

# Fire and high voltage transmission line safety

POWERLINK QUEENSLAND INFORMATION SHEET



## About Powerlink

Powerlink Queensland is a State Government Owned Corporation that owns, develops, operates and maintains the high voltage electricity transmission network in Queensland. Powerlink's network extends 1,700km from north of Cairns to the New South Wales border. Powerlink's transmission network is the central link in the electricity supply chain, transporting electricity from power stations where it is generated to distributors Energex, Ergon Energy and Essential Energy (in northern New South Wales). Powerlink also transports electricity to industrial customers and to New South Wales via the NSW/QLD Interconnector transmission line.



Our first priority is to ensure the safety of the community and our transmission line workers. Fires burning beneath or near transmission lines can endanger people, animals and objects, and have the potential to interrupt electricity supply to customers.

## Key points

- 🔥 Be safe. Fires near transmission lines can be dangerous. If fire is threatening property or lives, contact Emergency Services immediately by calling 000.
- 🔥 Report all fires burning underneath or near Powerlink's transmission lines – phone **1800 353 031**.
- 🔥 Notify Powerlink before undertaking any fire activity near our transmission lines – phone **1800 353 031**.
- 🔥 Follow the *National Guidelines on Electrical Safety for Emergency Personnel* (visit [www.saiglobal.com](http://www.saiglobal.com) for a copy or telephone 13 1242).

## Safety risks

Large fires burning adjacent to or under high voltage transmission lines have the potential to:

- Create electrical arcs (known as 'flashovers') that can endanger people, animals and objects;
- Damage or destroy the wires, insulators and supports of the transmission line; and
- Interrupt electricity supply to households and industry.



## Report all fires near transmission lines

If you see a fire burning underneath or near a transmission line and property or lives are at risk, ring Emergency Services immediately by calling 000.

All fires underneath or near a transmission line should be reported as soon as possible to Powerlink by calling **1800 353 031**, even if you are unsure what risk they pose.

## Advise of all planned activities involving fire near transmission lines

Seek Powerlink's advice and approval as early as possible before undertaking any activity involving fire near our lines by calling **1800 353 031**. Early notification can ensure an appropriate response is taken if the fire should cause a fault on the transmission network.

## More Information

For more information on fires near or under transmission lines, contact Powerlink by:

- Phoning our Freecall information number 1800 353 031;
- Sending an email to [website.enquiries@powerlink.com.au](mailto:website.enquiries@powerlink.com.au); or
- Writing to Powerlink Queensland, PO Box 1193, VIRGINIA QLD 4014.



## Flashovers

The combination of dense smoke and hot gases generated by a large fire directly under or near a high voltage transmission line can create a conductive path that increases the potential for a 'flashover'.

A flashover is when electricity, especially at higher voltages, jumps across an air gap to create a conductive path. A flashover may occur between wires or from wires to the ground - this may be seen as a flash or heard as an explosion or loud cracking sound.

Under everyday conditions, the height of wires and their separations are designed to be entirely safe. However, a fire burning under or very close to the powerline can increase the distance that an electricity arc can jump.

Flashovers are potentially life threatening to a person standing in the near vicinity of the flashover (much like when lightning strikes the ground near a person). Flashovers can also cause damage to nearby equipment and the transmission line, and can cause possible interruptions to power supply to homes and industry.

## Fire behaviour

Fire is unpredictable and can move quickly. Fire behaviour is influenced by a range of factors including:

- The amount, type, moisture content and location of fuel for the fire;
- The topography of the area, in particular the steepness of the slope; and
- The time of day, weather and climatic conditions, including temperature, wind speed and direction.

If you are involved in fire control activities, you should be aware of the hazards and potential consequences of fires near transmission lines so you can reasonably assess the risks.

## Fighting fires near powerlines

The Energy Networks' Association, in consultation with emergency services groups across Australia, has produced *National Guidelines on Electrical Safety for Emergency Personnel*. Powerlink endorses the use of these guidelines.

The industry guidelines provide **critical information** relating specifically to fire control near high voltage powerlines, including the special conditions that apply to the use of water in fire control activities near powerlines.

An extract from the *National Guidelines on Electrical Safety for Emergency Personnel* appears in this document. A full version of the industry guidelines may be purchased from [www.saiglobal.com](http://www.saiglobal.com) or by calling 131 242.

*If you are involved in fire management or control near high voltage powerlines, please familiarise yourself with these guidelines and the recommended control measures.*

## Safety advice for fires near powerlines

For your safety, when there is a fire close to a powerline remember:

- Keep personnel, vehicles and attachments at least 25 metres from the powerline.
- Electricity, especially at high voltages, can 'jump' across several metres of air gap. This means that direct contact with the high voltage wire is not required to produce a potentially fatal event.
- Smoke can act as a conductor. Fires burning on or near powerline easements can greatly increase the chances of a flashover occurring.
- Don't count on rubber tyres on vehicles to stop a flashover from occurring.
- Wires on powerlines sag lower in times of high demand, high temperature and fires, reducing the ground clearance.
- Don't stockpile, windrow or heap combustible material under high voltage lines.
- Exercise caution if using powerline easements to access fire locations, as readymade firebreaks, as a break from which to commence back-burning operations, or as a refuge area in a firestorm.

## Using Powerlink easements

Whenever you are undertaking any activity on a powerline easement, including fire management, remember to 'look up and live' for your personal safety and the safety of others around you.

To ensure the safety of people and the transmission network, Powerlink restricts certain activities on its easements. For a comprehensive guide to activities that are permitted, conditional or prohibited on our easements in non-fire situations, please refer to our *Easement Co-use Request Guidelines*, available by calling Powerlink on Freecall 1800 635 369 or on our website [www.powerlink.com.au](http://www.powerlink.com.au) (go to the *Network/property and easements/co-use requests* section)

## Extract from National Guidelines on Electrical Safety for Emergency Personnel (EN A DOC 009-2006)

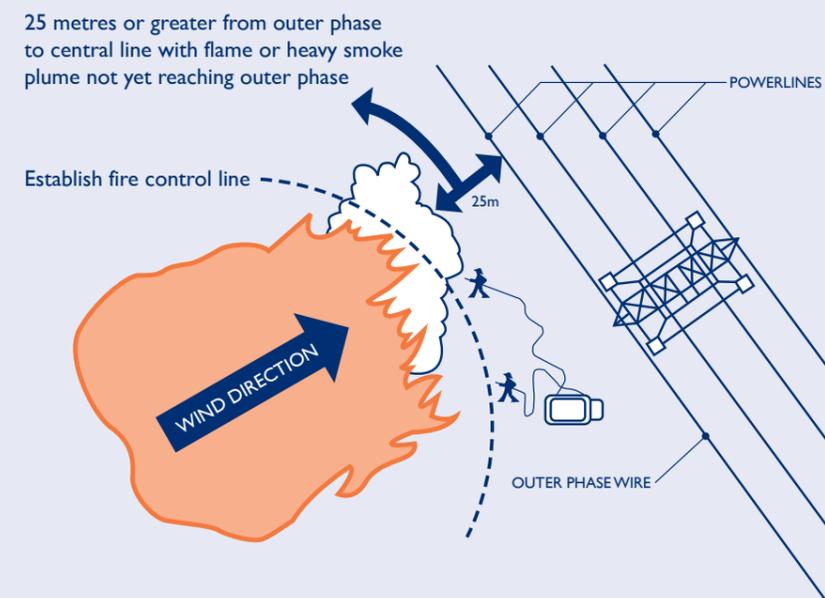
Available from: [www.saiglobal.com](http://www.saiglobal.com) or by telephoning 131 242.

### 4.2.10 Fire control near high voltage powerlines

In addition to the hazards and control measures identified in Section 4.1, the following hazards and control measures apply to this situation.

| Hazards  | Control measures   |
|--|--|
| <ul style="list-style-type: none"> <li>• Sagging wires due to failures or high temperature.</li> <li>• Wood pole structures may fail causing wire to fall.</li> <li>• Flashover may occur between wires or from wires to the ground or structures through burning vegetation (this may be seen as a flash or heard as an explosion)</li> </ul> | <ul style="list-style-type: none"> <li>• Do not directly attack fires in cleared areas beneath lines.</li> <li>• Do not spray water on or near wires or insulators from the ground or air.</li> <li>• Wait for fire to burn clear of the cleared areas beneath the lines before commencing a mop-up operation.</li> <li>• At all times treat the line as live until clearance has been given by Electricity Company ON SITE.</li> <li>• At all times keep personnel and vehicles at a minimum of 25m clear of a headfire, or a flank fire burning under or within 25m of the powerlines (see following Figure illustrating a firefighting operation).</li> <li>• When working near or under live powerlines, approach no closer than 25m to the fire edge to conduct mop-up of grass fires. Mop-up may include the knockdown of low (less than 2m high) isolated flames/spots/smouldering logs which are not producing a convection column or heavy smoke plume. In such cases:             <ul style="list-style-type: none"> <li>- Never direct the hose stream into the powerline.</li> <li>- Never direct the hose stream into a smoke plume that is near (less than 25m from) or reaching power lines. Keep stream no higher than a person's head height.</li> <li>- Never direct the hose stream at a burning bush or tree (more than head height) in a powerline easement.</li> </ul> </li> <li>• Bushes or trees burning in powerline easement present a real threat of creating a flashover to earth from the wires – KEEP AT LEAST 25m CLEAR.</li> <li>• When crossing powerline easement, ensure there is adequate clearance (which will vary between 3m to 8m depending on the voltage of the line) between the highest point of the vehicle (including aerials) and powerlines, avoiding areas with tall vegetation under lines.</li> </ul> |

### Firefighting operation where fire and smoke plume are greater than 25 metres from high voltage powerlines



NOTE: Major powerlines are critical infrastructure. They support essential community services and their de-energisation may have significant impact on public safety. Some smaller lines directly service critical sites such as sewerage, water and communication facilities.

It is therefore preferable not to attempt fire control activities near energised lines where possible.

Where fire control activities ('hazard reduction') are still considered necessary from the cleared area under lines, early advice to the Electricity Company will allow an assessment of risks associated with de-energising the line.