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A pilot's guide to staying safe in the vicinity of non-towered aerodromes



Australia's national transport safety investigator

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Summary

Most aerodromes in Australia are located in uncontrolled airspace and consequently do not have an air traffic control presence. At and around non-towered aerodromes, pilots are responsible for making themselves aware of nearby aircraft and maintaining separation. This report aims to provide pilots with an appreciation of the types of safety events that are associated with operations at non-towered aerodromes, and provide education on expected behaviours to assist pilots in being prepared for the risks.

Generally, operations at non-towered aerodromes can be considered to be safe, but this relies on all pilots maintaining awareness of their surroundings and of other aircraft, and on flying in compliance with procedures, while being observant, courteous and cooperative. Most of the 709 airspace-related safety occurrences reported to the ATSB between 2003 and 2008 at, or in the vicinity of non-towered aerodromes, were incidents, but they also included 60 serious incidents and six accidents (mid-air and ground collisions).

Most of the occurrences involved conflicts between aircraft, or between aircraft and ground vehicles. A large number of these involved separation issues, ineffective communication between pilots operating in close proximity, the incorrect assessment of other aircraft's positions and intentions, relying on the radio as a substitute for an effective visual lookout, or a failure to follow published procedures.

This report looked only at incidents and accidents prior to the introduction of changes by the Civil Aviation Safety Authority (CASA) to Civil Aviation Regulation (CAR) 166 on 3 June 2010, which affected procedures at all non-towered (non-controlled) aerodromes. Although the CAR 166 changes may in time be shown to reduce incidents and accidents, a number of issues highlighted by the occurrences documented in this report persist at non-towered aerodromes which pilots can easily address.

This guide has been released in association with a more detailed and larger report (AO-2008-044(2)) into non-towered aerodrome operations, which can be found at www.atsb.gov.au.

Introduction

Due to the dispersed nature of Australia's population, most aerodromes in Australia are located in uncontrolled airspace, and consequently do not have a permanent air traffic control presence. These are known as non-towered aerodromes. In the vicinity of these aerodromes, pilots are responsible for making themselves aware of other nearby aircraft and for maintaining separation.

Aircraft are *in the vicinity* of a non-towered aerodrome if they are in uncontrolled airspace, within a horizontal distance of 10 NM (18.5 km) from the aerodrome and at a height that could conflict with operations at a non-towered aerodrome.

Challenges

Operations at non-towered aerodromes can present many challenges to the pilots who use them or fly in their vicinity. These can include:

- » different operating procedures that are specific to non-towered aerodromes
- » fitting into the circuit traffic
- » communicating with other aircraft to arrange separation
- » a mixture of aircraft types, performance levels, and operation types
- » dealing with threats and hazards that may be encountered, such as unannounced traffic, or unexpected manoeuvres by nearby aircraft.

Mixed usage

Non-towered aerodromes can have a mix of passenger-carrying aircraft, instrument (IFR) or visual (VFR) flight rules aircraft, smaller general aviation aircraft or amateur-built aircraft, agricultural or military aircraft, helicopters, balloons, and gliders all operating at any one time.

Traffic density

Some non-towered aerodromes are busier than others. For example, Broome (WA), Kununurra (WA), Wagga Wagga (NSW), Wollongong (NSW), Toowoomba (Qld), Horn Island (Qld), Bathurst (NSW), Geraldton (WA), and Port Macquarie (NSW) aerodromes all have over 20,000 movements per year. At some of these (and many other) non-towered aerodromes, there are a significant number of passenger transport flights utilising large jet and turboprop aircraft, as well as recreational and general aviation aircraft.



Mangalore Aerodrome, Vic.

Source: courtesy of Phil Vabre

Rules for operating in the vicinity of non-towered aerodromes

Safe operation at any aerodrome requires pilots to use good judgement and to follow Civil Aviation Safety Authority (CASA) rules and procedures. At non-towered aerodromes, Civil Aviation Regulation (CAR) 166 provides the rules that pilots need to operate by.

On 3 June 2010, CASA made changes to CAR 166. One of the major changes was that all aircraft operating into all registered, certificated, military, and other specified non-towered aerodromes now require a radio to be carried and used. Pilots must now also be appropriately trained to use their radio equipment and appropriately licensed by CASA.

Two important Civil Aviation Advisory Publications (CAAPs) have also been released by CASA to support the CAR 166 changes and reinforce safe flying practices in the vicinity of non-towered aerodromes. All pilots who use non-towered aerodromes should read the following CAAPs:

- » CAAP 166-1(0) *Operations in the vicinity of non-towered (non-controlled) aerodromes*
- » CAAP 166-2(0) *Pilots' responsibility for collision avoidance in the vicinity of non-towered (non-controlled) aerodromes using 'see-and-avoid'.*

These CAAPs are the authoritative benchmark of operating procedures at non-towered aerodromes. They also provide a code of conduct to reinforce good airmanship principles and to allow greater flexibility for pilots using non-towered aerodromes.

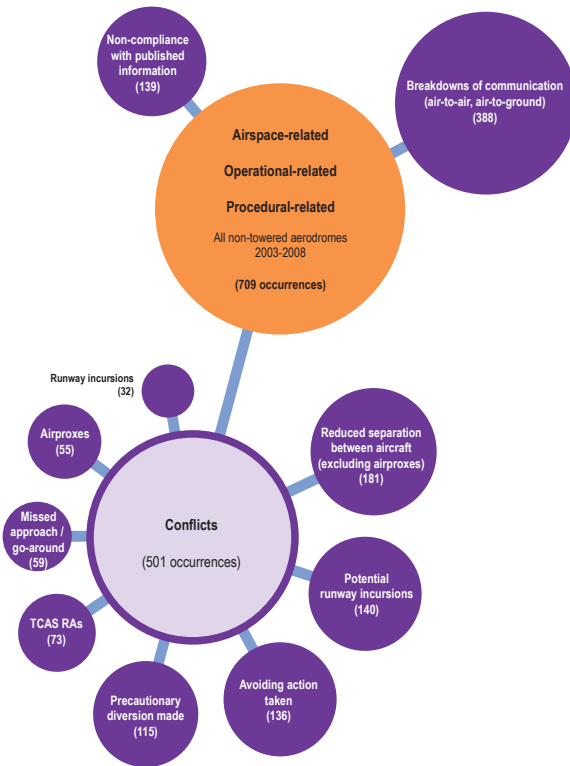
Both of these CAAPs are available on the CASA website at www.casa.gov.au.

Safety occurrences at non-towered aerodromes

The reports of occurrences (accidents and incidents) at non-towered aerodromes received by the ATSB have raised a number of concerns relating to aircraft separation, poor communication, situational awareness, adherence to circuit and approach procedures and airmanship.

Between 2003 and 2008, 709 occurrences in the vicinity of non-towered aerodromes were reported to the ATSB relating to airspace use, operations and procedural compliance. The most common types of occurrences are shown below¹.

Figure 1: Most common types of occurrences in the vicinity of non-towered aerodromes in Australia, 2003 to 2008



1 As occurrences can have multiple occurrence types recorded, the sum of occurrence types is greater than the number of occurrences.



Kyneton Aerodrome, Vic.

Source: courtesy of Phil Vabre

These occurrences were mostly incidents, but did include six accidents (four mid-air and two ground collisions) and 60 serious incidents (where an accident almost occurred). Most serious incidents (92 per cent) were near mid-air collisions (airprox events). Some of these near misses involved passenger transport aircraft.

Communicating effectively

Pilots operating at non-towered aerodromes are expected to make a series of standard broadcasts on the CTAF regarding their position and intentions. Broadcasting on the CTAF effectively helps to reduce the risk of a mid-air collision or reduced separation by supporting pilots' visual lookout for traffic and situational awareness, and assisting them to mutually separate their aircraft. This is known as radio-alerted 'see-and-avoid'.

Insufficient communication between pilots and breakdowns in situational awareness were the most common contributors to safety incidents in the vicinity of non-towered aerodromes (388 occurrences).

There are six minimum broadcasts that pilots should make when operating to and from non-towered aerodromes.

Situation	Radio broadcast required
1. Pilot intends to take off	Immediately before/during taxiing
2. Pilot intends to enter the runway	Immediately before entering a runway (with intentions)
3. Pilot is inbound	No less than 10NM from the aerodrome (with an estimated time of arrival) (pilots should consider making an inbound call earlier if they are operating a high performance aircraft)
4. Pilot wishes to enter the circuit	Immediately before joining the circuit
5. a) Pilot intends to make a straight in approach; or b) Pilot intends to join the circuit on base leg	On final approach, no less than 3 NM from the runway threshold Prior to joining on base
6. Pilot intends to fly through the vicinity of a non-towered aerodrome (but not land), i.e. within 10 NM or at a height over the aerodrome which could conflict with operations	When the aircraft enters the vicinity of the aerodrome, as defined in CAR 166

These are only the minimum calls that all pilots are expected to make. More positional broadcasts can improve the situational awareness of other pilots or reduce the risk of a collision.

Such calls might include:

- » turning downwind
- » turning base
- » turning final (with intentions)
- » backtracking
- » clear of the runway.

Making unnecessary broadcasts that have no safety value (radio chatter), however, contributes to frequency congestion on the CTAF, and can be a source of distraction for other pilots. The following occurrence is a good example of this.

As the aircraft was taxiing for departure, the pilot of an arriving aircraft persisted in asking the female pilot of a departing aircraft questions of a personal nature over the radio. The female pilot reported that the chatter distracted her from the task of taxiing, resulting in the left wing striking the 'Welcome' archway of the aerodrome as she was manoeuvring to avoid the arriving aircraft. The impact resulted in a hole in the leading edge of the aircraft wing approximately 60 cm inboard from the wingtip.



Dubbo Aerodrome, NSW

Source: courtesy of Jonathan Rankin

Over 200 occurrences between 2003 and 2008 were found where pilots flying within 10 NM of a non-towered aerodrome may not have been broadcasting or maintaining a continuous listening watch on the CTAF. Some of these were due to communication problems, others were related to non-compliance with non-towered aerodrome procedures. These 200 occurrences included instances of not being tuned to the correct frequency, having the radio volume turned down, faulty radio equipment, not making broadcasts, or other distractions.

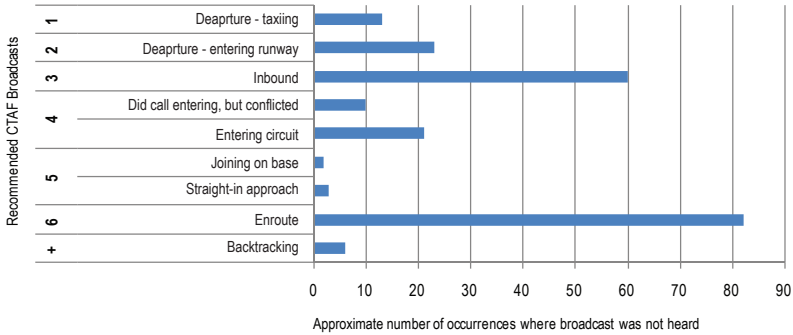
It was generally difficult to determine from the reported information exactly why a broadcast was not heard — because it was not made at all, because a pilot did not hear it due to distraction or radio interference, because of a radio problem, or some other reason.

Figure 2 shows approximately how often each of the standard six broadcasts was not made or was not heard in these 200 occurrences². It also indicates situations where backtracking broadcasts (while not required) were not made and led to reduced separation between two aircraft.

² While not allowed prior to 3 June 2010, cases also are shown where an aircraft joined on base and did not broadcast.

The occurrence reports submitted to the ATSB clearly show that the *Inbound* call at 10 NM from the aerodrome and the *Enroute* call (where the aircraft is transiting in the vicinity of the aerodrome, but not landing) are often missed by pilots, or are not heard. In half of the 169 occurrences between 2003 and 2008 that involved aircraft that were enroute, the *Enroute* broadcast was not heard by other pilots in the area.

Figure 2: Frequency of recommended broadcasts not being heard or made by pilots, 2003 to 2008



Sometimes, broadcasts were not heard because the radio volume was turned down, the radio was not tuned to the correct frequency, the microphone was open, or the radio was not functioning correctly. To help pilots make sure that their radio is operational and tuned to the correct CTAF frequency, Aerodrome Frequency Response Units (AFRUs) are installed at about 100 non-towered aerodromes. These facilities provide an automatic response (also known as a 'beep back') to pilots' radio transmissions on the CTAF. They provide a safety benefit to pilots as they confirm the operation of the aircraft's radio transmitter and receiver, the volume setting, and that the pilot has selected the correct frequency for use at that aerodrome all at once. Furthermore, to confirm that the correct radio frequency has been chosen, a series of 3 microphone clicks within 5 seconds will cause the AFRU to transmit a voice identification for the particular aerodrome.



Albury Aerodrome, NSW

Source: ATSB

Conflicts

A conflict is a situation where the actions of an aircraft or ground vehicle interfere with the flight of another aircraft. Conflicts do not necessarily result in reduced separation. Conflicts between an aircraft and other aircraft or vehicles were identified in 71 per cent of all occurrences (501 conflicts). These were mostly due to:

- » reduced separation between aircraft in the circuit
- » conflicts between aircraft circuiting and others on final approach
- » runway incursions.

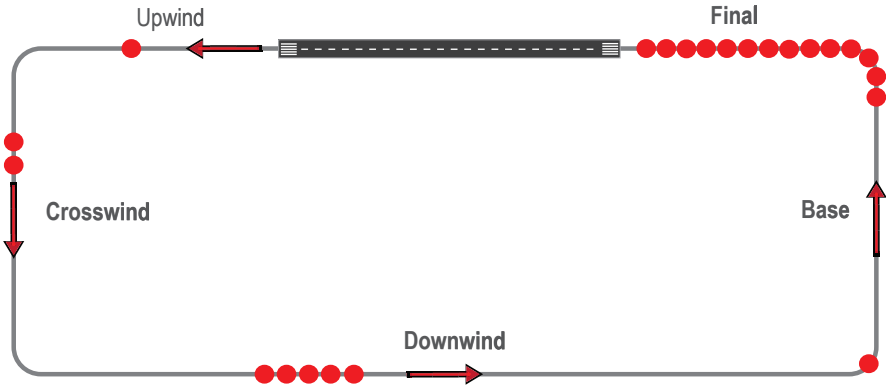
In approximately 27 per cent of the 501 conflicts, one or more aircraft took avoiding action to prevent a collision or an airprox. In a further 23 per cent, one aircraft made a precautionary diversion from its intended flight path in order to maintain safe separation with another aircraft that was not communicating or aware of other nearby aircraft.

A common type of conflict was where a reduced margin of separation between two aircraft was reported on final approach and landing. Thirty-two incidents involved aircraft coming close to each other when both were on final approach, aircraft turning early off base leg and cutting in front of other aircraft on final approach, or landing on the runway at the same time after approaching from reciprocal runway ends. Also common were separation issues where aircraft came too close to each other in the circuit, or an aircraft entered the circuit incorrectly and caused a reduced margin of separation with other aircraft already in the circuit (30 incidents).

There is a higher risk of mid-air collisions when aircraft come too close to each other on final approach or base leg, particularly where radio is not used to enhance situational awareness. A 2004 review by the ATSB of mid-air collisions between 1961 and 2003 found that almost 80 per cent of mid-air collisions (29 accidents) occurred in or near the circuit area, with two-thirds of these involving aircraft on final approach or the base-to-final turn. Figure 3 shows the location of these collisions in the circuit area. More

than half of these collisions (59 per cent) occurred outside the major general aviation aerodromes (those that were formerly General Aviation Aerodrome Procedures (GAAP)); however, only one collision had ever occurred at a non-towered aerodrome where radio carriage was required.

Figure 3: Location of mid-air collisions in the circuit in Australia between 1961 and 2003

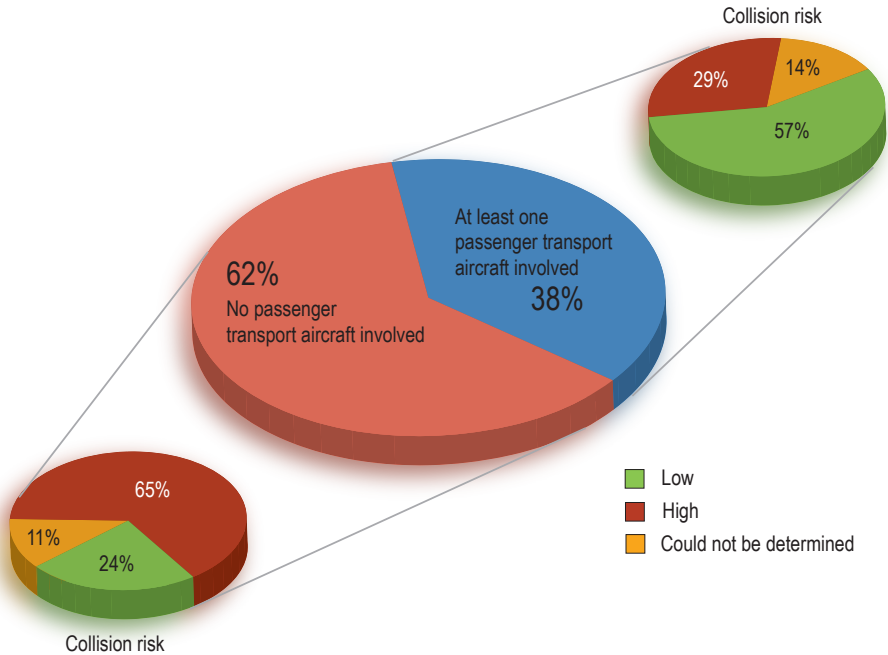


Airproxes

Most of the 60 serious incidents (92 per cent) were near mid-air collisions (airproxes). Some of these near misses involved passenger transport aircraft.

An analysis of airproxes found that when a passenger transport aircraft was involved, the estimated collision risk was usually low. This compared to airproxes where no passenger transport aircraft were involved, where the collision risk was usually high. Greater compliance with broadcast procedures, a better awareness of aircraft performance and speed, and defences such as TCAS contributed to the lower collision risk.

Figure 4: Collision risk assessments by operation type, airproxes in the vicinity of non-towered aerodromes, 2003 to 2008



Near-collision, Olympic Dam Aerodrome, SA on 26 July 2007

At 0755 local time on 26 July 2007, a Fokker 50 aircraft was completing a turn on to final for runway 24 at Olympic Dam Aerodrome, SA at about 850 ft above ground level (AGL) when the crew were alerted by the Traffic Collision Avoidance System (TCAS) to a Fairchild Metroliner aircraft departing from runway 06. The crew estimated that the distance between the two aircraft was about 200 ft laterally and 30 ft of vertically.

The Fokker 50 was on a scheduled flight from Adelaide to Olympic Dam with 32 passengers and five crew on board. The Metroliner was departing Olympic Dam for Adelaide on a charter flight with 11 passengers and one pilot.

An investigation of this occurrence by the Civil Aviation Safety Authority (CASA) determined that the Fokker 50 made the required circuit calls on the Common Traffic Advisory Frequency (CTAF), and that these were heard by another inbound aircraft, but not by the Metroliner pilot. The pilot-in-command of the Metroliner claimed to have made the required calls on the CTAF at the commencement of taxiing, entering, backtracking along the runway, and rolling. None of these calls were received by the Fokker 50 or the other inbound aircraft.

The investigation also noted that it would have been difficult for the Metroliner pilot to see the approaching Fokker 50 as he was looking into the rising sun, and that it would have been difficult for the Fokker 50 crew to see the Metroliner while it was on the ground, as the Fokker 50 was turning away from the runway as it joined the circuit on downwind.

The investigation could not determine why the pilot of the Metroliner was unable to receive the broadcasts from the Fokker 50 aircraft.

Runway incursions

A runway incursion is any intrusion (by an aircraft or vehicle etc) into a runway strip that creates a collision hazard or results in a reduction to safety.

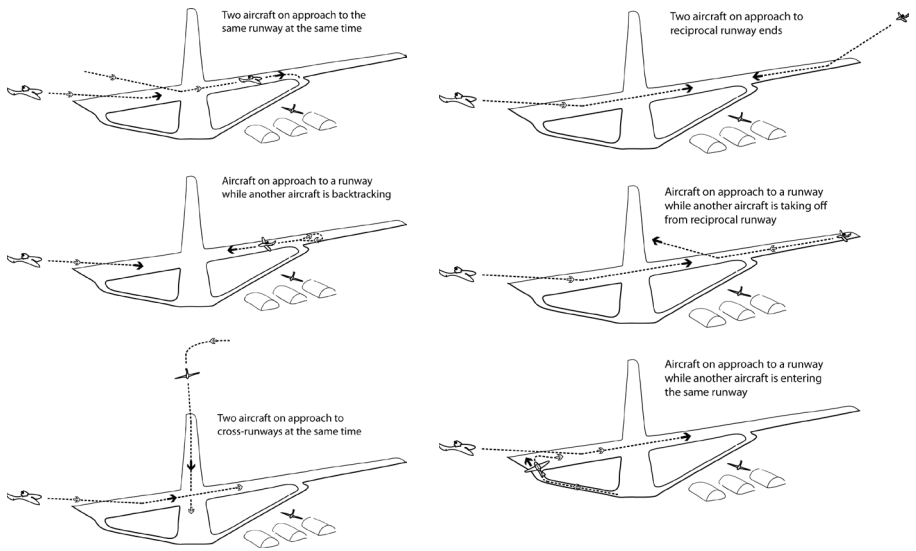
While only 32 runway incursions were recorded at non-towered aerodromes (about 7 per cent of all conflicts), the potential existed for significantly more (140 occurrences, about 28 per cent of all conflicts) because in many cases, aircraft came into situations where they conflicted with each other (such as an aircraft entering a runway when another aircraft was on final approach), but the actions of one or more of the pilots prevented a high potential for a collision.

Some potential incursion situations were particularly common at non-towered aerodromes between:

- » an aircraft taxiing on a runway, or preparing to enter a runway, and another aircraft on final approach, short final, or on its landing roll (61 occurrences). Specifically, these included:
 - taxiing by backtracking down the active runway (23 occurrences)
 - entering the runway from a taxiway or lining up (24 occurrences)
 - taxiing off the runway after landing (9 occurrences)
 - holding short on a taxiway to prevent an incursion with a landing aircraft (5 occurrences)
- » two aircraft on short final and landing, where the aircraft came too close (32 occurrences)
- » an aircraft commencing takeoff at the same time as another aircraft was on short final or was rolling out after landing (31 occurrences)
- » an aircraft taxiing on a runway at the same time as another aircraft commencing takeoff from the opposite runway end (17 occurrences).

Some of these situations are shown in figure 5. Other runway incursion situations were less common, such as aircraft landing at the same time on cross-runways.

Figure 5: Runway incursion possibilities



Source: adapted from Department of Aviation, 1981



Griffith Aerodrome, NSW

Source: courtesy of Phil Vabre

Situational awareness on the ground

The risk of runway incursions and other reduced separation events can be minimised through good communication by pilots when on the ground before takeoff and after landing (by making taxiing, entering, backtracking and clear of runway broadcasts).

Pilots commenced taxiing or entered the runway without making the recommended broadcasts in 35 occurrences. In 31 of these, an aircraft on final either landed with, or was forced to conduct a go-around due to an aircraft backtracking on the active runway. In some of these cases, it was likely that the pilot of the landing aircraft had assumed that the preceding aircraft had cleared the runway at the end of its landing roll, even though a 'clear of runway' broadcast was not made, or a 'backtracking' broadcast had been made.

A review of the occurrences where an aircraft that backtracked down a runway without making an appropriate 'backtracking' broadcast showed six cases where a loss of separation assurance occurred between two aircraft. While backtracking broadcasts are not required, they help to reduce the chance of runway incursions by improving the situational awareness of pilots on approach, or who are intending to enter the runway.

Most importantly, a good visual lookout should be maintained when in the circuit for aircraft that could be manoeuvring on the ground. Pilots on the ground should be pragmatic when taxiing or entering a runway, considering they are often hard or near impossible to see from the air. This means keeping a good lookout for aircraft on approach, listening to the CTAF for other pilots' intentions, building a good awareness of circuit and other nearby traffic prior to and during the taxi, and making broadcasts prior to taxiing and entering the runway.

Maintaining safe operations in the vicinity of non-towered aerodromes

Non-towered aerodromes and the use of radio broadcasts by pilots to establish situational awareness have been, and will continue to be, a central component to the Australian airspace system. While this system works well, a number of issues persist in occurrences at non-towered aerodromes that pilots can easily address to improve safety.

The importance of radio-alerted ‘see-and-avoid’

Broadcasting on and monitoring of the CTAF is the key way for pilots to establish situational and traffic awareness, especially at busier non-towered aerodromes. Pilots should always carry a radio and learn how to use it correctly. Even the smallest ultralight can have an aircraft band hand-held radio with a headset.

The ATSB *Limitations of the see-and-avoid principle*³ study has shown that the effectiveness of a search for other traffic is eight times greater under alerted see-and-avoid circumstances (when a radio is used effectively in combination with a visual lookout) than when just un-alerted (when no radio is used).

Maintain a constant visual lookout too—do not rely on the radio

Whether you fly into non-towered or towered aerodromes, maintaining a vigilant lookout at all times is important.

The most hazardous phases of flight are within 5 NM of an aerodrome and at an altitude below 3,000 ft. Within this area, there is a higher traffic density. Pilots should remember that there may be a variety of aircraft with different sizes, flight rules and performance levels all operating at the same time in the same airspace.

It is also possible to find pilots who have inadvertently selected the wrong frequency, have not made positional broadcasts, are operating in non-radio equipped aircraft, or are transiting in the vicinity of the aerodrome or manoeuvring near it. It also seems that some pilots do not always behave professionally and follow procedures.

³ This study is available from the ATSB website www.atsb.gov.au

The following report was submitted to the ATSB through the Aviation Confidential Reporting (REPCON) system by a pilot flying into a non-towered aerodrome and is an example of the elevated collision risk that exists when airspace users do not observe good airmanship principles.

A Piper Cherokee aircraft was on late downwind for runway 09 when the pilot of a Cessna 206 called joining base for runway 27. Before entering the circuit, the Cherokee pilot had called inbound and joining upwind for runway 09 on the CTAF, but had not heard any transmissions from the Cessna pilot prior to the base call.

The Cherokee pilot called the Cessna twice to report that the Cherokee was on the downwind leg for runway 09, but did not receive a readable response. The Cessna landed on runway 27, forcing the Cherokee to go around and make an additional circuit before landing on runway 09.

When queried on his actions, the Cessna pilot informed the Cherokee pilot that he was running a commercial operation and did not have time to waste on procedures.

The Cherokee pilot later commented that although there was no collision risk, the Cessna pilot's disregard for circuit procedures and radio procedures indicated a very unprofessional attitude.

For all of these reasons discussed above, it is essential to maintain a vigilant lookout. Good airmanship dictates that all pilots should be looking out and not be solely reliant on the radio for traffic separation.

In some locations, information services (such as Flight Information Service, UNICOM and CA/GRS) are available as a tool for pilots to help enhance their awareness of traffic and weather conditions. It is important to be aware that these are not traffic separation services and are not available at all aerodromes.



Horn Island Aerodrome, Qld

Source: courtesy of Martin Eadie

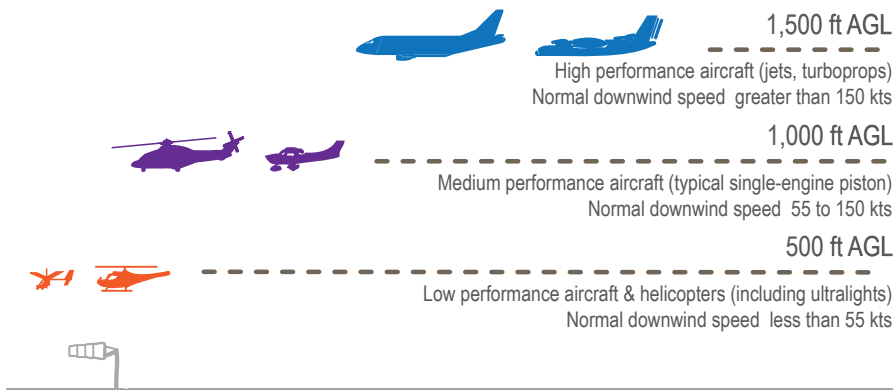
Be aware of circuit conflicts

There are several points at which conflicts can potentially occur between entering aircraft, arriving or departing aircraft, aircraft on straight-in approaches, and aircraft already established in the circuit. Between 2003 and 2008, there were 61 conflicts at non-towered aerodromes involving aircraft operating in the circuit.

Circuit heights

The purpose of having prescribed circuit heights at non-towered aerodromes is to separate fast moving aircraft from slow moving aircraft in the interests of situational awareness and separation.

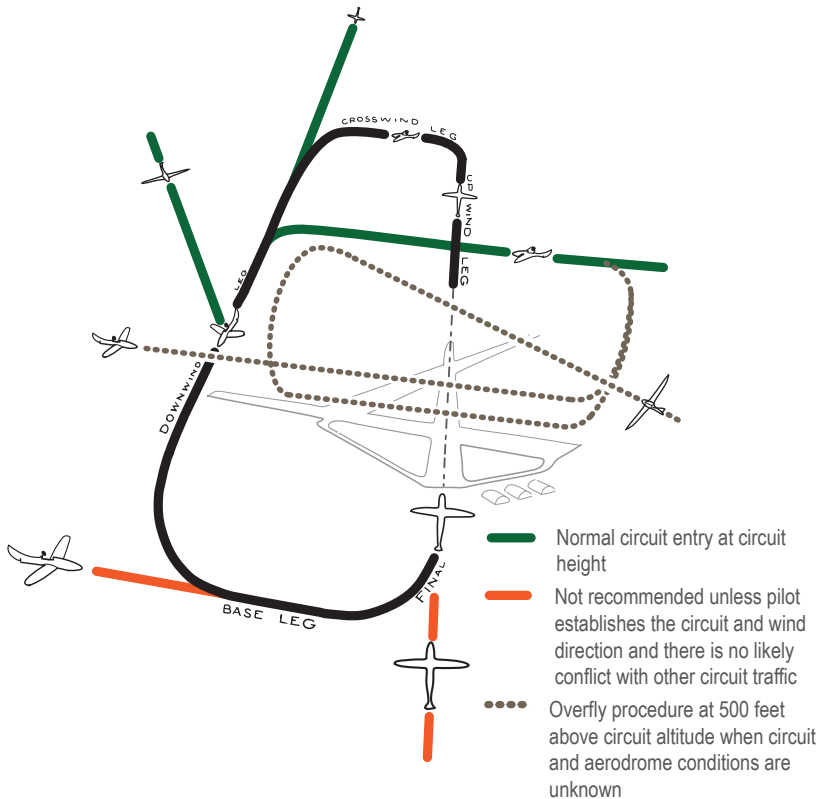
Figure 6: Standard circuit heights depend on aircraft performance since 3 June 2010



Use the correct entry method and make a broadcast

Aircraft entering the circuit at a non-towered aerodrome generally do so on the crosswind or downwind legs of the circuit in accordance with the entry requirements specified in CAR 166. Pilots may only conduct base leg entry and straight-in approaches if their aircraft are equipped with VHF radio, they are certified by CASA to use the radio equipment on their aircraft, they make the required broadcasts, and give way to aircraft already established in the circuit. Figure 7 below shows the permitted entry methods into the circuit at non-towered aerodromes since 3 June 2010.

Figure 7: Typical circuit entry methods at Australian non-towered aerodromes since 3 June 2010



Source: adapted from CASA, 2010a, CAA 1981

Whichever entry method you choose to use, it is important to make a circuit entry call. In 21 occurrences between 2003 and 2008, a pilot did not broadcast before entering the circuit.

Be alert on base and final

Making appropriate broadcasts in the circuit area is important so that all pilots can maintain awareness of other traffic. The elevated risk of mid-air collisions at the base-to-final turn means making base and final approach calls is a good idea – 80 per cent of mid-air collisions occurred in or near the circuit area, with a third of these involving aircraft on final approach or the base-to-final turn.

Aircraft conducting straight-in approaches were only involved in 16 conflicts between 2003 and 2008, of which half were passenger transport aircraft. In almost all of these occurrences, the actions of the other aircraft involved – which was usually in the circuit or lined up to takeoff – led to the conflict.

What the ATSB is doing

Several investigations have been conducted by the ATSB into safety occurrences at non-towered aerodromes since the National Airspace System non-towered aerodrome procedures came into effect in November 2005.

These investigations have raised a number of concerns relating to issues such as aircraft separation, poor communication, situational awareness and circuit procedures, and serve as a reminder to all pilots and airspace users who operate in the vicinity of non-towered aerodromes of the consequences of not effectively broadcasting on the CTAF, and not maintaining an effective visual lookout.

- ▶ **2008 — Wee Waa, NSW** — Air Tractor AT-502 and Air Tractor AT-502
(Aviation Investigation number AO-2008-014)
- ▶ **2007 — Port Macquarie, NSW** — Piper Arrow and de Havilland Canada DHC-8
(Aviation Investigation number 200700231)
- ▶ **2007 — Port Macquarie, NSW** — Aerooprakt Foxbat, Beech Baron, and de Havilland Canada DHC-8
(Aviation Investigation number AO-2007-006)
- ▶ **2007 — Orange, NSW** — Beech Baron and Saab 340
(Aviation Investigation number 200604222)
- ▶ **2007 — Latrobe Valley, Vic.** — Avid Flyer ultralight and Cessna 172 Skyhawk
(Aviation Investigation number AO-2007-065)
- ▶ **2006 — Hervey Bay, Qld** — Fairchild Metroliner and Eurocopter EC135
(Aviation Investigation number 200605091)

Full reports of these investigations are available on the ATSB website at www.atsb.gov.au.

The ATSB will continue to review reportable matters related to non-towered aerodrome safety that are reported by pilots and operators under their requirements in the *Transport Safety Investigation Act 2003*. These include airproxes, air-to-ground and air-to-air communication problems, non-compliance with published procedures, breakdowns of separation, runway incursions, and ATC procedural errors.

Reporting of safety occurrences and concerns

If you are involved in a safety occurrence you are required to notify the ATSB. Accidents and serious incidents should be notified immediately on **1800 011 034**. Other safety occurrences can be reported via the aviation on-line notification form on the ATSB website within 72 hours (www.atsb.gov.au/mandatory/asair.aspx). Occurrence information in publications such as this one are only possible through the reporting of safety occurrences by industry.

In addition, if you have identified a safety concern or hazard that you think endangers, or may endanger, the safety of an aircraft, we encourage you to report it confidentially to the ATSB via the Aviation Confidential Reporting (REPCON) scheme. Reporting can be done online at www.atsb.gov.au/voluntary/repcon-aviation.aspx.

Safety concerns that have been reported by pilots through REPCON at, or in the vicinity of, non-towered aerodromes have included:

- » unauthorised parachuting operations
- » model aircraft and kite flying near aerodromes
- » pilots not broadcasting or making muffled broadcasts with the intention of avoiding landing charges
- » frequency interference issues.

Issues such as frequency congestion or interference at a particular aerodrome should, in the first instance, be reported to Airservices Australia (www.airservices.gov.au) so that they may be reviewed.

Further reading

Australian Transport Safety Bureau. (2010). *Safety in the vicinity of non-towered aerodromes* (Aviation Research and Analysis Report AR-2008-044(2)). Canberra: ATSB.

Australian Transport Safety Bureau. (1991). *Limitations of the See-and-Avoid Principle* (Research Report). Canberra: ATSB.

Civil Aviation Safety Authority. (2010). *Operations in the vicinity of non-towered (non-controlled) aerodromes* (Civil Aviation Advisory Publication CAAP 166-1(0)). Canberra: CASA.

Civil Aviation Safety Authority. (2010). *Pilots' responsibility for collision avoidance in the vicinity of non-towered (non-controlled) aerodromes using 'see-and-avoid'* (Civil Aviation Advisory Publication CAAP 166-2(0)). Canberra: CASA.

What you need to do

Non-towered aerodromes have been, and will continue to be, a central component of the Australian airspace system. A number of issues related to communications, situational awareness, and following circuit procedures persist in occurrences at non-towered aerodromes that pilots can easily address to make sure that safe operations are always maintained.

The aim at all times is to achieve radio-alerted see-and-avoid, to be aware of other traffic, and position your aircraft appropriately to prevent conflicts with that traffic. Observing these simple points will help to you to do this⁴.

- » Maintain a lookout for other aircraft at all times.
- » Get a radio, and always make the standard broadcasts — even when you think there is no nearby traffic.
- » Achieve radio alerted see-and-avoid by making all of the standard broadcasts within 10 NM of a non-towered aerodrome.
- » Use the same procedures at all non-towered aerodromes, unless otherwise stated in the En Route Supplement Australia (ERSA).
- » Be aware that any radio-equipped aircraft could be conducting straight-in approaches at non-towered aerodromes
- » Avoid overflying aerodromes where possible, and take note of IFR inbound and outbound routes.

⁴ Adapted from Department of Transport and Regional Services. (2005). *Operations at non-towered aerodromes: A guide to the new procedures effective from 24 November 2005*. Canberra: DOTARS.

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB does not investigate for the purpose of apportioning blame or to provide a means for determining liability.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and, where applicable, relevant international agreements.

When the ATSB issues a safety recommendation, the person, organisation or agency must provide a written response within 90 days. That response must indicate whether the person, organisation or agency accepts the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

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