

Stay Safe Near Electricity

*A guide for working safely around Aurora Energy's
electricity and communications networks.*



At Aurora Energy we want to keep all contractors, customers and the public safe.

Aurora Energy Limited owns and operates the electricity distribution network and high speed fibre-optic networks in Dunedin and Central Otago/Southern Lakes.

Whenever you are digging on private or public property, or working near overhead lines there is a serious risk to life and property.

This booklet is a guide to safe working practices when working near our electricity and communications networks in Dunedin and Central Otago/Southern Lakes, and provides information about the services we have to help you.

Aurora Energy has several service providers who install and help maintain our network cables. Our key service provider is Delta Utility Services.

This guide will be amended periodically, to reflect changes required for continued good industry practice. The current version of these requirements will be maintained on Aurora Energy's website (www.auroraenergy.co.nz), along with associated forms.

For more information about Aurora Energy visit

www.auroraenergy.co.nz

Key: Network icons



Electricity



Communications

DELTA
THINK.INFRASTRUCTURE

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Before you start work call us on 0800 433 582

This number is a quick and easy way to use all the services we provide:

- *Reference maps* which show the location of our underground electricity and communications cables.
- *On-site advice/mark outs/close approach approvals* for work near strategic electricity and communications cables and pipes.
- *High load approvals* – we will check your route to make sure it's safe.
- *Close approach approvals* for excavation work near power poles and operating machinery near overhead lines.



Planning your work

It takes time to arrange these services, so plan your work carefully and call us in advance. Allow:

- Up to four working days for *on-site advice, mark outs, close approach* and *high load approvals* (less than 5.4 metres).
- Reference Maps can generally be provided by emailing the Asset Systems Info Team on AssetSystemsInfoTeam@thinkdelta.co.nz.
Up to two working days may be required to process the request.

If any work requires the power to be disconnected, 12 working days notice will be required to plan the shutdown with electricity retailers.

Your legal requirements

WorkSafe has set down minimum safe work practices for carrying out any work near electricity and communications networks. See 'Underground Services – Guide for Safety with Underground Services' (www.worksafe.govt.nz).

There are also laws and regulations that specify safe working practices which must be followed.



- Electricity Act 1992 and amendments.
- Electricity (Safety) Regulations 2010 and amendments.
- Health and Safety at Work Act 2015.
- NZECP 34:2001 Electrical Safe Distances.
- Health and Safety in Employment (Pipeline) Regulations 1999.

Aurora stringently enforces health and safety across its networks and if a third party is found breaching any of the above laws and regulations we will refer the matter to the WorkSafe for investigation. We may also take legal action to recover both the cost of repairs and the cost of lost business from any party or parties responsible for damaging our network infrastructure.

The dangers



If you hit an electricity cable or overhead line there is a risk of:

- Electrocution
- Flash over
- Explosion
- Fire.

It's not always necessary to touch a live cable or overhead line to be electrocuted. At the moment of contact, a machine, tool, or person is live at the same voltage as the cable.

If an electricity cable is cut by an excavator, or contact is made with an overhead line, anyone touching the machine is likely to be electrocuted.

Electricity can also travel through the ground, causing the ground to become live.



If you hit a fibre-optic cable, there is a risk of:

- Eye damage, possibly blindness.

Working safely

There's one golden rule – Safety First!

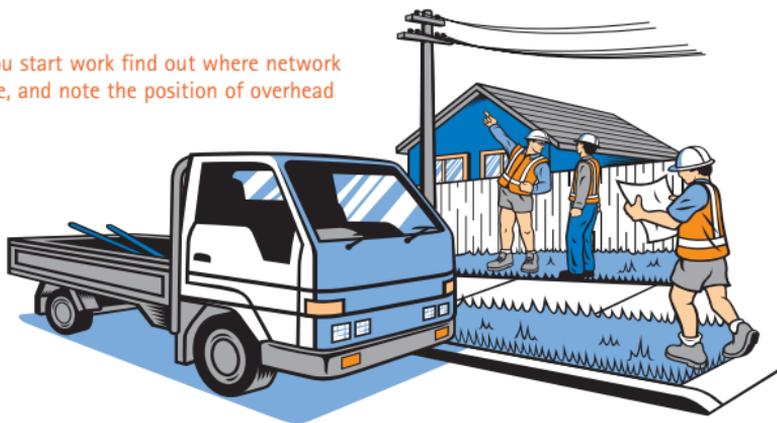
Safety for yourself, your co-workers and the public must never be compromised. Everyone on a worksite is responsible for making sure that safety is maintained.



When working near overhead lines:

- Keep a careful watch and make sure that you maintain a safe working distance from overhead lines at all times:
 - *at least four metres* when operating machinery, such as a digger or crane, near lines.
 - and *do not excavate within five metres* of a power pole (see page 12).

Before you start work find out where network cables are, and note the position of overhead lines.



Safe digging



When digging:

Before you begin

Find out where our electricity and communications cables are. Just because there are overhead lines in the area doesn't mean there won't be underground cables as well!

Step 1: Get reference maps.

Call us at least two days before you begin work on 0800 433 582, and we'll provide free *reference maps* showing underground cable locations. We may be able to provide these maps in less than two days to meet an urgent request, but a charge will apply.

Step 2: Mark out the locations.

Use the *reference maps* to mark out the location of all cables on the worksite before you break ground. Maps are a *guide only*. Use appropriate location technology.

Aurora Energy will provide a free *mark out* service for strategic assets only. See page 13 for details.

NOTE: The same precautions may be required for other work, such as driving metal stakes or posts into the ground, particularly in verges. A metal post or stake that contacts a live cable is likely to electrocute anyone who touches it.

Reference maps

- Are *valid for 28 days* from date of issue. After 28 days you must request new maps.
- The accuracy of our maps cannot always be guaranteed. Road realignment, reconstruction, alterations to ground cover and property boundaries can all affect accuracy. You must hand dig to confirm the location of our cables within your worksite before you start work.

Mark out all cable locations before you start work.



Step three: Hand dig to expose cables.

Why hand dig? Hand digging is less likely to cause serious damage to cables. You must dig with caution for your own safety.

Any damage to a cable should be reported to Aurora Energy immediately on 0800 433 582.

AND remember to watch out for services coming off a main distribution cable.

Hand dig pot holes to locate cables.



Cable depths

Our cables are laid at different depths in the ground, varying from 400mm to over 1200mm.

Alterations to the ground cover may *reduce* or increase the depths. We cannot guarantee the depth of any cable. Expect a cable to be at any depth.

Don't rely on finding buried marker tape when you dig as this may have shifted over time and depending on the age of the asset, tape may never have been laid (note warning tape is not a legal requirement).

If you expose a cable during excavation, you must ensure that the cable is adequately supported and protected.

Any exposed cable must not be moved under any circumstances. If the surrounding material is removed, the cable must be supported at intervals of not more than 1 metre to prevent any movement.

When reinstating excavations, cables must be backfilled with at least 200mm of sand that has been compacted by hand.

Close approach approvals

For safety reasons *close approach approvals* are required for *all works* near strategic assets (66kV, 33kV and fibre-optic cables) or excavating within five metres of a power pole.

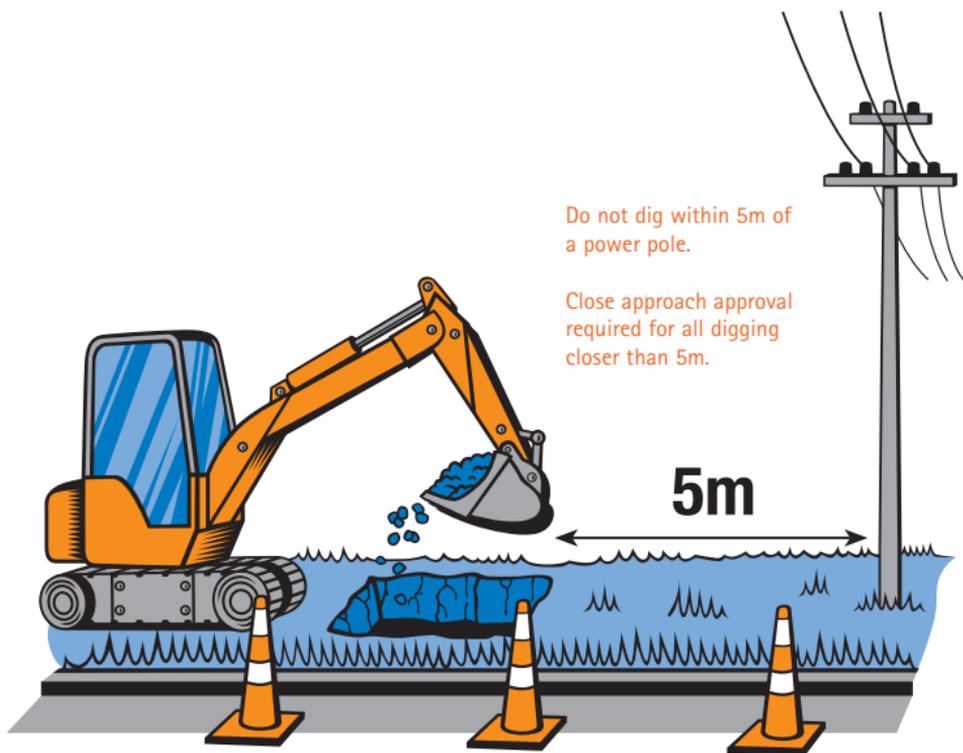
We will contact you if any strategic assets are shown on the maps you have requested, arrange for the appropriate *close approach approval* to be issued and advise whether *on-site advice* is required or *mark out* provided.

You must not use any mechanical excavation within two metres of strategic cables – you must hand dig.

NOTE: Close approach approvals are only valid for the dates applied for and the location and type of works as agreed on the approval.

Excavating near power poles:

- Do not dig within five metres of one of our power poles without a close approach approval.
- Excavations within five metres could cause the pole to collapse! We will provide guidance and in some instances, *on-site advice*.



Our mark out services

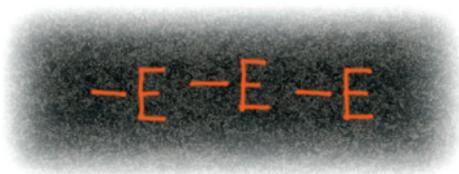
We provide free electricity and communications cable *mark outs* for strategic assets only (66kV, 33kV and fibre-optic cables). One of our representatives will indicate the location of cables by marking the ground to provide a digging guide.

*Please note: Mark outs are a guide only. It is your responsibility to identify hazards within your worksite. You must hand dig to confirm the location of all cables **before** you start work.*

Please allow up to four working days for Delta to arrange *mark outs* of strategic assets. All other mark outs are your responsibility.



Electricity cables mark outs will have the letter "E" beside them.



A single orange line shows an individual cable, and you must hand dig to positively locate the cable (and all other services) before using mechanical excavators.

A double orange line (corridor marking) shows a raft of cables between the lines. You must hand dig between the two lines.



Communications cable mark outs will have the letters "F" beside them.

A single purple line shows that there is a Aurora Energy communications cable.



Indicates service coming off the cable.

One of our representatives may provide on-site advice if you're working near any strategic assets.

Safe digging – REMEMBER:

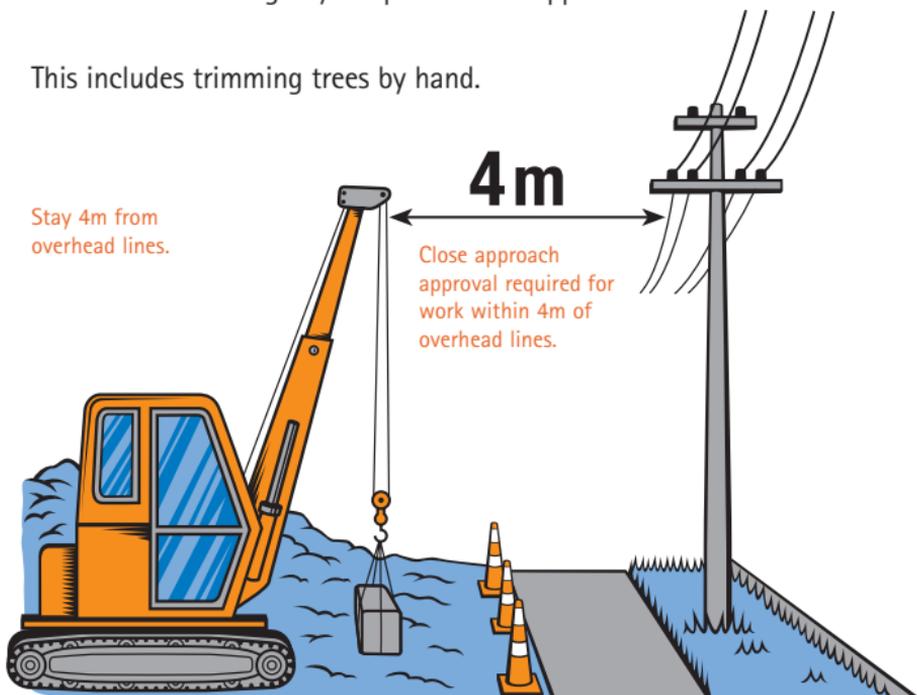
- ✓ *Get reference maps before you start work.*
- ✓ *If our maps show electricity or communications cables, you must locate them before you start work.*
- ✓ *The actual location and depth of cables can differ from what's on our maps because other earth works can change these.*
- ✓ *Watch out for customer services coming off main cables.*
- ✓ *You will be advised it you need a close approach approval, mark out or on-site advice.*
- ✓ *You must obtain a close approach approval for all excavations within five metres of a power pole.*
- ✓ *Follow WaorkSafe's 'Underground Services – Guide for Safety with Underground Services' (www.worksafe.govt.nz).*

Working safely near overhead lines

When you plan to work near overhead lines or power poles it is a legal requirement that you follow the minimum safe distances as set down by New Zealand Electrical Code of Practice – NZECP 34:2001 Electrical Safe Distances.

Follow the four metre rule: All work activity must be kept at least four metres from Aurora Energy's overhead lines. If you need to work closer to our overhead lines you must get a *close approach approval*. It takes two working days to process this approval.

This includes trimming trees by hand.

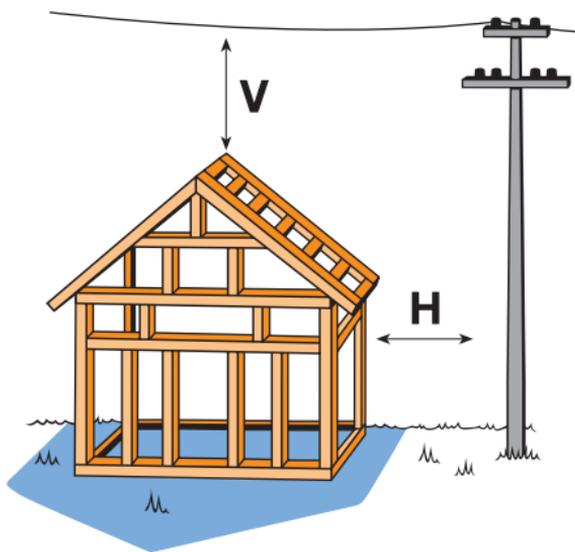


Building near overhead lines:

You must ensure that structures such as garages and extensions to houses remain well clear of overhead lines.

The NZECP 34:2001 has set down minimum distances allowed between any new buildings and overhead lines. The minimum safe distances differ depending on the voltage of the overhead lines.

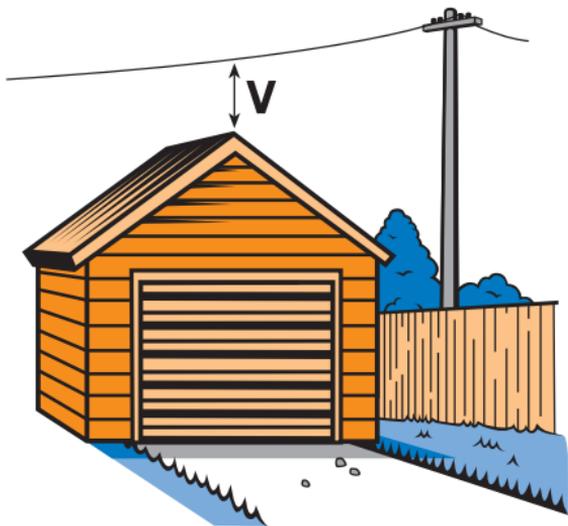
If you need to build closer to overhead lines on a private property they may need to be placed underground. A specialist contractor can do this – call us for advice on 0800 433 582.



Minimum safe distances from buildings to overhead lines

Voltage	V	H
	(Vertical clearance) <i>Minimum distance beneath conductors</i>	(Horizontal clearance) <i>Minimum distance to side of conductors</i>
Not exceeding 1kV	4m	3.5m
Exceeding 1kV but not exceeding 11kV	5.5m	5m
Exceeding 11kV but not exceeding 33kV	7m	8.5m
Exceeding 33kV but not exceeding 110kV	7.5m	9.5m
Exceeding 110kV	Refer to Table 2 NZECP34	

Call 0800 433 582 for more information and to find out the voltage of the lines that you plan to build near.



Temporary electricity disconnection service:

Repairs to roofing, spouting, painting, water-blasting, tree trimming and scaffolding can be dangerous if carried out close to overhead service lines (the lines connecting a home or business to the lines and poles in the street).

Call 0800 433 582 to have the power temporarily disconnected when working near overhead service lines.

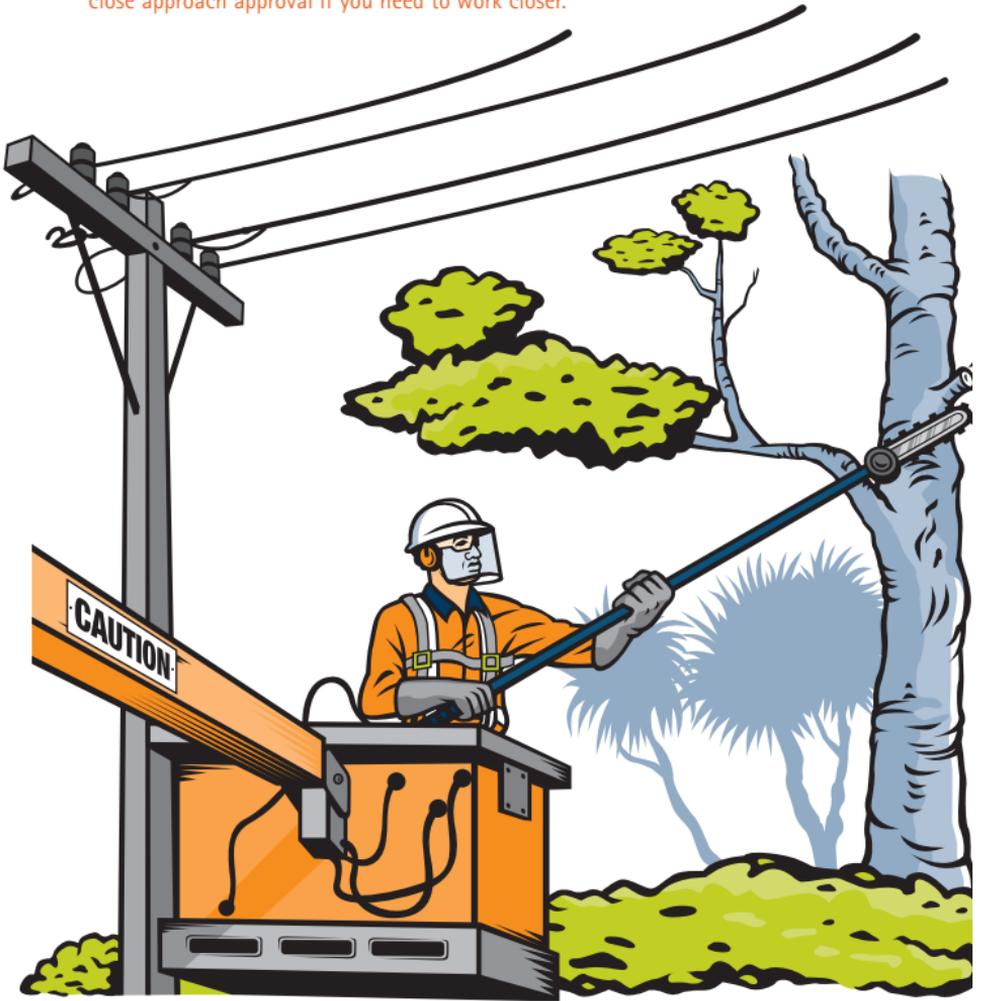
Allow five working days to process the request. This service is free on private properties and available between 8am and 5pm, Monday to Friday. Disconnection services outside these hours will incur a charge.



Working safely near overhead lines – REMEMBER:

- ✓ *Note the position of all overhead lines and power poles on a worksite and in the area.*
- ✓ *Follow the four metre rule: All work activity must be kept at least four metres from overhead lines – get a close approach approval if you need to work closer.*
- ✓ *Do not excavate within five metres of one of our power poles – get a close approach approval if you need to dig closer.*
- ✓ *Close approach approvals take four working days to process.*
- ✓ *Follow the NZECP 34:2001 Electrical Safe Distances when building near overhead lines. Contact Energy Safety for more information (www.energysafety.govt.nz).*
- ✓ *If you are working near overhead electricity service lines or a service connection have the power disconnected before you start work.*

Follow the four metre rule: All work activity must be kept at least four metres from overhead lines – get a close approach approval if you need to work closer.



Disconnect before you remove or demolish a building

For your own safety, you must have the electricity and communications services disconnected before you demolish or remove a building.

Contact your electricity retailer to have all services disconnected.



Who to call to disconnect:



Communications

Call 0800 433 582 and allow two working days to process the request. This service is free.



Electricity

Contact your electricity retailer to arrange.

Travelling with high loads

You must apply for a *high load approval* if you plan to move any tall structure such as a house or a boat. Call 0800 433 582 and allow up to five working days to process the approval.

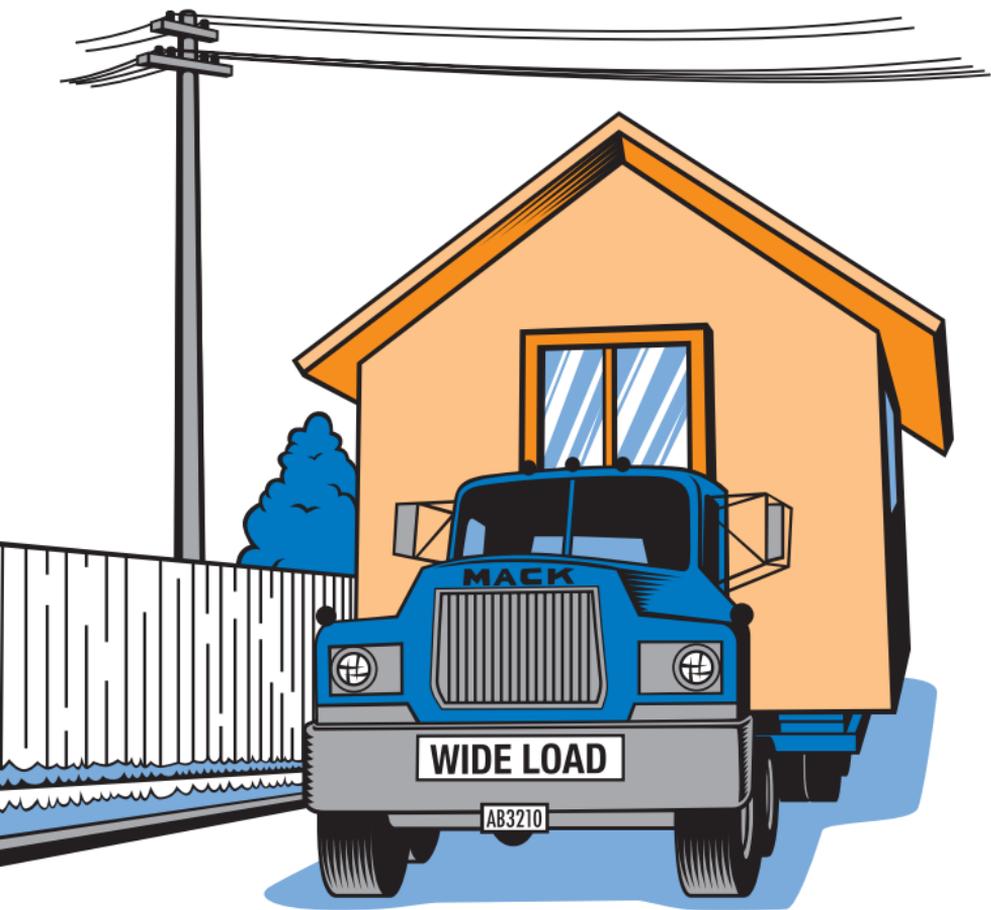
Loads between 4.25 and 5.4 metres high:

- We will check the proposed route.
- If the route is clear to the height required, an approval will be issued.
- If there are low lines we will arrange to escort the load at no cost.

Loads 5.4 metres high and over:

- We will check the proposed route.
- If the route is clear to the height required, an approval will be issued.
- If the route is not clear we will arrange an escort. A charge will apply.
- If disconnection is necessary, a 12 working day notice period is required so we can inform customers who will be affected.





What to do in an emergency



If you hit an electricity cable or overhead line:

- Treat the cable or overhead line as live – get back at least 10 metres.
- Evacuate the immediate area.
- If you are in a machine, stay there.
- If you are at serious risk from another hazard, such as fire, and must leave the machine, jump well clear. Do not touch the machine and ground at the same time.
- **DO NOT** cover up a broken cable or try to fix it yourself.

Call us immediately on: 0800 433 582



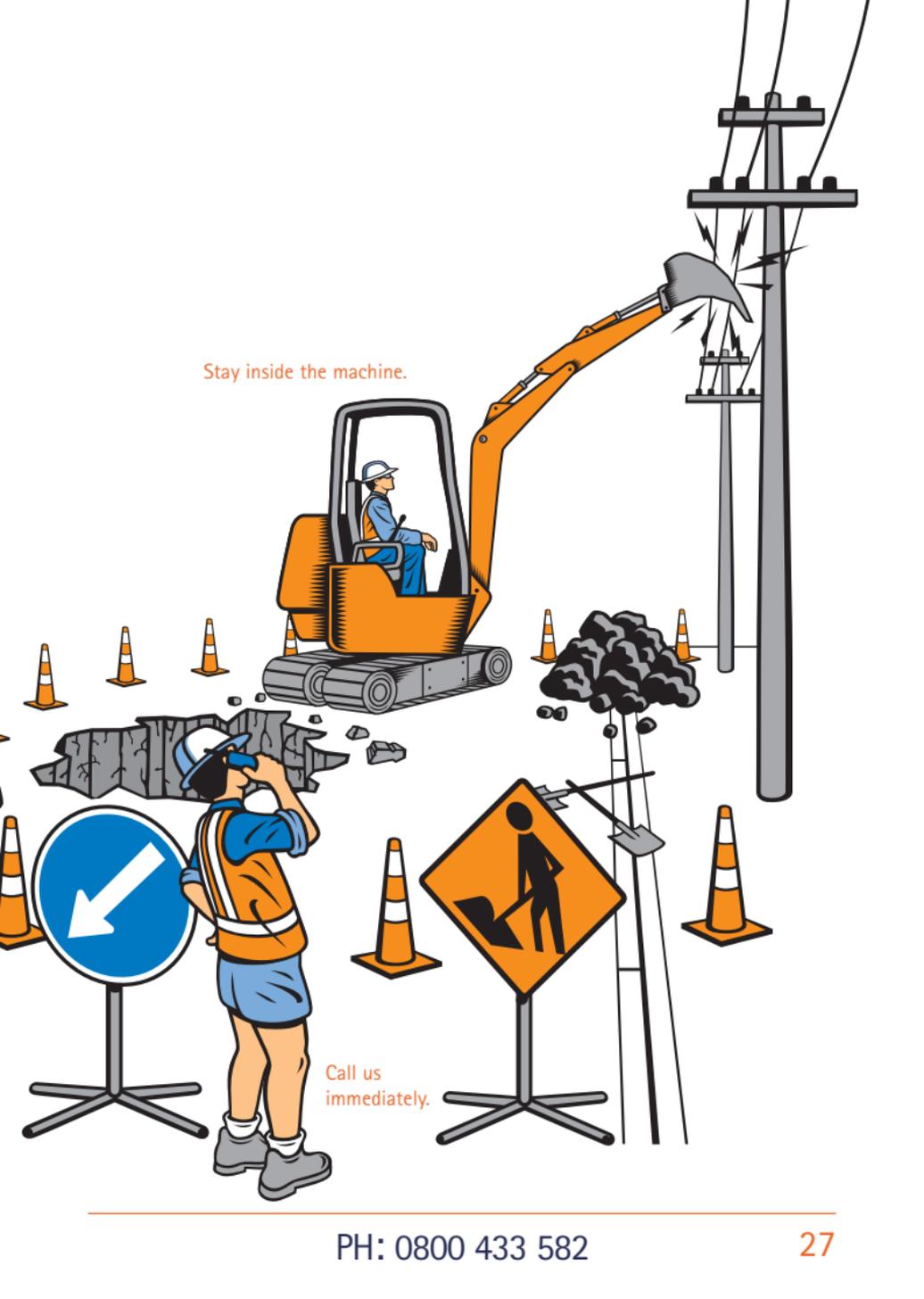
If you hit a communications cable:

- **DO NOT** look directly at the cable as laser light may damage eyesight.
- **DO NOT** attempt to repair the cable.

Call us immediately on: 0800 433 582



Evacuate
immediate area.



Stay inside the machine.

Call us
immediately.

Disclaimer

Aurora Energy Limited does not accept any liability for any information contained in this document.

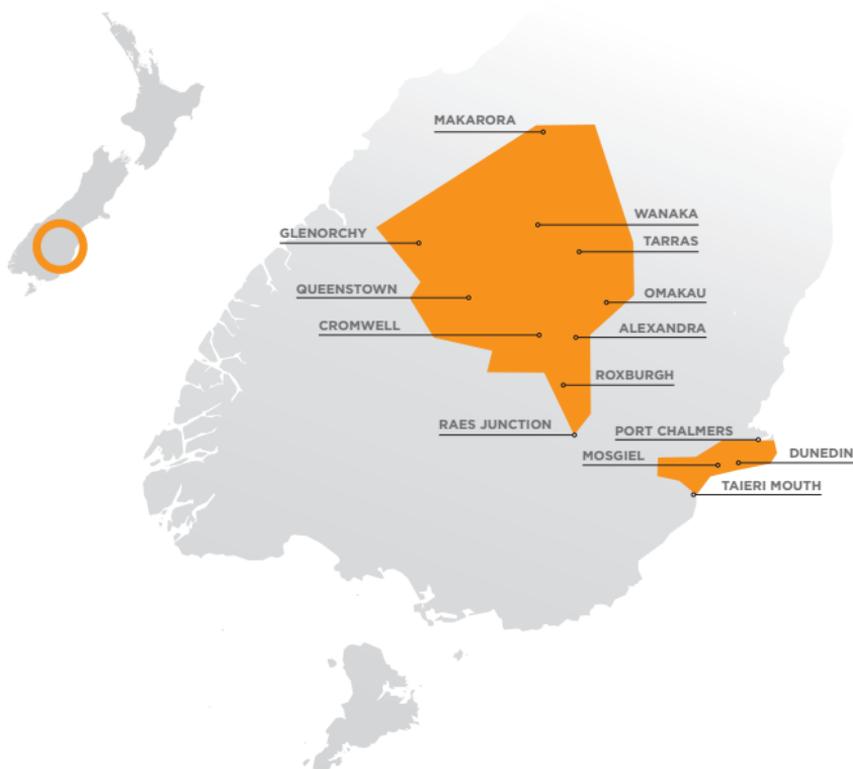
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Aurora Energy's network region



*For more information visit www.auroraenergy.co.nz
or contact our key service provider,
Delta on 0800 433 582*