

Investigation Insights

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Don't skip the reccy

What happened?

A Robinson R44 helicopter was contracted to carry out agricultural weed spraying on private farmland. The pilot, who had not worked on the property before, received a pre-task briefing from the landowner. Hazards were identified, including two sets of parallel transmission lines shown on a paper map. No reconnaissance flight was conducted.

Conditions on the day were favourable. The pilot completed three spraying runs between the two sets of transmission lines, flying along the contours of the hills as indicated in the spray lines on the GPS job management tool.

During the fourth run, the helicopter struck the transmission lines. The power pole was obscured by trees, and visibility to the right was partially blocked by pine trees along the ridgeline above. The pilot saw the wires only moments before impact and was unable to manoeuvre clear. The rotor blades and spray boom made contact with the lines, severing them. The pilot was able to maintain sufficient control and landed safely in a nearby paddock.



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CAA investigations

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A familiar task, an incomplete picture

The pilot was experienced, appropriately qualified, and operating in suitable conditions, with no evidence of fatigue or mechanical issues.



Hazards had been identified during the briefing, and initial runs were completed successfully. However, the transmission lines were not entered into the onboard GPS job management system and were only referenced on the pre-flight paper map. This was not a requirement, but the GPS system had the ability to perform this task.

As the task progressed, the pilot relied increasingly on memory. With limited visual cues and no in-flight reinforcement of hazard locations, awareness of the transmission lines degraded. This created a gap between where the hazards actually were and where they were believed to be.

The limits of seeing wires

Wire avoidance in agricultural flying often depends on visual detection and maintaining an accurate mental picture of hazard locations. Wire visibility can be affected by:

- terrain and vegetation
- lighting and viewing angle
- obstructions such as trees or ridgelines, and
- workload and divided attention.

In this case, the lines were partially obscured and difficult to distinguish from the background. At the same time, low-level manoeuvring along terrain features increased workload and reliance on memory rather than continuous visual confirmation.



As is common in wire strikes, detection occurred too late for recovery.

A system with limited safety barriers

The primary defence against collision was the pilot's ability to detect and remember the location of the wires. Other safety measures were absent or underused:

- no reconnaissance flight to confirm hazard locations
- no GPS marking to provide in-flight cues
- limited visual references due to terrain and vegetation, and
- aircraft not fitted with wire strike protection equipment (not available for this aircraft type).

Individually, these factors are not unusual. Together, they reduced the system's ability to support hazard awareness throughout the task.

What does this event tell us?

This occurrence did not result from a single failure. Instead, it emerged from a combination of common conditions:

- reliance on pre-task information without a reconnaissance with the landowner to build a detailed spatial picture
- increasing dependence on memory during repeated runs
- reduced visibility of wires, and
- high workload associated with low-level operations.

Each factor was manageable on its own. In combination, they reduced the margin for error until the hazard was detected too late.

What can we learn?

Managing wire strike risk requires more than pilot vigilance. It depends on how well the system supports sustained hazard awareness. Opportunities to strengthen that system include:

- conducting a reconnaissance flight to build a shared understanding of hazards
- marking wires in onboard GPS systems to provide ongoing cues
- establishing clear reference points where technology is limited
- designing tasks to manage workload and preserve capacity for hazard detection, and
- recognising the limits of visual detection, particularly where wires may be obscured.

The key lesson is not pilot failure. Even experienced pilots in good conditions can lose awareness of hazards when they are not actively reinforced – either visually or through supporting systems – throughout the task.

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