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Autumn 2024

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NAVIGATING THE AIRSPACE OF QUEENSTOWN

Do you see me now?

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New radar for air traffic control

CAA
CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

// DO YOU SEE ME NOW?

// NEW RADAR FOR AIR TRAFFIC CONTROL

// RISKY BUSINESS

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In this issue...

// THE RNZAF AT UNATTENDED AERODROMES

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CIVIL AVIATION AUTHORITY OF NZ

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Reader comments and contributions on aviation safety are welcome. Let us know your thoughts by emailing education@caa.govt.nz. We'll try to publish a selection in each edition, although they may be edited or shortened.

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NAVIGATING THE AIRSPACE OF QUEENSTOWN

The airspace around Queenstown has changed significantly over the last 30 years. *Vector* hears from Jon Brooks, former Chief Controller at the Queenstown Tower, on how to navigate the complex airspace.

Photo: iStock.com/Paer Svensson

// Jon Brooks, now Regional Towers Operations Manager, Airways New Zealand.

Every air traffic services unit gets used to change. From new aircraft types and operators, to new rules, procedures and airspace modifications, change is the one constant that air traffic controllers and flight service officers are adept at handling.

Queenstown in particular, though, has changed significantly over the past 30 years or so. The old saying, 'It's not what it used to be...' is so true – even though the awe-inspiring views, and the other reasons people flock to this region, remain the same. »

Queenstown has gained grass runways, flight service, an air traffic control service, world-leading surveillance and Required Navigation Performance Authorisation Required (RNP AR) procedures, night operations for regular passenger transport aircraft, a change to Class C airspace, and a surveillance approach service based out of Christchurch.

Phew...we need to take a breath and just pause for a moment to reflect on all those incredible changes.

Class D to Class C airspace

The change of just one letter, from D to C, was really quite a big deal.

Class C airspace typically surrounds areas of higher numbers of regular passenger transport aircraft. This means greater protection for those aircraft.

It's no longer an occasional Hawker Sidley HS-748 arriving at Queenstown airport, but, during the middle of the afternoon, a stream of up to 11 Boeing 737 or A320 aircraft an hour. Away from the peak international arrival and departure periods, there's still a steady flow of instrument flight rules (IFR) arrivals and departures.

The challenge for air traffic control is managing the flow of IFR aircraft, while providing separation from those operating under visual flight rules (VFR). It's not segregation or traffic information as it used to be, but the application of defined and complex separation standards in mountainous terrain.

IFR approach and departure

The IFR approach and departure pathways are well known.

For runway 23, aircraft approach from the Pisa Range and up the Gibbston Valley.

For runway 05, they approach around the back of Mt Nicholas, and up Lake Wakatipu towards the Frankton Arm.

IFR aircraft are now managed by Queenstown Surveillance Approach which is based in Christchurch. Arriving aircraft establish their first communication with Queenstown Tower only when passing 8000ft on descent.

For IFR departures, these aircraft are handed from Queenstown Tower to Approach controllers as soon as they're airborne.

So, two different air traffic control units are managing the airspace around Queenstown, with strict procedures and Class C separation standards keeping both VFR and IFR aircraft safe.

An example of how air traffic control units manage the Queenstown airspace

As an example, let's take a look at the VFR Geographic Separation Chart for the Queenstown Control Zone.

As an IFR aircraft approaches or departs, VFR aircraft must be established in one of the sectors that's separated from the IFR track, unless another form of separation exists.

This separation chart results in two A4 pages of separation statements that Queenstown Tower controllers must know in depth, and be able to call on at a moment's notice.

RNP AR tracks are relatively close to airspace boundaries, both laterally and vertically. In Class C, any inadvertent infringement of controlled airspace boundaries, or air traffic control instructions, can cause a separation loss or TCAS event.

What does this all mean for VFR operations in the Queenstown Control Zone?

VFR aircraft wanting to operate through the same valleys and pathways as IFR can face significant delays at times.

If at all possible, it's always best to approach the control zone, and the aerodrome, from the north (Soho, Moonlight) or south (Devil's Staircase), at right angles to the IFR pathway.

Interacting with Queenstown Tower

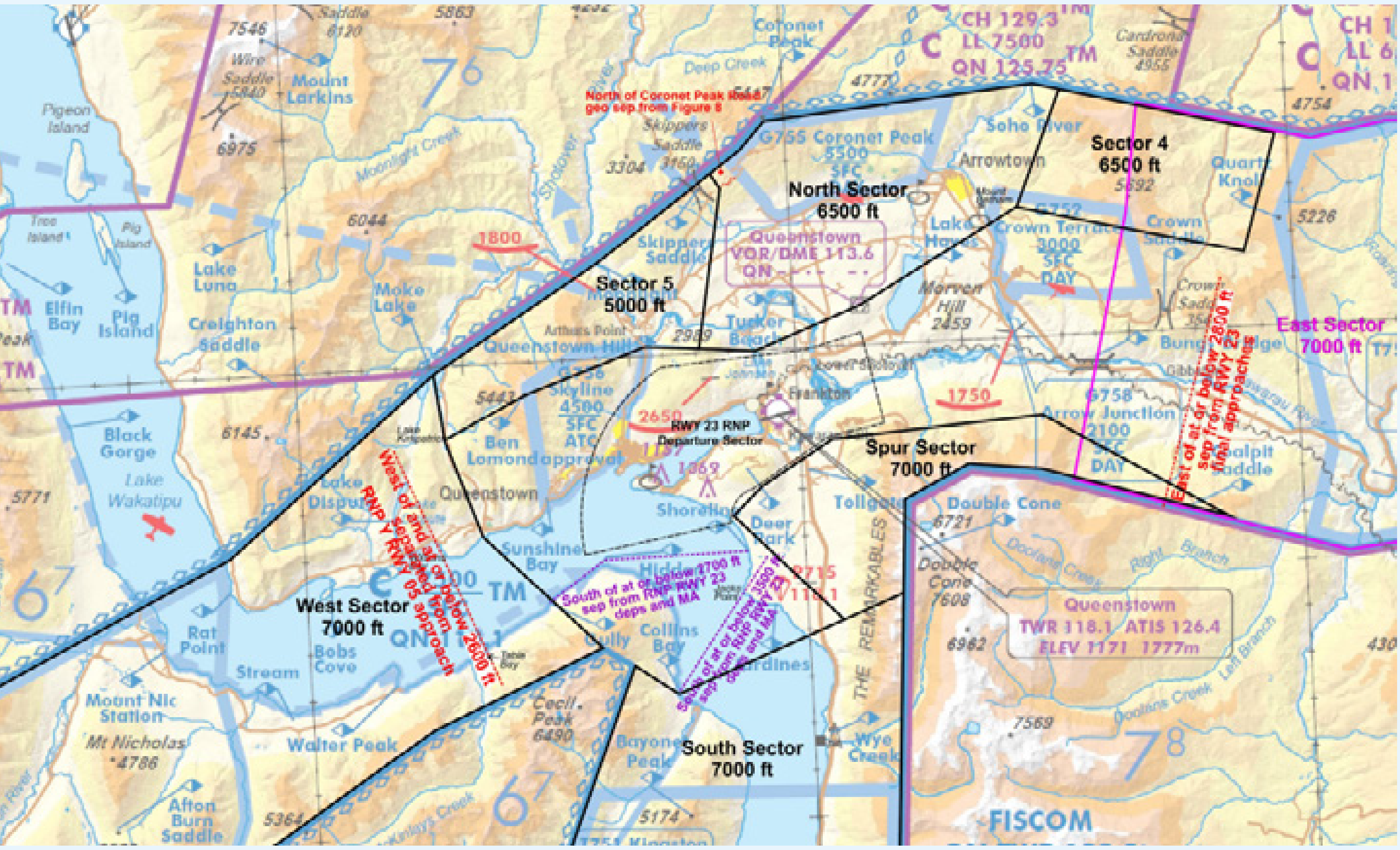
Queenstown Tower is now staffed by three air traffic control positions.

The person occupying the Queenstown Flight Information position, and using 128.9 MHz, is a controller who can provide information and advice to help regulate the flow within the control zone. You can have a discussion with them on this frequency about how and when to expect entry into the control zone, and which procedure you're most likely to get.

For itinerant aircraft and people unfamiliar with Queenstown operations, it's best if you contact the Airways Queenstown team well before your flight, so they can assist with your preflight briefing. On the day, you should also contact Queenstown Flight Information on 128.9 MHz.

The locally-based commercial operators are well used to Queenstown operations, and the flows to and from Milford remain the same.

The VFR procedures, such as the Nic Arrival, are strictly contained in their tracking and heights to enable safe and efficient integration with IFR aircraft.



// VFR Geographic Separation Chart for the Queenstown Control Zone.

Itinerant and training flights are unlikely to be given such procedures. To work in with both IFR and Queenstown's busy commercial VFR, itinerant flights are best operated outside the hours of 10am–5pm.

Preparing to fly into Queenstown

For any pilot coming to Queenstown, being prepared is the key.

Have plans A, B, and C in mind. Think about worst case scenarios: Do I have enough fuel to hold for 30 minutes or more? Am I comfortable holding in the Gibbston Valley, at Lake Hayes, or north of Arrowtown?

Communication is so important. Get comfortable with fast-paced radiotelephony and listen closely to air traffic control. If you're unsure or need clarification, always ask for confirmation.

Because of the high traffic volumes, both on the aerodrome and at other landing sites within the Queenstown Control Zone, it's paramount that pilots maintain good situational awareness.

Be prepared to integrate with any number or type of fixed-wing aircraft or helicopter.

Into the future

With the prospect of advanced air mobility, and next-gen aircraft technology, who knows? The drive over the Crown Range or through the Kawarau Gorge may be a thing of the past. In the future, there's a possibility we could be integrating electric vertical take-off and landing (eVTOL) operations from nearby hubs, so passengers can embark on a scenic flight around Fiordland on an electric aircraft.

Queenstown has been on an incredible journey over the last 30 years, and anyone who played a part in that should feel very proud.

// KEEP AN EYE OUT FOR...

We'll soon be releasing an updated version of the *In, out, and around Queenstown* GAP booklet. Keep an eye on our website, or sign up to our notifications emails, to learn when the updated booklet will be available.

Aviation safety needs you!

LASTING LEGACY OF AN AVIATION SAFETY PIONEER

When Captain Brian Dunn first sat in the cockpit of a Tiger Moth in the late 1940s, it marked the start of six decades of dedication to air safety in New Zealand.

Captain Brian, as he was affectionately known by colleagues and peers, died in 2023 at the age of 91, after spending nearly half his career at the CAA. He retired from his role of Air Transport Inspector Flight Operations in 2014.

He joined the CAA as Controller of Airlines in 1987 and, apart from a short stint introducing jet aircraft to Polynesian Airlines in 1992, he remained with the CAA for the rest of his working life.

His sense of adventure – and his admiration for his elder brother Mervyn's flying assignments in World War II – inspired his interest in aviation.

But it was his connection to people, and his deep care for their welfare, that drove his commitment to aviation safety.

The ethics and principles he applied to air safety over many decades are woven into the fabric of the CAA.

Pivotal moments

Captain Brian was first confronted with the reality of losing someone close in an air accident in 1951, when his flight instructor, Lieutenant Dereck Varkevisser, died when a student spun off a gliding turn.

"That upset me very much, because I thought the world of him," he said in an interview with *Vector* some years ago.

He later realised that the death of his instructor triggered the safety ethic that became the hallmark of his career.

Other tragedies, including the crash of a DC-3 on the Kaimai Ranges in 1963, and the Erebus disaster in 1979, spurred him on to further develop his skills in aviation safety and accident prevention and investigation. This included a course of study at the University of Southern California, which cemented his role as a go-to person for determining the cause of air accidents in New Zealand.

He was a board member for Air New Zealand for a time, and a technical director for the New Zealand Airline Pilots' Association.

Bringing everyone home safe

Captain Brian was renowned among the young pilots he flew with for impressing on them his 'one-day commitment' – the promise he made to himself every day that he would do nothing to endanger the aircraft or the people in it.

This philosophy served him well, from his Tiger Moth training at age 17, through his lengthy career flying many aircraft, including the Vampire strike jet for the RNZAF and the Boeing 767 for Air New Zealand.

He had not so much as a close call in his 20,000+ flying hours, and said his proudest achievement was "having the same number of landings as take-offs". »

//The ethics and principles he applied to air safety over many decades are woven into the fabric of the CAA.//

"A safety record like this over so many flying hours is what the CAA would like all pilots to aspire to," says CAA Deputy Chief Executive (Aviation Safety) David Harrison.

"And the way in which he did it was really quite clever. He took just one day at a time, vowing that, 'Today I will fly safely', and he stuck to that commitment for just that one day. Then the next day he made the same commitment, and stuck to it that day, and so on the next day, and the one after that.

"Quite achievable day by day, but adding up to years of safe flying. No wonder the CAA chose his image years ago to illustrate an aviation safety poster."

His poster "Aviation safety needs you!" was used by regulators all over the world.

Fond memories

Brian's long-time colleague and best friend at the CAA, former Flight Operations Manager Peter Underwood, remembers him as a very fair-minded person who made sure any pilot being investigated got a 'fair go', reflecting his philosophy that everyone makes mistakes, but the important thing is fixing them.

Bob Fletcher, Air New Zealand's head of flight operations (technical support) for 22 years until 2017, had many interactions with Captain Brian over the years, in the area of regulatory approvals.

"Brian had a wealth of operational knowledge and experience. As an individual, he brought integrity and credibility to the decisions made within the CAA. On most operational matters we were on the same page as Brian, while on some we had differing operational perspectives, but those challenges were healthy and contributed to aviation safety. He always had my respect."

CAA Inspector Terry Curtis says Captain Brian's safety ethic "went into all facets of his life".

"He was my mentor when I first worked for the CAA 20 years ago. He welcomed me into the CAA, saying he had flown with my father and I had something to live up to! So that was my starting point, and I had this person I could go to about anything.

"I had to be assessed for various aspects of the job, and Brian was the person who did that. It was quite enjoyable. He was very particular about getting things right and keeping things safe."

A busy retirement

On retiring from the CAA in 2014 at the age of 82, Brian's love of aviation was unabated and he enjoyed flights in a restored bright yellow Tiger Moth based at Mandeville in Southland.

Brian's wife Moira died in 2022. They are survived by their five children, 13 grandchildren, and one great-grandchild.

Photo: iStock.com/KuntalSaha

Photo: iStock.com/PhotoImagesnz

THE DANGERS OF AIRCRAFT ICING

The polar jet is beginning its northward migration, bringing weather conditions perfect for producing ice on aircraft – both in the air and on the ground.

"As we move towards winter, southerly outbreaks become more likely," says CAA Chief Meteorological Officer Paula Acethorp.

"This increases your risk of encountering icing conditions when flying IFR. And in the wake of those outbreaks, as the skies clear and winds ease, frost may form in cooler climes."

She adds that climate change is expected to increase the chance of pilots encountering icing conditions.

"As the warming trend of the atmosphere brings still more moisture to the air, there's potential trouble for aviators on cold days."

So whether you fly fixed wing or rotary, for recreation or for work, knowing how to avoid and deal with icing is essential. Failure to do so can have fatal consequences. »

Photo courtesy of Dan Foley

Photo: iStock.com/DanelHarwardt

» Before you fly...

Rule 91.315 requires VFR pilots to remove all ice, snow, and frost from the aircraft wings, stabilisers, and control surfaces before flying.

In a past *Vector* article, former CAA aviation examiner, John Parker, notes that even a thin layer of ice can have a huge impact on the aircraft's performance, and the propeller slipstream or air flow over the wings will not blow the surfaces clean during the flight.

"The effects of icing can be serious and lethal," John says. "They include increased aircraft weight, drag, and stall speed, loss of lift, thrust, and control, and incorrect instrument readings."

Carlton Campbell, GA flight examiner and CAA Aviation Safety Advisor (A-cat, 12,000+ hours), says aircraft left in the open during autumn and winter should have their wings and engines covered.

"If snow, ice, or frost does build up on the aircraft, push it into the sun or hangar area where the temperature is above zero. Rub a cloth over it to clear and dry the critical surfaces." He advises against pouring jugs of hot water over the canopy or windshield, though, because it contributes to wear and tear.

"Don't use hot water on the aircraft wings in temperatures below zero either," he warns, "because it will instantly freeze, making de-icing much harder."

Carlton emphasises that preflight checks play a vital role in managing icing risks.

"Expansion of water as it becomes ice can damage the internal structure of wings, control surfaces, and fuselage bulkheads.

"Torrential overnight rain will get into all sorts of places," he says, "and if the rain is followed by a hard frost, it can cause the rainwater to freeze around the control linkages of the aircraft. This can result in breakages or control issues.

"If the preflight omits a trim check, it might be only after becoming airborne that the pilot discovers the trim hinges are jammed with ice."

Carlton also stresses the importance of considering fuel drain testing.

"Fuel drain testing needs special consideration when icing is a risk. The air inside fuel tanks of aircraft left outside on a clear night may condense and freeze. If the ambient air temperature is still below freezing when the fuel drain is tested, the drains may be frozen solid."

Carlton recommends pushing the aircraft into the sun and waiting for the ice to melt, before testing.

"Keeping fuel tanks full reduces the risk of condensation forming, but it's vital even full fuel tanks are checked for water by draining some fuel into a tester."

Paula adds that it's worth keeping an eye on the forecast meteorological conditions. A minimum temperature of 4 degrees Celsius or less, reasonable humidity, and light winds can increase the risk of frost forming on aircraft parked outside overnight.

Induction system icing

If you have a carburettor, the two factors that most affect icing are the air temperature and the relative humidity.

"When liquid fuel vaporises and mixes with the induction air, it can cause a large drop in temperature. The venturi effect also cools the airflow. If the carburettor temperature then falls below 0 degrees Celsius, the water vapour condenses into ice," says Carlton.

"The classic symptoms of carburettor icing are a reduction in power and an engine running rougher. The carburettor may freeze up unless you address the problem, usually by applying carburettor heat.

"Carburettor icing is less likely to occur during take-off and climb, when the engine is operating at higher power with a wide throttle opening. Apply full carburettor heat at regular intervals during the cruise to avoid ice accumulating. The engine may still run roughly for a short time as any ice melts and is ingested."

Icing during flight

Pilots must manage icing risks during flight. If your aircraft isn't certified for flight in icing conditions, then you must stay grounded.

Paula advises that pilots log on to a certificated meteorological app, such as PreFlight, for the latest weather updates so you know where icing conditions are forecast.

"Be cautious when flying IFR through a front that may contain freezing rain, freezing drizzle, or other hazardous conditions. Even if icing is forecast at 6000ft, and you're flying at 5000ft, if the icing level descends, you'll need to take action to avoid the icing conditions.

"Stay aware of how quickly icing conditions can affect your aircraft's performance. If you encounter icing conditions, don't dither – get into clear air ASAP."

Special considerations for helicopters

Most helicopters in New Zealand have very little ice protection technology, and most aren't certified for flight in icing conditions.

"The main effect of ice on the rotor system is increased drag, followed by a loss of lift," says CAA Aviation Safety Advisor Pete Gordon (CPL(H), 10,500 flying hours).

"Helicopter icing may be evident through deteriorating performance, vibration, and visible icing accretion on the aircraft structure.

"The most effective option if you notice icing is to vacate the area, but depending on the rate of accretion, you may need to consider landing immediately.

"Make sure the main rotor and tail rotor blades are free of frost and snow before the flight, and check the aircraft flight manual to understand what conditions may apply to operate your aircraft in icing conditions.

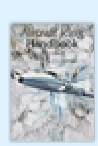
"Heavy rain will seep into areas, similar to fixed-wing aircraft, so make sure all controls have full and free movement."

"Most helicopters in the limitations section of the flight manual have information on the restrictions of flight into snow or icing conditions, and what levels of temperature and moisture should be avoided," adds Andy McKay, CAA Flight Examiner and Flight Standards Helicopter and A-cat helicopter instructor.

"The restrictions are generally aimed at ice induction into an engine or ice build-up on any aerodynamic surfaces. Often an engine barrier filter may have a supplement for review as well. A review of these limits is always advised as the weather moves into the colder months of winter, as there can be variations between helicopter types."

// MORE INFORMATION

Winter flying Good Aviation Practice booklet – go to **aviation.govt.nz/education** to download or order your free copy.



Aircraft Icing Handbook – go to **vertia.co.nz** > Aviation Clients to purchase a copy.

DO YOU SEE ME NOW?

// By Murray Shaw

I learned about losing situational awareness from this.

It was a blustery day in the early springtime, and I was near the end of a local solo flight near Whanganui.

In the circuit, I lost situational awareness and wound up too close to another aircraft, forcing the pilot to take avoiding action.

How had I got here?

A day like any other

This was a typical weekend flight. I had tracked west up the coast, found a hole in the clouds, and climbed above 5000ft for some general handling exercises and aerobatics. That was followed by a touch and go at a nearby airstrip, before I tracked back to the aerodrome.

I've been flying since 1981 and try to fly as often as I can afford it – about once a week.

Being approved to do my own maintenance, I try hard to keep the aircraft in good condition. In simple terms, it's my neck on the line, and I'm not ready to die yet!

I try to take that same attitude into my flying, working on being safe – not just for myself, but for others too. I take pride in that I generally do well in managing separation in a busy, uncontrolled VFR airspace.

It didn't happen this time

Returning east back down the coast, I checked the AWIB (aerodrome and weather information broadcast) to note that the wind had increased from 12 to 15 knots and was now gusting 22. It was a slight crosswind, and the pressure had dropped slightly. Monitoring the traffic told me I'd have to slot in among a couple of other aircraft.

I made a radio call to a nearby beach that I intended to join downwind 29. There was traffic joining from different directions – I'll call them aircraft X, Y, Z, and A.

Aircraft X tracked to the nearby water tower, and then joined overhead. Aircraft Y was coming in from the north, and tracking to the coast.

As I approached the river mouth, aircraft Z called downwind 29 touch and go #2, followed by aircraft A calling finals 29 full stop #1.

Aircraft X had called at the water tower and was descending non-traffic to join downwind 29. This circuit went without a hitch.

Aircraft A landed, aircraft Z called finals low approach and overshoot, aircraft X crossed threshold 11 to join downwind, and aircraft Y crossed the coast five miles west to track down the coast to join.

Calling finals

I made my finals call at about three quarters of a mile, followed by aircraft X calling downwind for a full stop. I did my touch and go and was climbing out, when a visiting aircraft on the ground called entering and backtrack 29. »

Photo courtesy of Murray Shaw

// But somewhere around here, my brain shrunk from two aircraft to one! //

This was followed by a finals call from aircraft X. The visiting aircraft rolled and departed south from the downwind.

I was on my crosswind nearing circuit height – 1000ft – and the end of the crosswind, when aircraft Z called downwind touch and go, and aircraft Y called downwind 29.

I looked for aircraft Y and found them away out to my right, very early downwind. We had a brief conversation and I told them I'd be turning downwind in front of them. Turning into the downwind, I found I couldn't see aircraft Z.

This was not unexpected. The wind was causing a lot of haze, we were at the same altitude, and the aspect of the aircraft made it difficult to see. But the timing of the calls indicated they should have been well ahead of me.

This is quite a common situation at this aerodrome. I knew I'd pick them up when they turned onto base or on finals.

I also pulled back my power to ensure I wasn't overtaking anyone on the downwind, so instead of 115 knots I was doing between 90 and 100.

My brain shrunk!

But somewhere around here, my brain shrunk from two aircraft to one!

I was looking for an aircraft on base or final. I'd heard aircraft X's final call on climb-out from my touch and go, and expected to see it on the ground or close to it. It didn't register that it wasn't where I expected it to be.

Then I saw an aircraft just inside two miles from the threshold, and I perceived it as being the one I was following. As I passed abeam of it, I rolled into my base.

Settling into my base I did a quick scan to the right (checking for unexpected traffic on the finals vector), as aircraft Z called diverting to a location nearby.

What a clanger!

Right then the bomb dropped. It wasn't a penny or a ball, but a bloody great clanger!

Close abeam to my right was aircraft Z, and they were saying on the radio, "Can you see me now?"

I didn't have to take another look to realise the aircraft I had perceived as aircraft Z, was in fact, aircraft Y.

I affirmed I could see them, and apologised.

As they were already turning away and diverting, I continued my approach. But ultimately I had to overshoot and go around, as aircraft X was still on the runway.

The following circuit and landing were without incident.

What went wrong?

There was nothing major, but a bunch of environmental issues.

The circuit was busy, but not excessively so. It was windy, so aircraft on downwind had comparatively high ground speeds, while aircraft on finals had comparatively low ground speeds.

When two aircraft are at the same altitude, the one in front of you can be hard to spot when the aspect is tail-on against a hazy sky.

Add that they are white, and it gets worse. Strobes help, but whites tend to fade into the background – and I did not see the ones on aircraft Z, on downwind.

The biggest factor for me was the finals call from aircraft X. This was made when I was climbing out from my first touch and go, which, to me, strongly suggests it was made at, or before, three miles out.

The call was just "finals", not "long finals" or "three-mile finals", or whatever. No indication was given to provide a clue where on the finals they were, and there was no other finals call made.

I'm not blaming that pilot – the critical error was mine.

At some point, I lost track of what type of aircraft it was. I became too focused on the aircraft on finals, and assumed the one I saw was what I was following.

I failed to maintain contact with the aircraft immediately in front of me, and position myself to clearly see it throughout the leg.

I lost my situational awareness at an important time.

Aviation has a way of teaching humility – just when you think you're nailing it.

And I'm somewhat humbler now.

THE RNZAF AT UNATTENDED AERODROMES

What air force pilots want other users of unattended aerodromes to know about the way they fly.

Work together
Stay apart

Flight Lieutenant Ryan McRae is one of 17 instructors who, each year, turn about 20 zero-hour ab initio students into qualified air force pilots.

The Royal New Zealand Air Force students learn to fly on the T-6C Texan II – a high-performance training aircraft that can approach an unattended airfield at up to 240 knots.

"They can slow quite happily to 140 knots – depending on the way they're joining – but at these speeds, they can appear quite quickly at an unattended aerodrome," says Flight Lieutenant McRae. »

Photo courtesy of the RNZAF

// A NH90, one of three helicopter types flown by the NZDF.

The students fly mainly in the regions closest to Ohakea, where 14 Squadron (training) is based. But once they're being schooled in IFR, or are on navigation sorties, users of unattended aerodromes around the country can expect to be sharing airspace with the air force students.

"They'll be making standard radio calls and there'll be an instructor supervising them making sure they are accurate," says Ryan.

"But for some students, this will be their first time at an unattended aerodrome and their calls might not be 100 percent correct. There might be some corrections quickly coming in a second radio call, to make sure that everyone's up to speed with what they're doing and where they're coming from.

"We'd ask that other pilots are patient with them."

The students, as part of their training, will also fly in formation. Helpfully, their call signs can alert other pilots to this.

"Texan zero-one to Texan one-one denotes a single aircraft," says Ryan. "But 'Texan' followed by a metal – for example, gold, silver, or bronze – represents a formation."

If civilian pilots deduce there's an air force formation of Texans approaching to land, they can also anticipate the pilots might use the 'buzz and break'[1] manoeuvre.

"Even a two-ship might use this because that gets us from being a formation to being nicely sequenced and separated in the downwind to land."

Ryan says the rare student with a 'Top Gun' mentality is soon humbled by the Texan.

"It's pretty hard to jump in that aircraft and just nail it. It does have an awesome avionics suite, but there's no flight director, and there's no autopilot – it demands a lot of the pilot.

"It gets them honest pretty quick if they're inclined to a big ego."

That humility extends to courtesy in the circuit. Ryan says his student pilots have noticed, and appreciate, how often GA pilots give way to them, but he says it's important his students understand the 'rules of the road' at the unattended aerodrome.

"We definitely expect them to give way if someone else is in the circuit – they'll be happy to be number two to operators who were there first."

1 Buzz and break manoeuvre – aircraft flies at high speed to halfway down runway, then turns sharply left or right to circle back and join downwind. This rapidly reduces the aircraft's speed, without it having to fly for a long time at lowered speeds.

// The Royal New Zealand Air Force students learn to fly on the T-6C Texan II.

Photo courtesy of the RNZAF

Rotary flying at unattendeds

Once the students have qualified with Ryan, they specialise in fixed-wing flying with 42 Squadron, or in rotary-wing flying with 3 Squadron.

"The first thing to know about our rotary ops is that the way we fly cannot always be predicted," says the Commanding Officer of 3 Squadron, Wing Commander Christopher Ross.

He says while most operators will fly to an unattended aerodrome because it's their destination, or they're calling in for fuel or to carry out some other task, RNZAF helicopters may land and, perhaps inexplicably to some pilots, take off again a few moments later.

"In those circumstances, we're probably conducting a nav sortie. We're not using the aerodrome as a destination, but as a waypoint. We just want civilian pilots to be aware that we may not be on the ground for long."

The NZDF flies three types of helicopter around the country – the NH90, AgustaWestland A109, and SH-2G(I) Seasprite.

Christopher says that, at over 10 tonnes, the NH90 can create considerable wake turbulence.

"Our pilots will tell other pilots in light aircraft operating close to a medium wake turb NH90 to 'give due consideration' to how closely they follow us.

"Basically, we're saying to give it a couple of minutes, because our wake turb could have catastrophic consequences."

Christopher says that military helicopters, like civilian helicopters, may join via standard means, or in some sort of direct or abbreviated arrival.

"Helicopters don't always join a circuit, but if there's other aircraft around, they might.

"The point is, they're not altogether predictable and communications between the aircraft need to be really good."

He says air force helicopters training in low-flying areas are typically there to practise low-flying operations.

"We have dedicated low-flying areas, but we can also fly anywhere in New Zealand down to 100 feet. If we're carrying out low flying, we'll typically avoid unattended aerodromes because of possible congestion and difficulty with traffic de-confliction.

"But in a formation flying a route, we may plan to use an unattended aerodrome to land because they're big open areas (ideal for large formations), and we don't necessarily need landing consent.

"But of course, we will always consider the needs of other pilots at those aerodromes."

The importance of good comms

Christopher says ADS-B is only now being fitted across the RNZAF fleet.

"So RNZAF pilots building a mental picture rely heavily on everyone having great lookout – and other traffic making good radio calls."

He says his pilots flying IFR will do standard IFR calls but then 'translate' for VFR pilots.

"If we're inbound on an NDB, say, at Whanganui, you would hear 'Whanganui, Traffic, Warrior 06, established inbound on the NDB/DME 11'. But then we'd say, 'We're currently eight miles to the northwest descending through 2400, tracking towards the aerodrome', and that way, those unattended aerodrome folks who are VFR go, 'Sweet, I know where they are'."

Christopher says, because the helicopters are not that predictable, a civilian pilot who's unsure about what they're doing, or about to do, "can just ask, in plain language".

"And we'll answer in plain language right back. That's much better than everyone assuming they know what's happening".

Something the RNZAF pilots have in common with just about every other pilot in the country is being disconcerted by locals using informal reporting points.

"'Overhead Dave's shed' gets you hunting on the VNC with that feeling, 'I have no idea where that is'. It's potentially a really dangerous distraction," says Christopher.

"A further issue for us is that our radios are really good quality, and we can be in the Hawke's Bay but picking up calls from the West Coast.

// An issue for us is that our radios are really good quality, and we can be in the Hawke's Bay but picking up calls from the West Coast. //

"If pilots don't start with, for instance, 'Buller Traffic', we have no idea where they are. When they say, 'Charlie Bravo Delta, Bob's shed, 3000', we don't know that they're, firstly, using an informal VRP, and secondly, are literally hundreds of miles away.

"So complete information in a radio call, including location, is really important to us.

"In that way, we're really no different to civilian pilots."

// FLIGHTADVISORNZ.IO

Flight Advisor is a free online tool designed to reduce the risk of mid-air collisions and/or collisions with hazards at low level.

Those hazards include fixed obstacles, or aircraft that have indicated they plan to operate in the same area at the same time.

It displays, in near-real time, locations of hazards reported by users, and intended flight operating areas of users, altitudes, and routes – so other pilots can log in to identify any areas of conflict – before flying."

An example: An RNZAF Texan crew uploads a low-level navigation route, and finds it will potentially conflict with a low-level agricultural operation happening in the same area at the same time.

That gives the air force crew the opportunity to modify their route to avoid that area, or change the flight timing so the risk is removed.

NEW RADAR FOR AIR TRAFFIC CONTROL

// **By Phil Rakena** Operations Development Specialist, ATS Future Services, Airways New Zealand

The next generation of surveillance technology

Pilots flying into Christchurch aerodrome may have spotted a new radar tower or noticed radar outage NOTAMs. It's all part of the next generation of surveillance technology for air traffic control.

The two arrays on top of the tower are for new Secondary Surveillance Radar (SSR) and Primary Surveillance Radar (PSR) systems, due to begin operating this year. They're being configured over the first half of 2024, and you may see related NOTAMs and AIP Supplements on PSR outages.

// Phil Rakena

// At Christchurch aerodrome, the new Indra radar sits atop the right-hand tower, with Secondary Surveillance Radar (SSR) antenna above the Primary Surveillance Radar (PSR). The left-hand tower houses the existing Thales PSR. An existing Thales SSR is located at Cass Peak in the Port Hills.

SSR is now a contingency for Airways New Zealand's main surveillance technology, Automatic Dependent Surveillance-Broadcast (ADS-B). SSR ensures resilient surveillance coverage between Auckland, Wellington, and Christchurch.

PSR provides a safety net in high-density airspace, enabling air traffic controllers to identify aircraft without a transponder.

Air Traffic Services (ATS) staff use PSR to assist an aircraft which has suffered a transponder or GNSS (global navigation satellite system) equipment failure, or been given special permission to operate without a transponder. They may also use PSR to identify an aircraft without a transponder, which has entered controlled airspace without authorisation.

The new PSR and SSR systems from supplier Indra are an upgrade that will replace the existing Thales radars, which have given excellent service but are nearing the end of their lives.

Christchurch, Wellington, Auckland

Christchurch is the first centre to have new PSR and SSR systems installed. These are located together on an 18-metre tower slightly west of the old PSR, and they are now being readied for operation. Planning is under way for the installations in Wellington and Auckland.

The new PSR system will increase radar range from 80NM to 120NM. With a 50% increase in range, the coverage area will more than double.

The new SSR system will provide contingency surveillance for flights around Auckland, Wellington, and Christchurch in the unlikely event of an ADS-B or GNSS outage.

Unlike Christchurch's current Thales SSR at Cass Peak in the Port Hills, the new Indra radar will not require the protection of a radome, a golf ball-like cover. The new system is rated for winds of up to 200kph, and is well clear of the sea and corrosive salt air.

Expect the new, co-located PSR and SSR systems to be operational at Christchurch aerodrome by mid-2024, with the PSR-SSR systems at Hawkins Hill in Wellington being operational in early 2025. In 2026, the new PSR-SSR will be operational at Rua-ō-te-Whenua in Auckland's Waitākere Ranges, replacing the PSR at Auckland aerodrome.

// The new PSR system will increase radar range from 80NM to 120NM. With a 50% increase in range, the coverage area will more than double. //

Keep your eyes peeled

Keep an eye out for AIP Supplements and NOTAMs, with more information about surveillance outages to allow the safe installation and testing of the new systems.

Once they're operational, updated surveillance coverage maps will be published in the *Aeronautical Information Publication New Zealand* (AIPNZ).

// MORE INFORMATION

Automatic Dependent Surveillance-Broadcast (ADS-B): Air traffic surveillance includes position information based on the global navigation satellite system (GNSS). It has increased surveillance coverage by 40 percent across the country since 31 December 2022, when ADS-B OUT equipment became mandatory for aircraft operating in domestic controlled airspace.

Primary Surveillance Radar (PSR) was developed during World War II, and relies on transmissions reflecting off the body of an aircraft. The antenna position and time taken for a **RA**dio signal to return from a target is used to determine aircraft **D**irection **A**nd **R**ange (RADAR). The Indra PSR relies on the same basic principles, but uses advanced beam steering technology and digital processing to optimise radar performance for the surrounding environment.

Secondary Surveillance Radar (SSR) arrived in the 1990s and provides line-of-sight coverage out to 250NM. It doesn't rely on reflected signals – instead, an aircraft transponder sends a signal that includes a discrete code and altitude. In the case of Enhanced Mode-S, it can also provide data including aircraft heading, airspeed, and pilot-selected altitude.

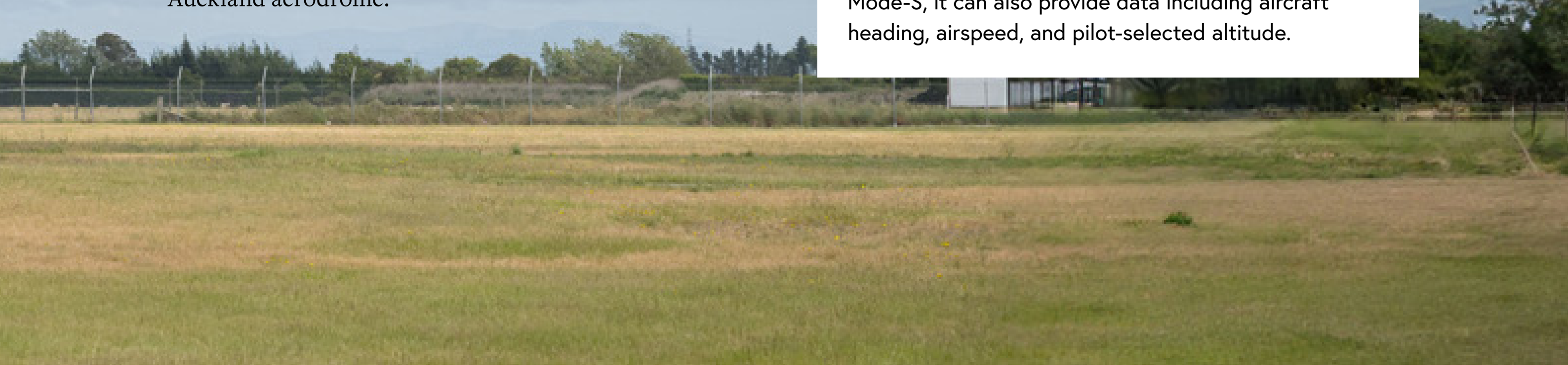


Photo courtesy of Airways New Zealand and Neil Macbeth

RISKY BUSINESS

Preflight risk assessments can unlock communication and help create a strong safety culture. But you might have to overcome initial cynicism.

"This is bollocks!"

The pilot rounded on the preflight assessment trainer, cheeks flushed with indignation, nose wrinkled with disdain. "I've been managing risk for 20,000 hours without this!"

The trainer in question was Scott McKenzie, Chair of the New Zealand Helicopter Association, aviation consultant, and pilot.

"I get it," Scott says now. "In fact, at one time, when I was in the air force and preflight risk assessments were being introduced, I was not far off having that attitude. I'm a complete convert now, but it can take a while to bed in."

Scott's patience with this particular pilot paid off, but it was the feedback from the rest of the flight crew that was the most telling.

"They really liked the introduction of the preflight risk assessment, because it required the pilot to communicate more clearly and provide relevant context.

"If the crew could see weather deteriorating, they could specifically ask, 'What would this do to our risk assessment?'"

Photo: CAA

Once mitigations are in place for the riskiest elements, the amended score will help you decide whether the flight should go ahead.

What's the point of a preflight risk assessment?

The goal of the preflight risk assessment is simple, Scott explains.

"It helps pilots and crews to evaluate the relevant variables that could increase the likelihood of an accident. It helps them form a plan, allowing a flight to be completed even with many hazards, but with mitigations that reduce risk to acceptable levels. Or, it helps them say no, with sound reasoning."

There's a bunch of benefits that come with an effective preflight risk assessment process, Scott says.

"It provides a clear and consistent framework for decision-making, both before the flight, and if the situation changes during the flight.

"The process promotes good communication. It enables the flight crew to methodically consider the flight risks, and – more importantly – to make the information and situation visible to everyone.

"The assessment also helps determine when decisions need to be escalated, how, and to whom. It shares the risk and helps determine the level of risk the company is prepared to take.

"For example, there can be a lot of commercial pressure. A pilot may want to please the client and the company, and is task-focused, wanting to get things done. This possibly leads to them taking more risks than the company is willing to accept.

"Preflight risk assessments, when done properly, put checks and balances in place to prevent this."

How to...

If you're looking to introduce preflight risk assessments, or improve on your existing process, Scott's advice is that it doesn't have to be a large and overwhelming task.

"There are a range of different tools you can use. These include the Flight Risk Assessment Tool (FRAT), the Operational Risk Assessment (ORA), and the Personal Flight Risk Assessment Tool (PFRA). They all have the same aim of assessing and mitigating risk effectively and promptly.

"Available in paper and electronic formats, the tools walk you through some simple questions and the risk is assessed against a score.

"Once mitigations are in place for the riskiest elements, the amended score will help you decide whether the flight should go ahead."

Scott suggests you pick an example tool that suits you best. Set it up for your specific operations (for example, mountains versus coastal, tourism versus agricultural).

"Setting your risk levels in the first place is vital to making the assessment practical and effective.

"For commercial operators, this includes considering the risks you're prepared to accept as a company, and what risks you're happy for your pilots to take. Does that alter based on their experience?"

Then, simply start using your process. The system will work well only if you're honest with yourself and your company, stick to the parameters set, and report when needed.

You can keep improving the process until you feel any glitches are ironed out.

Lachie Johnston, Staff Officer Rotary Wing in the Royal New Zealand Air Force, is another keen proponent of preflight risk assessments.

"It's a leadership exercise," he suggests. "The greatest success comes from people seeing leaders make proactive use of these tools."

He adds that, while senior pilots and instructors are essential role models, "there's nothing to stop any pilot using these tools on a personal level." »

Confidence to say 'no'

Crucially, the preflight risk assessment helps pilots learn to say no.

"It can be really hard to say no in some environments, because it has implications for your revenue. However, it costs hundreds of thousands, if not millions, of dollars to have an accident. And it costs lives," says Scott.

So how can a preflight risk assessment, which is often just one sheet of paper, be so transformative?

Scott says the assessment helps to put a 'score' on risks, which in turn sets thresholds for how the flight will be done, if you need senior person approval, or if the flight will be postponed or cancelled.

"Factors that might influence the risk include the forecast visibility, complexity such as multiple aircraft in the mix, a flight going a long distance offshore, likely high-density altitude conditions, or no standard operating procedure in place for a particular activity.

"Preflight risk assessments can also set thresholds whereby a flight will simply not happen. This could include, for example, deteriorating weather or the pilot's last 'flight on type' being more than two or three months before.

"Other benefits of preflight risk assessments can be as simple as enabling busy people to make good decisions in tight timeframes.

"Let's say I'm chief pilot, but I'm away on a course tomorrow, so you're the pilot.

"We've talked about how you're going to manage the flight, but the next day the weather is worse than expected.

Photo: CAA

// The Twin Cessna Flyer risk assessment tool.

"Although I'm busy on my course, I'm up to speed with the preflight risk assessment, so you text or call me and I can provide advice quickly.

"So when people have a lot on, managing lots of things, the preflight risk assessment helps to keep up the communication when necessary."

Everyone needs to do it

Preflight risk assessments are relevant in all aviation settings, Scott emphasises, without exception. In every circumstance, risks need to be weighed up and mitigated.

Scott says the assessment might well be 'just a piece of paper', but that's the point – it's an easy and effective tool that sets a framework for consistently and effectively assessing and responding to risk in real time.

// It can be really hard to say no in some environments, because it has implications for your revenue. However, it costs hundreds of thousands, if not millions, of dollars to have an accident. And it costs lives. //

LETTERS TO *VECTOR*

Bird strike surprise

When reading a recent issue of *Vector*, I recalled a bird strike incident from my past that I think is worth relating.

At the time of this incident, I was flying a Puma helicopter from a base in Papua New Guinea, supporting a Parker Oil drilling rig. It was about 11.30am, and operations had called through that the road had collapsed due to heavy rain, and some trucks had been delayed.

We were needed to fly up to the Tari Gap, and pick up a load of explosives from a lorry which was delayed there.

It wasn't a long trip, so I thought half a tank of fuel would do. My co-pilot for the day was the late Ian Washer.

We eventually found the truck at the top of the pass, which is about 9000 feet. There's an area cleared there for graders etc, so there was no problem landing. No longline that day, due to the weather.

We shut down, secured the blades, and slid the side doors open. The truck was backed up, and the operators manhandled 2.5 tonnes of explosives into the helicopter.

The weather was light drizzle, and cloud hanging around in valleys and on some of the ridges. Ian prepared for liftoff, and I gave him the thumbs up. The power came in, we got airborne, and were sneaking down the hillside.

We had just achieved transition speed, when, 'nek minnit' we heard a whump! What the hell?! Two pairs of eyes checked Ts and Ps – all green. Ian had let the speed drop off, so we recovered that.

Where the hell was all the cold air coming from? The bloody paperwork, flight log, maps and so on, were being blown all around the cockpit.

On closer inspection, I saw that the helicopter's lower chin bubble had disappeared, and there were all these pretty blue and green feathers drifting around the cockpit. The missing chin bubble sat just in front of my feet. We composed ourselves a bit, and I paid a bit more attention to our problem.

I reached down below my seat, and felt a soft sticky substance jammed there. I grabbed hold of it, and retrieved something that looked like a supermarket chicken without the plastic wrapping. I pulled it out from beneath my seat, and on closer inspection it did indeed seem to be a chicken – but that couldn't be! Then I saw the head of a pigeon attached to the rest of the body.

It looked as though it had smashed through the bubble, hit the cyclic on the way past, and got jammed under my seat. I was very grateful it hit the cyclic first, as it was lined up just where my legs are joined.

The most surprising thing was that the helicopter company could supply a replacement chin bubble that afternoon and it was fitted that evening!

No, pigeon was not on the menu that night.

Ross G

Photo: iStock.com/tvtveu

// LETTERS CONTINUED...

Accuracy of weather forecasts

A comment in the recent special edition of *Vector,* from Mark Woodhouse, was noteworthy when he stated that, "I've always felt that flying instructors would do well to take their students out in marginal conditions to demonstrate the true application of such decision-making". He was referring to making 'no go' or 'turn back' decisions when the weather changes during a flight. I would have to say, from past experience, I know that some flying instructors did not do this. Worse, some did not seem to have very extensive knowledge of meteorology.

It was also good to see in the special edition at least one reference to the fact that, on occasion, forecasts can be wrong. This provides a good balance between the explanation by Ashlee Parkes about how forecasters handle the models, compare real-time obs, and use their knowledge about terrain and local effects to compile a forecast. So, in spite of all this effort, which is great, forecasts can still occasionally fail.

At a safety seminar some years ago, some pilots asked why the forecast cloud heights were not always accurate. Examples were given of a forecast base of, say, 1500ft, but the base was found to be 1300ft when in flight. Another example was a forecast base of 900ft, then found to be 650ft. The forecaster at the time said that a margin should be considered when planning a flight, as the forecast base was either the most likely expected, or was the middle of an acceptable forecast range. They quoted the ICAO Annex 3 Operationally Desirable Accuracy of Forecasts.

I guess what the pilots were saying was that some of them, at least, expected the cloud base to be exactly at the heights forecast.

Keith Mackersy
Paraparaumu

Passing on the lessons

What a great issue the special *Vector* is.

Mark Woodhouse's comment about taking students out in marginal conditions particularly resonated with me.

As a student many years ago, I flew with a young air force flight engineer and club instructor, now safety investigator, Colin Grounsell. He took me out the back of Whenuapai in an old club Airtourer for some hands-on bad weather flying.

It made a lasting impression on me, but I was reassured by Colin's calm and competent manner in conditions I thought were terrible. Although well beyond my capabilities at the time, the weather was well within his. It's a lesson I've passed on since as a Part 104 instructor, and I agree it's an invaluable experience for a student early in their training.

John O'Hara
Auckland

// DEAR *VECTOR*...

Letters from *Vector* readers on aviation safety are welcome. Email **education@caa.govt.nz**.
We may edit or shorten letters, or decide not to publish.

OCCURRENCES DASHBOARD

These are the number and type of occurrences reported to the CAA, 1 October 2023 to 31 December 2023.

	Occurrence type
58	**Aerodrome incident**
15	**Aircraft accident**
507	**Airspace incident**
344	**Aviation-related concern**
559	**Bird strike**
13	**Dangerous goods occurrence**
226	**Defect**
10	**Hang glider accident** 5 Hang glider, 5 Paraglider
22	**Navigation installation occurrence** (for example, a transmitter failure)
764	**Operational incident** (for example, encountering severe icing)
6	**Parachute accident**
6	**Promulgated information occurrence** (for example, inaccurate weather information)
2530	**Total occurrences**

AIRSPACE OCCURRENCE

Airspace occurrences can be read on the CAA website, **aviation.govt.nz** > **safety** > **airspace occurrence briefs**.

Date:	26 August 2023
Time:	14:14 NZST
Location:	Masterton
Airspace:	Class G
Nature of flight:	Private operations – sport

An aircraft was conducting 'glide approach' circuits on the grass runway, when it appeared ahead and to the right of another aircraft that had joined overhead, and was on short final for the adjoining sealed runway. Both aircraft landed safely on their respective runways.

Investigation revealed that both aircraft were making appropriate radio calls, and both pilots were aware of each other from radio calls approximately five minutes before the incident.

However, no radio calls were heard from the aircraft conducting glide approaches after that time, although it was seen to be on short final by the crew of the joining aircraft when it was downwind.

It was later found that an intermittent wiring fault in the aircraft's comms system during the flight likely caused the loss of comms. The fault has since been repaired.

The operator has also reminded all its pilots of the importance of thorough lookout for all traffic, especially as this aerodrome has NORDO operations at times.

CAA occurrence number 23/6154

AVIATION SAFETY ADVISORS

Contact our aviation safety advisors for information and advice. They regularly travel around the country to keep in touch with the aviation community.

Carlton Campbell – Operations, South Island
027 242 9673 / carlton.campbell@caa.govt.nz

Richard Lane – Maintenance, South Island
027 296 5796 / richard.lane@caa.govt.nz

Pete Gordon – Operations, North Island
027 839 0708 / peter.gordon@caa.govt.nz

John Keyzer – Maintenance, North Island
027 213 0507 / john.keyzer@caa.govt.nz

CORRECTION

In our recent special issue of *Vector*, we included a small section in the article "Stuck in the middle with you" about decoding a GRAFOR. The text read "The meteorologist is expecting prevailing cloud conditions of broken cloud (5-7 eighths of the sky covered), with bases between 1500ft to 2500ft above ground level." This text should read "…2500ft **above mean sea level.**"

ACCIDENT BRIEFS

More accident briefs can be seen on the CAA website, **aviation.govt.nz > safety > aircraft accident briefs**. Some accidents are investigated by the Transport Accident Investigation Commission, **taic.org.nz**.

McDonnell Douglas 500N

Date and time:	02-Mar-2023 at 14:22
Location:	Livingstone
Damage:	Destroyed
Nature of flight:	Agricultural
Pilot licence:	Private Pilot Licence (Helicopter)
Age:	31 yrs
Flying hours (total):	3900
Flying hours (on type):	1600
Last 90 days:	169

During agricultural operations, a partial engine power loss occurred with the N1 dropping to approximately 65%. The pilot immediately jettisoned the fertiliser bucket and attempted an autorotation landing. The helicopter landed heavily and sustained significant damage. The pilot suffered minor cuts and bruises and was taken to hospital for a checkup.

During the initial maintenance investigation, a thorough examination of the helicopter fuel system was carried out, with no defects found. The engine was then removed and sent to Asia Pacific Aerospace in Brisbane where it was examined and stripped down into its component parts, under the supervision of investigators from Rolls-Royce, MD and CAANZ.

Significant damage was noted to the first four compressor stages. However, this was assessed as occurring as a result of the accident. All engine components were rig-tested and found to be serviceable, in accordance with the appropriate in-service limits.

No root cause was found that could have resulted in the partial engine power loss experienced by the pilot.

CAA occurrence number 23/1384

Cessna 177B

Date and time:	07-Jul-2023 at 12:30
Location:	Ranfurly
POB:	1
Nature of flight:	Agricultural
Pilot licence:	Private Pilot Licence (Aeroplane)
Age:	75 yrs

On landing, the stopping distance was increased by a combination of a frosty grass surface, the undulation of the runway surface causing the aircraft to momentarily become airborne (bouncing out of a hollow), and landing slightly later than intended, due to the aircraft's speed.

These factors led to a runway excursion through the fence at the end of the runway, resulting in a prop strike, damage to the horizontal and vertical stabilisers, and to the rear section of the tail due to contact with one of the fence posts.

The pilot acknowledged that going around early in the landing sequence would have been the correct action.

CAA occurrence number 23/4755

De Havilland DH 82A Tiger Moth

Date and time:	19-Feb-2023 at 13:25
Location:	Masterton
POB:	2
Damage:	Nil
Nature of flight:	Private other

During the engine cold start procedure, the propeller was being positioned for the starting swing after the priming sequence, when the engine fired, rotating the propeller three revolutions.

This resulted in the propeller striking the person who was rotating the propeller, on their left forearm, causing a deep laceration and suspected broken bone. They were taken to hospital where an x-ray revealed the arm was not actually broken, however, the lacerations required minor surgery.

During the maintenance investigation, an electrical check of the magneto switch leads was carried out and it was found that when the magneto switches were in the OFF position, there were 600 Ohms to earth. There should be no resistance (zero Ohms) with the magneto switches in the OFF position.

Further investigation found that the magneto earth brush spring was broken, allowing the carbon brush to intermittingly contact the earth ring on the magneto, making the magneto 'live'.

The carbon brush and spring assembly were replaced. An engine ground run was carried out with a 'dead cut' with the magneto switches in the OFF position.

CAA occurrence number 23/1135

ACCIDENT NOTIFICATION
24-hour 7-day toll-free telephone
0508 ACCIDENT (0508 222 433)
aviation.govt.nz/report

GA DEFECTS

GA defect reports relate only to aircraft of maximum certificated take-off weight of 9000 lb (4082 kg) or less. More GA defect reports can be seen on the CAA website, **aviation.govt.nz > aircraft > GA defect reports.**

KEY TO ABBREVIATIONS:

AD = airworthiness directive
NDT = non-destructive testing
P/N = part number
SB = service bulletin
TIS = time in service
TSI = time since installation
TSO = time since overhaul
TTIS = total time in service

Piper PA-23-250

Landing gear actuator

Part manufacturer:	Piper Aircraft Co.
Part number:	31870-00
ATA chapter:	3200
TSI hours:	51
TTIS hours:	12979

After take-off, the pilot selected landing gear up and then observed that the nose gear had failed to retract. The pilot was able to manually pump the gear up and continued IFR to the destination. Once established inbound on the approach, the gear was selected gear down, however, there was no 'three green' indication. After becoming visual, the pilot orbited and was able to manually pump and lock the gear down. A local standby was issued and the aircraft landed without further problems.

The maintenance investigation found that the left-hand main landing gear actuator was leaking hydraulic fluid, causing a reduction in hydraulic system pressure, which affected normal gear operation.

CAA occurrence number 23/5217

Airbus Helicopters AS350 BA

Part manufacturer:	Airbus
Part number:	350A37150803

The pilot reported main rotor vibrations increasing in flight. On inspection of the main rotor head, one lower main rotor pitch link rod end was found to have failed. The engineer noted that the pitch link rod end components were held together by a rivet/pin. The rivet/pin had sheared, causing the outer race to unwind in flight, resulting in excessive play in the ball end. It was also noted that the later model P/N rod ends have an improved design which prevents this issue. A thorough inspection of the main rotor head was carried out. The main rotor pitch link rod end was replaced, and main rotor track and balance was performed.

CAA occurrence number 23/6574

Tecnam P2008 JC

Rotax engine

Part model:	912S2
Part manufacturer:	Rotax
ATA chapter:	7330

After take-off at approximately 400ft AGL, the pilot noted a drop of approximately 150-200RPM. A precautionary landing was carried out back onto the aerodrome.

After landing, the pilot carried out an engine ground run with the engine developing full static RPM. A maintenance inspection was then carried out, but no defect found. Carburettor icing was suspected as the ambient conditions on the day were conducive to carb ice formation.

The Rotax 912 engines that are fitted with a carb heat system on certified aircraft, like this one, are more susceptible to carb ice formation, as the engine intake air is taken from outside the engine compartment. This differs from other models (microlight category aircraft) where the engine intake air is taken from within the engine compartment, and is warmer than the ambient air.

Following on from this occurrence and other carb icing events, the training organisation involved has created a student training course regarding carb ice and the correct actions to take when carb icing is suspected. It's also planning on fitting the Rotax-engined aircraft with an Eccleston Aviation carb heat system as a preventative measure. That system uses engine coolant to warm the carb body to prevent ice formation.

CAA occurrence number 23/3035

REPORT SAFETY AND SECURITY CONCERNS

Available office hours (voicemail after hours)

0508 4 SAFETY (0508 472 338)

isi@caa.govt.nz

For all aviation-related safety and security concerns.

SHOW YOUR COMMITMENT TO *WORK TOGETHER, STAY APART*

Since launching our *Work Together, Stay Apart* campaign in June 2023, we've been encouraged by the response. It shows there are many in the sector committed to increasing safety at unattended aerodromes. To acknowledge that, we've established a Statement of Commitment for individuals and organisations across the general aviation sector to sign.

Statement of Commitment

All participants who operate at and from unattended aerodromes, and those who influence those operations, have a role to play in working together and staying apart to reduce the likelihood of mid-air accidents and the number of near-collision and air proximity events within the circuit.

Signatories of this document state their commitment to:

- adopt the recommendations of the *Work Together, Stay Apart* safety campaign by modelling best practice when operating from unattended aerodromes
- raise awareness of the safety campaign, and its resulting resources and events
- participate in opportunities to learn and engage with others in the aviation sector.

In addition, signatory organisations commit to:

- publicly endorsing the *Work Together, Stay Apart* safety campaign
- enabling their members, employees, students, trainees, and volunteers to participate in opportunities arising from the safety campaign
- providing training opportunities for their people.

Photo: CAA

Visit our website to sign the statement, and to see the list of signatories.

CAA CIVIL AVIATION AUTHORITY OF NEW ZEALAND Te Mana Rererangi Tūmatanui o Aotearoa

Work together Stay apart