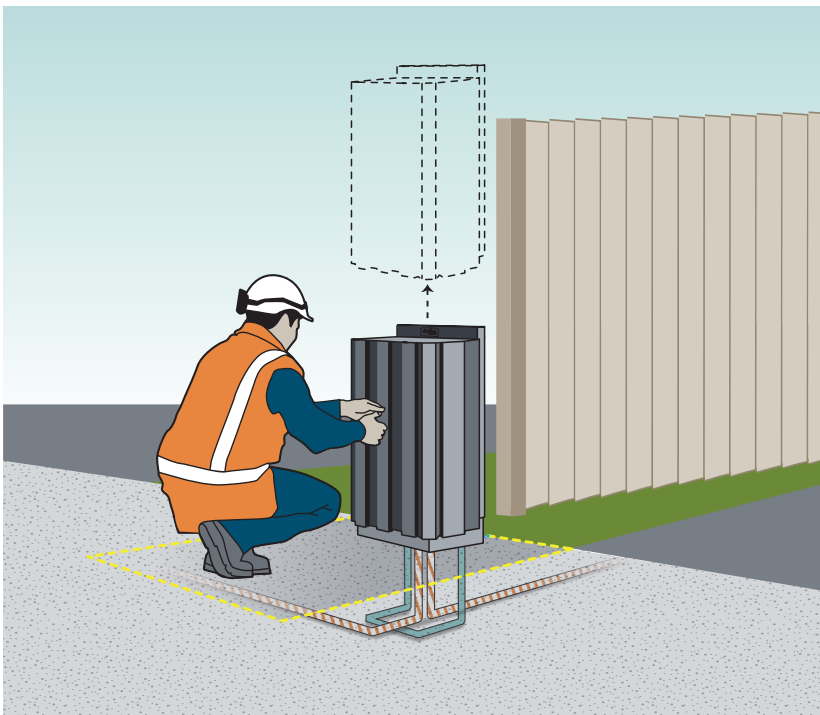
A distribution cabinet contains low voltage equipment necessary to supply buildings with an electrical requirement of 100 amps to 400 amps.



Cabinet
0 to 400 amps



Box
0 to 250 amps



Further questions and answers

Q. Could the Orion network equipment on my property be used to provide electricity elsewhere?

A. Yes. It could be used to deliver electricity to a site where other network equipment may have failed. Or it could be used to deliver electricity to public utilities such as street lights and traffic signals. Costs associated with these other uses would not be your responsibility.

Q. Does there have to be Orion network equipment at every building?

A. No. Some buildings do not need enough electricity to warrant having standalone network equipment. Hence, it is very important to talk to us early in the design process to determine if network equipment is needed, and what type.

Q. Who pays for the network equipment?

A. Our policy is that the cost of a new connection is paid for by the building owner/occupier. Other customers should not contribute to paying the cost. How much needs to be paid by the building owner/occupier is dependent on the situation. Factors such as ongoing electrical charges to the property and whether the equipment used also supplies other buildings, thus lowering costs, are taken into account in the cost assessment.

Q. Could there be any other electrical network equipment located near my building?

A. It is possible. This would be equipment necessary to deliver electricity to public utilities such as street lights and traffic signals. Typically this equipment, which is a distribution cabinet, is placed on the footpath.

Q. Could the equipment used to supply public utilities be re-located elsewhere?

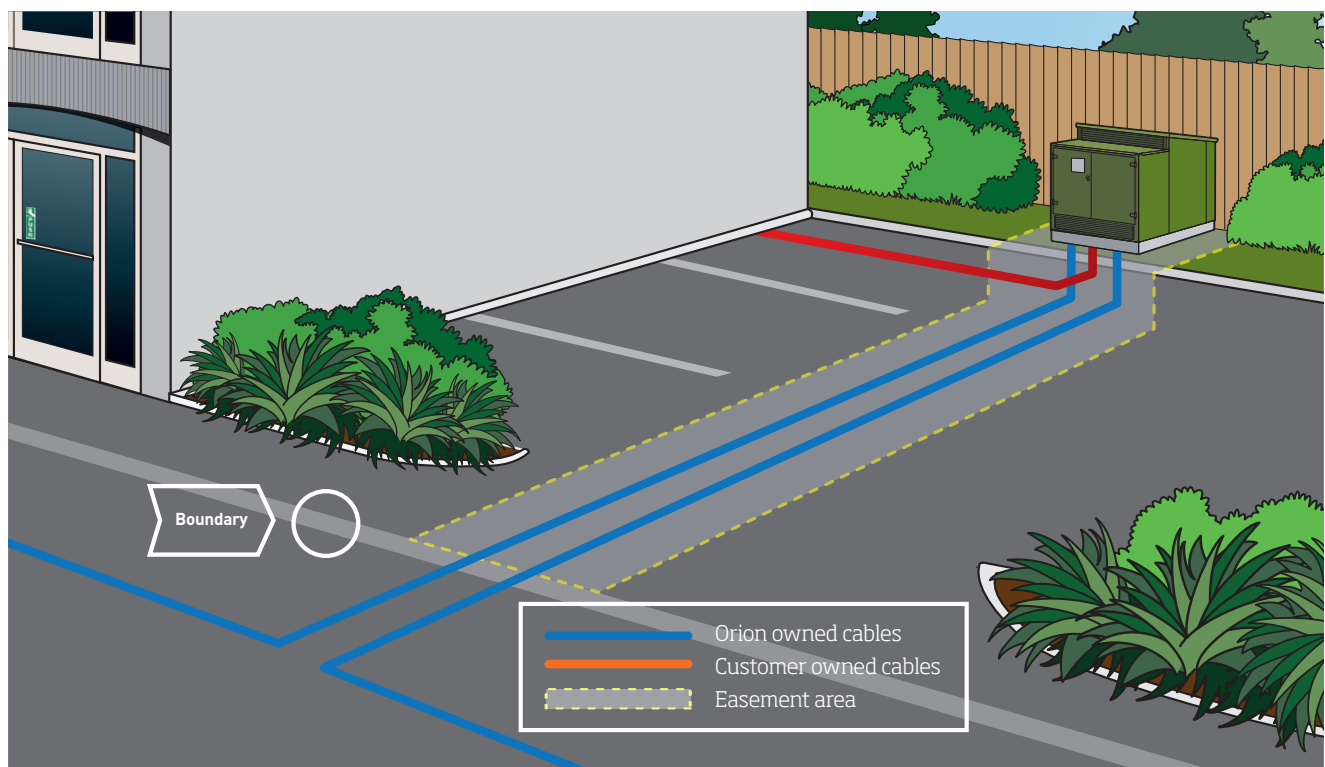
A. Possibly. But it would be at the expense of the building owner.

Q. Can electrical network equipment be customised to be consistent with the aesthetics of an individual building?

A. It is possible. But it is important that you talk to us about your requirements early in the design process. As long as our operational requirements are not compromised there is no constraint on design options.

Q. Are easements required for electrical network equipment?

A. Yes. Easements are necessary to ensure we can access electrical network equipment on private property. The diagram below shows an example of where easements would be required - in this example we would require easements for the kiosk and the blue cables. Easements are registered on the property title indicating other interests on the land.



The five step connection process

For most commercial developments, the following steps will be needed so you can connect to our electricity network:

Step 1

Identify your electrical requirements

Before you apply to connect to our network it's useful to work out what your electrical requirements will be now and in the future.

The following people can discuss your development plans with you and help to determine your requirements and the level of electrical design assistance you may need:

- your electrician, architect, electrical contractor/consultant or the person who designs your electrical connection
- our team at Orion.

Step 2

Apply for your electrical connection online at oriongroup.co.nz

For this step you will need to:

- confirm your contact details and the location of your development
- decide how much electricity you want to be able to use at the site (capacity)
- upload the design for your electrical connection if applicable and available.

If you have any difficulties providing the information above you can contact us for advice. Alternatively, please contact your electrician or electrical consultant/contractor who could assist you or apply for a connection on your behalf.

Step 3

Orion reviews your application for an electrical connection

We will review your application and either accept it or seek further clarification from you.

If your application is incomplete or inaccurate, there may be delays while we seek confirmation of details from you.

Step 4

Price/tender the electrical connection design

You will need to get budgets or actual costs for your electrical connection design. We recommend you get multiple quotes from various Orion-authorised electrical design/build consultants or contractors for the different build phases of your design. We can help identify which Orion-authorised electrical design/build consultants and contractors you should talk to.

Step 5

Agree the contract

We prepare an electricity network connection agreement between you and us which outlines the requirements, your costs and any Orion investment in your development.

You can then schedule the work with your contractor to build your power supply.

For more information call **03 363 9898** or click on the "Connecting to our network" link at oriongroup.co.nz.

Orion New Zealand Limited owns and operates the electricity distribution network in central Canterbury between the Waimakariri and Rakaia rivers. Our shareholders are the Christchurch City and Selwyn District councils. oriongroup.co.nz


Orion
your NETWORK