

Controlled Aerodrome Operations



Understanding the operational dynamics of a busy controlled aerodrome is the key to maintaining an efficient and safe traffic flow. This means knowing what types of clearances and instructions to expect for a particular situation, being able to comply with them quickly, and always maintaining good situational awareness.

This article looks at the different types of separations that controllers can apply to your aircraft (both in the air and on the ground), gives examples of the clearances and instructions that controllers are likely to issue to achieve those separations, and discusses some pilot considerations that will help make flying in to and out of controlled aerodromes a little less stressful (and more safer) for all concerned.

Aerodrome Control

Air traffic control (ATC) is established at most busy aerodromes where medium or large passenger aircraft operate. Aerodrome control is provided from a control tower, which allows aerodrome controllers to have views of the aerodrome apron, taxiways, runways, and the aerodrome traffic circuit.

The purpose of an aerodrome control service is to provide ATC clearances, instructions, and information, for the purpose of preventing collisions between aircraft in the air and between aircraft and/or other entities on the ground. This does not mean, though, that ATC has all the responsibility in terms of preventing collisions. It is often shared between the pilot and ATC, depending on whether the flight is VFR or IFR, the type of airspace involved, and the meteorological conditions at the time.

There are at present 17 aerodromes around the country with control towers, although this number may change with the changing air traffic patterns in

New Zealand. Milford Sound aerodrome is not controlled but has an aerodrome flight information service (AFIS) that provides flight information (traffic and weather information for example) and an alerting service.

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Approach Control

Approach control is provided in order to separate and sequence arriving and departing IFR flights at aerodromes where traffic density dictates it is necessary. This may be done from the control tower concerned, or by radar controllers located at the Air Traffic Control Centre in Christchurch in cooperation with aerodrome controllers.

Control Zones

All controlled aerodromes have a control zone established around them to protect aerodrome traffic, unless an ATC service is not being provided at the time, in which case the control zone will revert to uncontrolled airspace.

Some control zones have VFR transit lanes that, as the name suggests, are designed for VFR aircraft to transit without having to call ATC and get an ATC clearance. These transit lanes are class G (uncontrolled airspace) **during daylight hours only**, and at night they revert back to controlled airspace. Many of these VFR transit lanes are located under the approach path for IFR aircraft, so it is always a good idea to ensure your transponder is switched on.

IFR aircraft are always separated from each other when within a control zone. VFR aircraft, on the other hand, are **not** separated from each other when within a control zone. Pilots of VFR aircraft should be aware that by day they will be separated from IFR aircraft **only** when within class C airspace (airspace established around major aerodromes) and not when within class D airspace. VFR pilots will, however, be provided with traffic information about other VFR or IFR aircraft when within class D airspace. This assists in the maintenance of orderly traffic flows and ensures safe separation standards. Refer to the “New Zealand Airspace Classifications” poster for further information.

Runway Separation Standards

At busy controlled aerodromes, runway occupancy is one of the main factors that affect aerodrome capacity. Air traffic controllers try to improve runway utilisation by issuing ATC clearances with efficiency in mind. For these to be effective, pilots need to have a basic understanding of the separation being applied and any restrictions imposed by ATC. Let's look briefly at examples of what types of separation might be applied by ATC at a controlled aerodrome.

- **Runway separation.** As a broad term, a standard runway separation requires that only one aircraft occupy the runway at a time. This means that the preceding aircraft must either have passed the runway end, have commenced a turn after takeoff, or have cleared off the active runway on the ground.
- **Reduced runway separation.** This applies in visual meteorological conditions (VMC) by day only, and it varies with aircraft size. As a general guide, 1,000 metres between aircraft

of 7,000 kg or less, and 600 metres between aircraft of 2,300 kg or less.

- **Parallel runway separation.** This is dependent on parallel runway spacing and the size of the aircraft using each runway. A good example of where parallel runway separations are often applied is to traffic in the western grass circuit at Christchurch.
- **Wake turbulence separation.** This is necessary, for safety reasons, to provide a specified time period (normally two or three minutes) between aircraft in different wake turbulence categories.
- **Crossing runway separation.** This requires an aircraft to either stop short, or pass clear, of a crossing runway about to be occupied by another aircraft.

These examples do not detail all the permutations, so familiarise yourself with the separation standards contained in the “Operations Section” of the NZAIP *Planning Manual*.

ATC Clearances and Instructions

ATC clearances, and ATC instructions (such as taxiing route or circuit joining requirements), may contain special requirements in order to help achieve the safe and orderly flow of aircraft. Pilots must ensure that they either comply with these requirements or advise ATC **immediately** if they cannot comply for a particular reason (remember that controllers may not be aware of your particular circumstances or experience level). An alternative clearance will usually then be issued.

Examples of conditions that are attached to a clearance or instruction are shown underlined in the following example transmissions:

“GIVE WAY TO THE ATR 72 ON YOUR RIGHT, TAXI TO THE HOLDING POINT RUNWAY 34”

“BEHIND THE TOMAHAWK ON FINAL, LINE UP BEHIND AND WAIT RUNWAY 34”

“JOIN DOWNWIND RIGHTHAND RUNWAY 34, NUMBER TWO TO THE METRO AT SOMES”

“MAINTAIN RUNWAY HEADING, CLEARED FOR TAKE OFF”

Aerodrome controllers may include information with a takeoff or landing clearance to advise a pilot that a preceding aircraft is not yet clear of the runway at that time. Anticipated takeoff or landing clearances, like reduced runway separations, are issued in VMC by **day only**. The controller, however, is still responsible for applying normal runway separations in these circumstances. Pilots should therefore



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note the information provided by the controller and carefully monitor the progress of the aircraft or vehicle ahead, just in case it does not clear the runway as expected.

Examples of anticipated or ‘qualified’ ATC clearances are underlined in the following example transmissions:

“CHEROKEE VACATING RUNWAY LEFT, CLEARED TO LAND RUNWAY 02”

“CHEROKEE DEPARTING AND TURNING LEFT, CLEARED FOR TAKEOFF RUNWAY 02”

Pilot Considerations

Consider the following points in relation to operating at a controlled aerodrome.

- Familiarise yourself well beforehand with the control zone boundaries, the reporting points on the VTC, and the applicable aerodrome procedures in the VFG. Remember to ensure that you always carry up-to-date charts and VFG – Part 91 of the Civil Aviation Rules requires this.
- Always plan ahead, and listen to the ATIS for aerodrome information. Keep the controller informed of your preferences, and make any requests clear and concise.

- Listen carefully to the ATC clearances and instructions you are given. Write them down if necessary. If you are unable to comply with a clearance, tell the controller why and without delay.
- Read back all ATC clearances and instructions verbatim, and comply with the requirements as appropriate without delay (especially when cleared for an immediate takeoff). Do not read back a clearance that you do not fully understand – ask for further clarification.

- Listen to the radio dialogue between ATC and other aircraft in the vicinity of the aerodrome so as to form a mental picture of where you fit into the traffic flow, and what type of ATC clearance or instruction you are likely to be issued. Maintaining situational awareness is always the key.

- Finally, remember that as pilot in command it is your responsibility to go around off an approach or to abort a takeoff if you know that you

will be unable to comply with the conditions associated with an ATC clearance.

Pilots who are unfamiliar with normal controlled aerodrome radio phraseologies should acquaint themselves with the RTF examples in the “Operations Section” of the NZAIP *Planning Manual*. It is critical that these standard phraseologies are understood and used whenever possible.

Summary

Understanding how your aircraft fits into the dynamics of the traffic flow at a busy controlled aerodrome, and knowing what ATC clearances and instructions you are likely to receive, all helps to maximise traffic flow efficiency and improve aerodrome safety. The information and considerations detailed in this article should help in this regard.

Even if you are an experienced pilot, consider visiting your local tower to gain a different perspective and meet the people behind the voices. Never stay silent if you need assistance – even if you are outside controlled airspace. Fortune tends to favour the brave who speak up! ■