SPOT THE WIRE

// By Peter Bartlett, Health and Safety Practitioner, Transpower[1]

Two aircraft-versus-lines occurrences in the last three years highlights the inherent danger of operations near the national grid network.

In early 2019 an agricultural aircraft crashed after flying straight into a nearby transmission line in the North Island.

The pilot was relatively uninjured but the helicopter was badly damaged.

A year earlier, also in the North Island, another agricultural pilot did the same thing, but was able to land safely.

In both incidents, the weather was fine with good visibility and the pilots apparently knew the lines were in the vicinity.

Flying into lines is not the only danger of working near the national grid network.

In March 2020 a helicopter winchman received multiple low-level but painful shocks, as he was being lowered into a clearing between two parallel transmission lines.

The helicopter frame and its suspended load had built up an electric charge and the person suspended from the helicopter by a conductive (steel) winch cable was subject to sudden and continuous discharge as they came into contact with the ground.

Happily, the winchman was able to move clear of the lines and was winched to safety without further problems.

This problem can be mitigated by maintaining a minimum safe distance from the live conductors. »

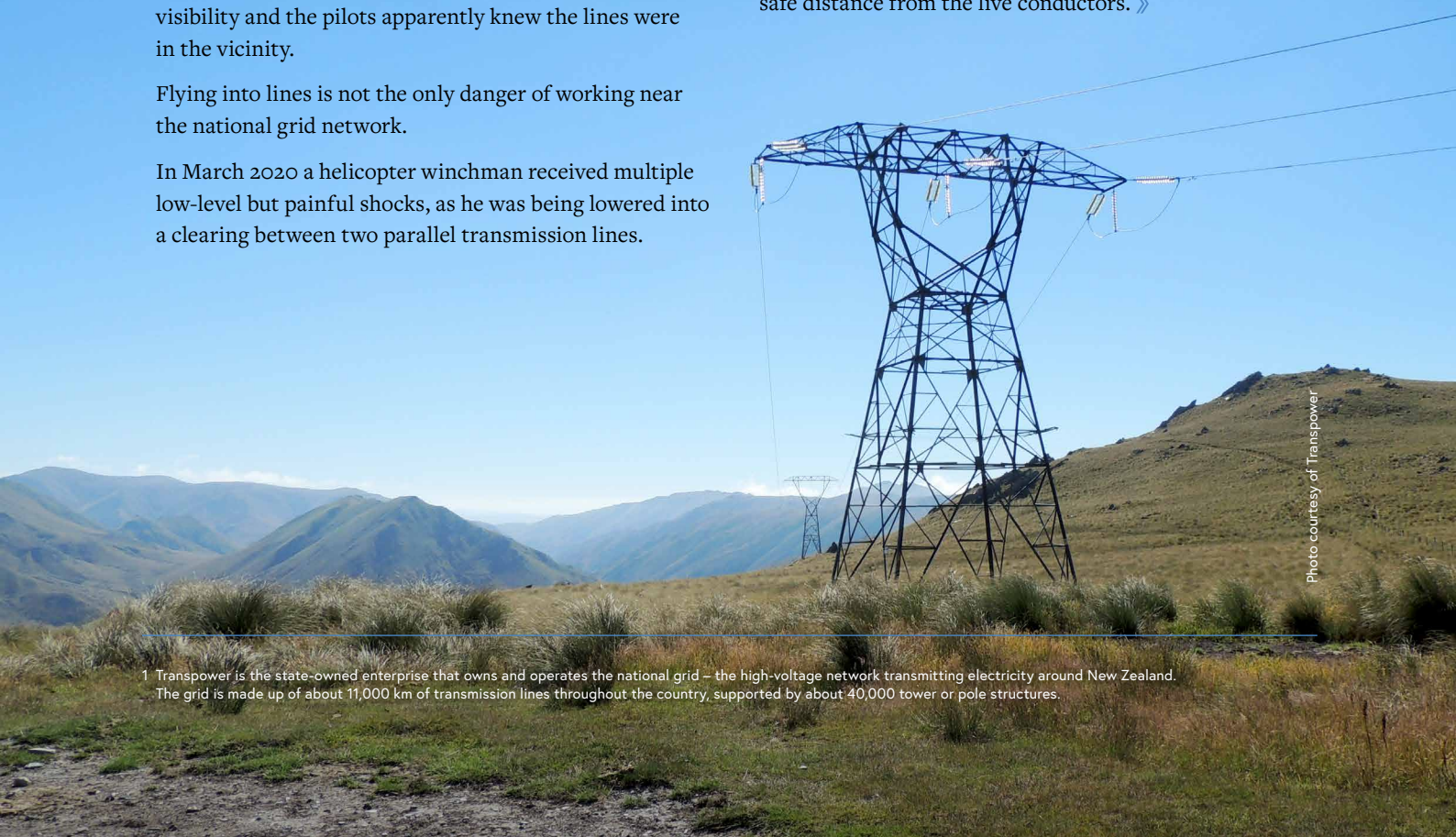


Photo courtesy of Transpower

1 Transpower is the state-owned enterprise that owns and operates the national grid – the high-voltage network transmitting electricity around New Zealand. The grid is made up of about 11,000 km of transmission lines throughout the country, supported by about 40,000 tower or pole structures.

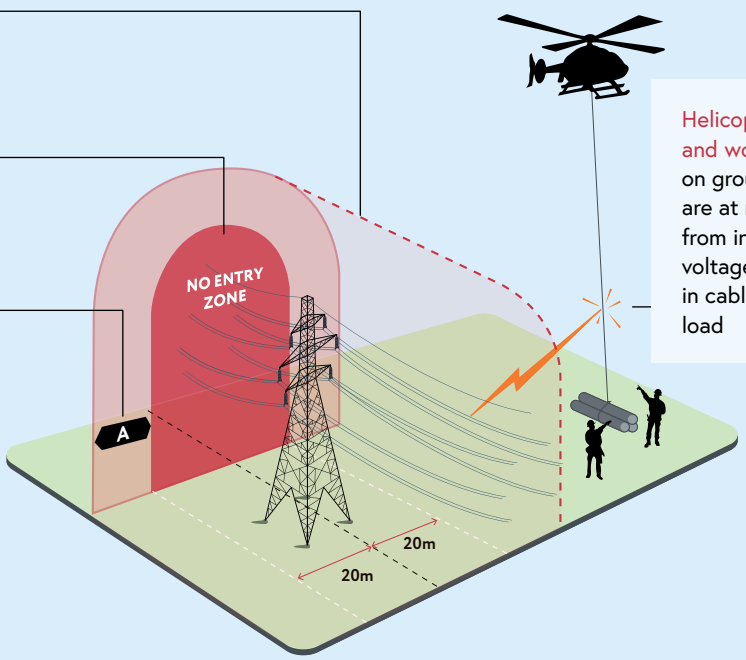
» Minimum approach distances for helicopter operations around Transpower transmission lines and structures

Vertical tower

Safe suspended load setback 'A' metres

NO ENTRY FOR ALL HELICOPTERS WITHIN 20m of conductors (wires)

Contact Transpower for any suspended load work within area 'A'



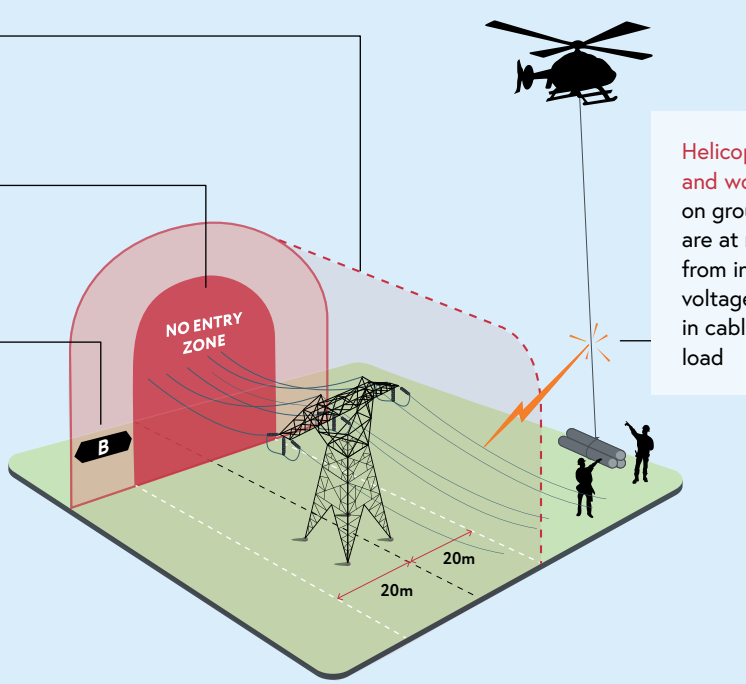
	A
220kV and ABOVE	70m
110kV and BELOW	25m

Horizontal tower

Safe suspended load setback 'B' metres

NO ENTRY FOR ALL HELICOPTERS WITHIN 20m of conductors (wires)

Contact Transpower for any suspended load work within area 'B'



	B
220kV and ABOVE	40m
110kV and BELOW	20m

Diagram: Transpower

Other lessons

Preflight planning must take into account the proximity of transmission lines.

Flight runs should be parallel with transmission lines wherever possible, and pilots should make sure they maintain situational awareness of hazards at all times.

The incidents also illustrate that it's essential operators conduct ongoing training in avoiding wires.

Our advice

- Identify the transmission lines in your flight path. The AIP and VNCs show Transpower's lines. Maps and GIS files of all Transpower assets are also available at **transpower.co.nz/keeping-you-connected/maps-and-gis-data-0**
- Do a full 360-degree reconnaissance of the area.
- Complete a safety briefing before starting work.
- Always maintain a minimum 20 metre distance from transmission lines.
- Be aware of earth wires when flying over transmission lines. They're normally of smaller diameter than the main conductors and are therefore less visible. They may be much higher than the main conductors, especially at mid-span. It's best practice to always cross over transmission lines at the structures, not between them.
- If you're crossing transmission lines carrying a suspended load make sure you stay at least 1.5 times the maximum length of the wire or sling – or at least 20 metres – above the lines.
- Exercise extreme care when flying over ice and snow-loaded conductors, as rotor wash can cause the ice or snow to break off the conductors resulting in them suddenly rising tens of metres.
- Be aware that wind and rotor wash can cause conductors to swing and move side to side.
- Recognise that at slow speeds, loss of tail rotor effectiveness, settling with power, or mechanical failure are major risk factors for line strike.
- Call Transpower on 0508 526 329, if there's any risk of contacting transmission lines, or when you're planning to undertake winching operations near transmission lines.