Australian Government
Civil Aviation Safety Authority

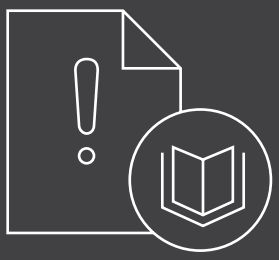
CASR PART

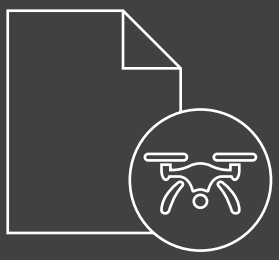
101 MICRO AND EXCLUDED REMOTELY PILOTED AIRCRAFT OPERATIONS

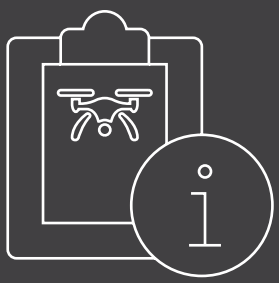
PLAIN ENGLISH GUIDE

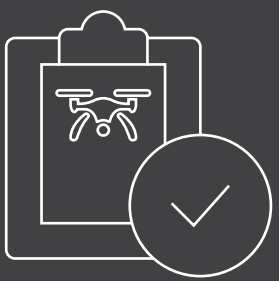
VERSION 2.2 | DECEMBER 2024

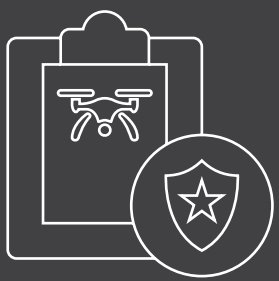
QUICK MENU











About this guide

Safety in the sky is our priority. To keep people, property and the environment around you safe, it is essential you know the rules that apply to the operation of your drone.

This Civil Aviation Safety Authority (CASA) plain English guide summarises and restates relevant regulations which relate to the operation of micro and excluded remotely piloted aircraft (RPA) from Part 101 of the *Civil Aviation Safety Regulations 1998 (CASR)* and the Part 101 Manual of Standards (MOS).

This guide re-organises the relevant information contained in the regulations and the MOS to make it easier for you to find, understand and apply the regulations for micro and excluded RPA in certain commercial activities.

By following this guide, it is expected you will comply with the rules that apply to micro RPA and excluded RPA that may be used for commercial activities or certain activities over your own land.

The guide provides references to the corresponding legislation so you can easily refer to the full text of the CASR and the MOS if you wish. The current legislation can be found on the Federal Register of Legislation website.

We are committed to providing you with accurate, consistent, and clear information to help you understand your legal obligations. The information contained in this guide was correct at the time of publication but is subject to change without notice. You should ensure you are using the most current version of the guide, which can be found on the CASA website. Please visit the CASA website regularly for updates.

How to use this guide

In this guide, the word 'you' refers to the person operating the remote controls of an RPA. We have also used the terms 'controller' and 'remote pilot' synonymously.

Within the guide, there are two key definitions of the term drone:

- An RPA is a drone that is used for hire or reward, commonly referred to as commercial activities
- A model aircraft is a drone that is used for sport and recreation.

We have defined certain words to avoid repetition and improve readability of this guide. A standard terminology table has been created specifically for this guide.

Useful abbreviations and acronyms are listed in a table at the end of this guide.

Where we do not define a word, you should consider its meaning to be that given in CASR Part 1 Dictionary, other specific regulations, or the Macquarie Dictionary.

For improved understanding, we have added comments to assist in explaining a requirement. This commentary is not intended to introduce a new requirement, but to provide a more detailed explanation.

This guide also provides the corresponding regulatory reference in brackets if you wish to refer to the regulation on the Federal Register of Legislation website.

To enhance the experience with digital interactive elements included in this guide, save this guide to your device. Then:

- for iOS operating systems open the guide with Apple Books application
- for Android operating systems open the guide with PDF viewer application.

Disclaimer: The guide has been prepared by CASA for information purposes only, and while every effort has been made to ensure that the contents accurately conform to the civil aviation legislation, this guide is not the law. CASA accepts no liability for damages or liability of any kind resulting from its use. You should ensure you are using the most current version of the guide.

CASA is responsible for the safety regulation of civil air operations in Australian territory, and for the regulation of Australian-registered aircraft outside Australian territory. For further information, visit CASA's website casa.gov.au

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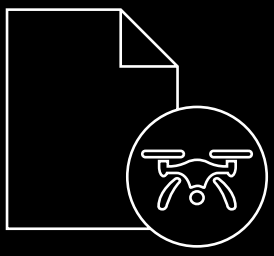
ISBN: 978-1-76137-022-9 (print)
ISBN: 978-1-76137-023-6 (pdf)

The following terminology table has been created for this guide to improve readability.

Term	Meaning
accreditation	authorises a person to operate a micro RPA or an excluded RPA
airspace	vertical dimensions of airspace (as set out in the aeronautical charts or ERSA) are referenced to mean sea level (MSL)
altitude	the vertical distance measured above mean sea level (AMSL)
controller	a non-regulatory term for the person controlling an RPA
controlled airspace	airspace of defined dimensions within which an air traffic control service is provided to flights in accordance with the airspace classification
crew	this includes the controller and any other person tasked with ensuring the safety of an RPA activity (e.g. RPA observers tasked with keeping a lookout for aircraft and people)
crewed aircraft	conventionally piloted aircraft
drone	an uncrewed aircraft
excluded RPA	very small or small RPA, operated by a controller with a valid accreditation, in standard RPA operating conditions for certain activities other than sport and recreation, in certain conditions a medium RPA, operated by a controller with a valid RePL, in standard RPA operating conditions for certain activities other than sport and recreation, in certain conditions RPA used solely for the purpose of the person receiving training by an authorised RPA operator's certificate holder
height	the vertical distance measured above ground level (AGL)
measurement point	any point on the actual or notional centreline of a runway between the 2 threshold centrepoints
micro RPA	an RPA that is 250 g or less which is not an excluded RPA but can also be used for other than sport and recreational purposes using an accreditation rather than a RePL
movement area	part of the aerodrome where aircraft taxi or are towed while on the ground (i.e. heading to or from the runway, boarding gates or a hangar)
no-fly zone of a controlled aerodrome	any area of a controlled aerodrome within 5.5 km of the measurement point of the runway, or over or in an approach or departure path, or over the movement area
no-fly zone of a helicopter landing site (HLS)	the area and airspace from the centre of a HLS with a radius of 1.4 km and a vertical height of 120 m
no-fly zone of a non-controlled aerodrome	any area of a non-controlled aerodrome within 5.5 km of the measurement point of the runway or over or in an approach or departure path, or over the movement area
operate	fly or control the RPA
operator	the legal entity (organisation) or person conducting the RPA activities
participant	includes the registration holder, controller, crew and operator, noting that one person may perform any or all these roles
person	takes the ordinary meaning of the word but includes a certified RPA operator
registration holder	the legal entity (the person or company) that holds the RPA registration
remote pilot	person who manipulates the flight controls of an RPA or who initiates and monitors the flight and is responsible for the RPA's safe conduct during the flight
you	the controller or remote pilot

Contents



CHAPTER 1: INTRODUCTION

Is this guide for you?

This guide is for people wishing to conduct certain commercial operations using micro or 'excluded' remotely piloted aircraft (RPA).

- Micro RPA are drones that weigh 250 g or less.
- Excluded RPA are very small, small, or medium drones used in very specific commercial situations (activity and location) defined below.

These micro and excluded RPA can be operated safely in Australian airspace without requiring CASA authorisations such as a remote pilot licence (RePL) or an RPA operator's certificate (ReOC).

However, you will need to register your drone and obtain an RPA operator accreditation. These can be obtained in the myCASA portal. You must be 16 years or older and, at all times, operate according to the standard RPA operating conditions (set out in this guide) and any explicit conditions relating to the flight of particular excluded RPA.

CASA has produced a short safety video of the rules that apply to micro and excluded RPA used commercially and for activities other than sport and recreation.

Within the aviation legislative framework, drones operated for sport and recreation are defined as model aircraft. Drones operated for a purpose other than sport and recreation (e.g. drones used commercially for hire and reward) are defined as RPA.

The relevant legislation and guidance material is available on the CASA website.

This guide is not for users of model aircraft (drones operated for sport and recreation).

This guide is not for RePL holders conducting other forms of commercial operations under an RPA operator's certificate (ReOC).

Types of RPA by weight

RPA are classified by weight:	
Micro	› 250 g or less
Very small	› more than 250 g, but no more than 2 kg
Small	› more than 2 kg, but not more than 25 kg
Medium	› more than 25 kg, but not more than 150 kg
Large	› more than 150 kg

Types of RPA that can be operated as 'micro and excluded' RPA (CASR 101.237)

Micro RPA (250 g or less)

Micro RPA can be used for commercial activities (payment or reward). You do not need to hold a RePL, but you will need to

- be 16 years or older to obtain a valid RPA operator accreditation
- register your RPA before the first flight
- operate your RPA in standard RPA operating conditions at all times unless you hold an approval from CASA.

Very small RPA (more than 250 g, but not more than 2 kg)

Very small RPA may be operated as excluded RPA for commercial activities (payment or reward) for work, research, training or community services; basically, any activity that is not sport or recreation. Common activities include photography and film-making, media, university research, real estate, surf lifesaving, construction and trade. You do not need to hold a RePL, but you will need to:

- be 16 years or older to obtain a valid RPA operator accreditation
- register your RPA before the first flight
- operate your RPA in standard RPA operating conditions at all times.

Small RPA (more than 2 kg, but not more than 25 kg)

Small RPA may be operated as excluded RPA over the RPA owner's land for activities such as aerial spotting, land surveying, agricultural operations, infrastructure inspections or carrying cargo. The controller does not need to hold a RePL, but the activity must meet these requirements:

- the controller must hold a valid accreditation
- the RPA must be registered before the first flight
- the RPA must be operated in standard RPA operating conditions at all times
- records of the activity must be kept.

To operate a small, excluded RPA over your own land:

- the operator, controller or owner of the RPA, or the owner or occupier of the land, or any person on whose behalf the activity is conducted, may not receive any money or remuneration for the operation of the RPA
- the controller must be the owner of the RPA, or a person operating on behalf of the RPA owner
- the RPA must be operated over land owned or occupied by the RPA owner
- the RPA must be operated in standard operating conditions
- the RPA must be operated for one of the following purposes:
  - aerial spotting
  - aerial photography
  - agricultural operations
  - aerial communications relay
  - carriage of cargo
  - any activity similar to those described above

Medium RPA (more than 25 kg, but not more than 150 kg)

Medium RPA may be operated as excluded RPA over your own land and must comply with the same requirements for small RPA, However, you are also required to hold a RePL and a specific rating for that RPA. Further details can be found on the CASA website.

Large RPA (more than 150 kg)

Large RPA cannot be operated as excluded RPA.

Excluded RPA used for training and gaining practical experience

An RPA is also an excluded RPA if it is being operated solely for the purpose of a person receiving training from a ReOC holder authorised to provide RePL training.

You may operate an excluded RPA to:

- gain the experience needed to meet the 5-hour minimum experience requirement for the grant of a remote pilot licence (RePL)
- gain practical experience and competency in the operation of an RPA not specified on your RePL if you already hold a RePL. This must only be a small RPA of the same category specified in your current RePL (eg aeroplane, helicopter, multirotor), but it may exceed the weight class.

You must follow the standard operating procedures set out in this guide.

You may wish to use a logbook to record flight hours as evidence of flying experience and competence. A sample logbook to record RPA flying hours can be found on the CASA website. You should record:

- the flight time
- the location
- the RPA used
- any training completed
- a short description of any tasks performed.

A list of CASA-approved training organisations is available on CASA's website. These organisations are certified to provide professional training for the grant of a RePL and may also offer shorter courses for recreational and excluded RPA operators.

Educational purposes

Flying a drone or model aircraft up to 7 kg for educational purposes at recognised educational institutions is considered flying recreationally.

However, you will be considered to be flying commercially if you receive remuneration (money) for flying, or use the drone to promote or advertise the educational institution. If you are flying commercially, extra rules apply in order to operate in the excluded RPA category. This information is contained in the guide for your reference.

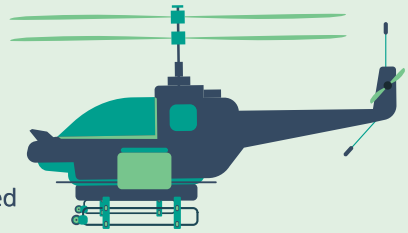
If your drone operations aren't considered 'flying recreationally', consider your options under the 'Small RPA excluded' category.

Figure 1: **Remote pilot licence and accreditation privileges**

Remote pilot licence privileges

Remote pilot licence (RePL)

- RePL holders may operate an RPA under a remotely piloted aircraft operator certificate (ReOC) for complex operations
- RePL holders may operate RPA (under a ReOC), micro RPA, very small, small and medium excluded RPA, and model aircraft (sport and recreation)
- RePL holders are not required to obtain RPA operator accreditation



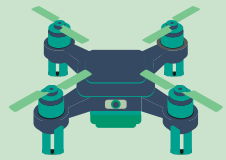
RPA operator accreditation privileges*

Excluded RPA operations

- Very small RPA – more than 250 g, not more than 2 kg – for activities other than sport and recreation (i.e. hire and reward) in the standard RPA operating conditions
- Small RPA – more than 2 kg, not more than 25 kg – for activities over your own land (land owned or occupied by the owner of the RPA) in the standard RPA operating conditions
- RPA operator accreditation has been required since January 2021

Micro RPA operations

- 250 g or less for commercial activities (i.e. hire and reward)
- RPA operator accreditation has been required since January 2021



Recreational privileges

Model aircraft (sport and recreational) operations

- There are no requirements to obtain accreditation or hold an RePL.

* Accreditation is free and valid for three years
An RPA operator accreditation allows a person of at least 18 years of age to supervise a person under 16 to fly an RPA.

Standard RPA operating conditions (CASR 101.238)

An RPA is operated in standard RPA operating conditions if, at all times during the operation, the RPA is:

- operated in Australian territory
- operated within the visual line of sight of the person operating the RPA
- operated at or below a height of 120 m by day
- not operated within 30 m of a person who is not directly associated with the operation of the RPA
- not operated:
  - in a prohibited area
  - in a restricted area that is classified as RA3
  - in a restricted area that is classified as RA2 or RA1 otherwise than in accordance with regulation 101.065
  - over a populous area
  - within 5.5 km of the measurement point of the runway of the controlled aerodrome
- not operated over an area where a fire, police or other public safety or emergency operation is being conducted without the approval of a person in charge of the operation
- the person operating the RPA operates only that RPA.

Gaining practical experience

There are no formal training requirements for remote pilots of excluded RPA (with the exception of medium RPA being used for 'landholder rule' operations when the pilot needs a RePL). However, all remote pilots should undergo training to learn how to fly an RPA safely and without creating a hazard to other aircraft, people and property.

You should learn to control your RPA within its design parameters and in varied operating conditions, including:

- dealing appropriately with variable weather
- abnormal flight situations
- emergencies
- system malfunctions

It's important to be proficient in all flight modes of your RPA, including manual control in the event of loss or degradation of autopilot.

When training or practising, you should keep the RPA a safe distance from property and you must keep it at least 30 m from people. However, it's advisable to increase this distance until you're competent with controlling the RPA. CASA considers that 5 hours flight time is the minimum necessary to gain a basic level of competency for any category of RPA.

Record keeping (MOS Division 10.3)

Small and medium excluded RPA operators must keep an operational log of each flight (CASR Part 101, MOS section 10.10).

The operator is required to keep a record of the following:

- the nature and purpose of the operation
- the specific location of the operation and the maximum height at which the RPA was flown
- information identifying the RPA, including the type, model and unique identification mark
- the remote pilot station for the operation
- the dates and times of the operation
- the name and aviation reference number (ARN) of the controller
- whether the RPA was serviceable after the final flight of the day and the nature of any unserviceability.

An operational record should be created as soon as practicable after each flight and kept for a period of three years after the last time the RPA is operated (by the operator).

CASA does not specify the form of the RPA operational log. The operator may keep the log physically or electronically, as long as the records are available on request from CASA.

Checklist 1 – Can you operate your drone for commercial activities without a RePL or ReOC?

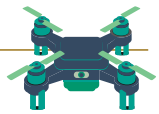
STEP 1

Are you flying your drone for sport and recreation?

☐ **Yes** – you are flying a ***model aircraft***. Use a CASA - verified drone safety applications to check where you can fly and follow the drone safety rules

☐ **No** – you are flying an RPA, go to **Step 2**

STEP 2



Is your RPA 250 g or less?

☐ **Yes** – it is a ***micro RPA***, which may be used for hire and reward, but it must be registered, and you must be accredited and follow the drone safety rules unless otherwise approved by CASA.

☐ **No** – go to **Step 3**

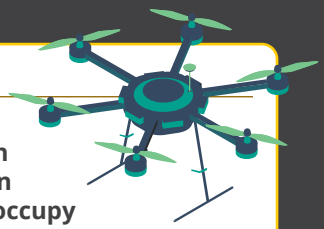
STEP 3

Is your RPA more than 250 g, but not more than 2 kg?

☐ **Yes** – it is a ***very small RPA,*** which may be operated for hire and reward provided it is registered, you are accredited and you follow the drone safety rules and standard operating conditions. See Chapter 2

☐ **No** – go to **Step 4**

STEP 4



Is your RPA more than 2 kg but not more than 25 kg, and will be flown over land you own or occupy for one of the following purposes:

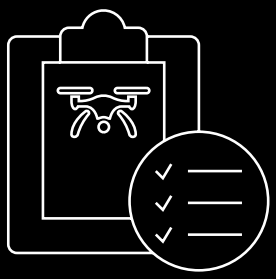
- aerial spotting
- aerial photography
- agricultural operations
- aerial communications relay
- carriage of cargo
- any activity similar to those described above?

☐ **Yes** – it is a ***small RPA,*** which may be operated for hire and reward, but it must be registered, you must be accredited, you must follow the drone safety rules and standard operating conditions, and you must not be remunerated (paid). See Chapter 2

☐ **No** – a RePL and ReOC is required

A medium RPA (more than 25 kg, but no more than 150 kg) may also be operated as set out above in Step 4 if you or the operator holds a RePL with a specific rating for that RPA.

Note: This checklist omits RPA that are excluded on the basis that they are being used for training or for gaining practical experience and proficiency.



CHAPTER 2: BEFORE THE FIRST FLIGHT

Before you fly, you must ensure your micro or excluded RPA is registered and you hold a valid RPA operator accreditation.

To do these things, you will first need an ARN.

Aviation Reference Number

An ARN allows CASA to transact with you and provide a service. Think of it as a driver licence number or bank account number.

Your ARN will allow access to the myCASA portal to obtain accreditation or register your RPA. This portal also provides access to other aviation services.

Types of ARN

You will need an Individual ARN to access the myCASA portal to register your drone and obtain accreditation. If you are an individual running your own business, we suggest you also apply for an organisation ARN.

You are generally eligible to hold an ARN if you pass the identity checks.

Organisation ARNs are available to eligible Australian businesses. You will need an organisation ARN to interact with CASA and register drones on behalf of a business or company. An organisation ARN is the only way to allow more than one person to act on behalf of the business in the myCASA portal. You will also need an individual ARN and be authorised to apply on behalf of the business.

You are generally eligible if your organisation holds an ABN, ACN, ARBN or foreign ID number.

How to get an ARN

An ARN application for an individual can be made through the CASA website and should not take long to complete. The applicant will need to provide CASA with proof of identity. Details of acceptable identity documents are available on the CASA website.

An ARN application for an organisation or business can be made through the CASA website. Before applying for an organisation ARN, the authorised representative of the organisation will need to obtain an individual ARN.

Accreditation (CASR 101.FA)

When operating a micro or excluded RPA, you must be accredited. If you already hold a RePL, you do not need to obtain RPA operator accreditation. Accreditation is free and is valid for three years.

You can obtain accreditation after viewing a short safety video, reading the educational material, and successfully completing an online quiz to test your knowledge of the standard RPA operating conditions and drone safety rules.

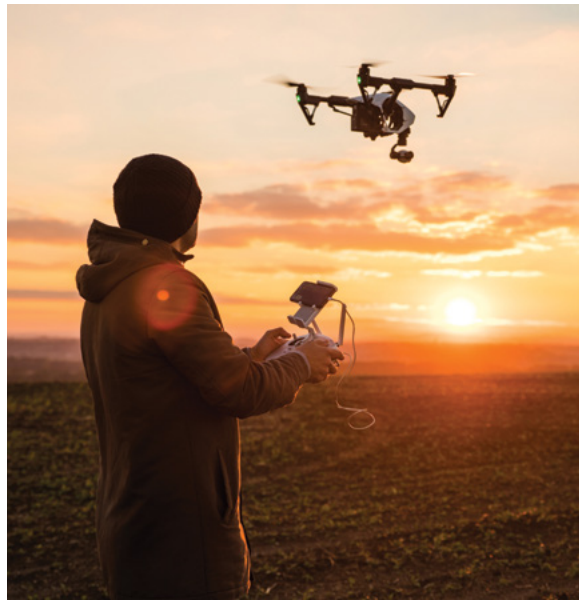
Accreditation can be completed online through the myCASA portal.

Age limit (CASR 101.374B(4))

- You must be 16 years or older to become accredited.
- If you are under 16 years, you may only operate an RPA if supervised by an accredited person who is at least 18 years.

Proof of accreditation (CASR 101.374C)

If requested by CASA or the police, you must present proof of your valid accreditation or a RePL. Your proof of accreditation can be electronic or printed.



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RPA registration (CASR 47.C.2)

You need to register your RPA if you fly it for business or as part of your job, even if it is operated indoors.

Some drones don't need to be registered. This applies if:

- you don't intend to fly your drone
- you're only flying for sport or recreation, including model aircraft flown at CASA-approved model airfields
- you're a commercial drone repairer or manufacturer (but you must keep records – see Divisions 11.1 and 11.2 of the MOS.

There is a requirement to register your micro RPA.

It is an offence to operate an RPA used for commercial purposes that is not registered. The offence may be attributed to the RPA operator and/or the controller. Where the RPA controller is under the age of 16, the offence may be attributed to the RPA operator or supervising adult.

Proof of registration (CASR 47.099B)

If requested by CASA or the police, you must provide proof of your RPA registration. This can be an electronic or printed certificate.

RPA registered in another country (CASR 101.099)

RPA registered outside Australia can be operated in Australian territory, but the RPA details must be recorded with CASA, and permission issued to the operator before the first flight. The controller must also hold an RPA operator accreditation or a RePL.

The process for applying for permission to fly a foreign-registered RPA is similar to registering an Australian RPA. This can be completed through the myCASA portal.

Checklist 2 – Ready for the first flight?

Follow this checklist if you are operating an RPA.

STEP 1

Have you obtained an ARN?

- ☐ **Yes** – go to **Step 2**
- ☐ **No** – apply for an ARN through myCASA portal

STEP 2

Have you completed accreditation?

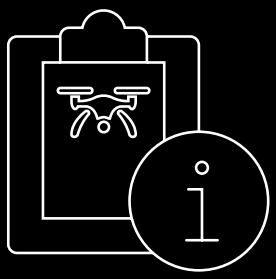
- ☐ **Yes** – go to **Step 3**
- ☐ **No** – get accreditation through myCASA portal

Note: if you hold a RePL, you are not required to hold accreditation.

STEP 3

Have you registered your RPA?

- ☐ **Yes** – you are ready to operate. Follow the drone safety rules and standard RPA operating conditions. See Chapter 3
- ☐ **No** – register your RPA through myCASA portal



CHAPTER 3: BEFORE EVERY FLIGHT

Before every flight

Before every flight, you should identify the areas where permission is required to operate and seek that permission if you wish to fly there. Conduct all your operations with caution.

Take extra care in areas where low-level crewed flight occurs. For example, in the vicinity of beaches (helicopters on shark patrol or search and rescue operations) and scenic areas and local flight training areas.

Maintain a constant watch for low-flying aircraft at all times. Even noisy aircraft may not be heard due to such things as wind, RPA motors and other noises.

Be aware of 'cognitive tunnelling'. This is where you are so focused on the task at hand that you don't perceive extraneous events and noises until it's too late to take corrective action.

How to identify no-fly zones

Drone safety apps

CASA-verified drone safety applications are the easiest way to find information about no-fly zones, restricted areas and military operating areas. The drone safety apps and web applications provide customised location-based information with easy to use maps about where you can and cannot fly your drone in accordance with aviation legislation.

While drone safety apps show all controlled aerodromes and most non-controlled aerodromes, some uncertified aerodromes in Australia may not be captured in these apps.

Drone safety apps are useful for identifying areas where you must not fly. However, they are not an official source of air navigation information and should be supplemented by using official sources of information when planning an operation.

Official sources of information

It remains your responsibility not to operate in a no-fly zone. While drone safety apps provide guidance, CASA recommends you refer to official publications in the Aeronautical Information Package, such as the En Route Supplement Australia (ERSA), Visual Terminal Charts (VTCs), Visual Navigation Charts (VNCs), NOTAMs and the Aeronautical Information Publication (AIP) (see Appendix A).

Other

Local councils and state governments may have restrictions in place, this includes national and marine parks. You should always check before you fly. For further information see drones.gov.au.

Prescribed areas – no-fly zones around aerodromes

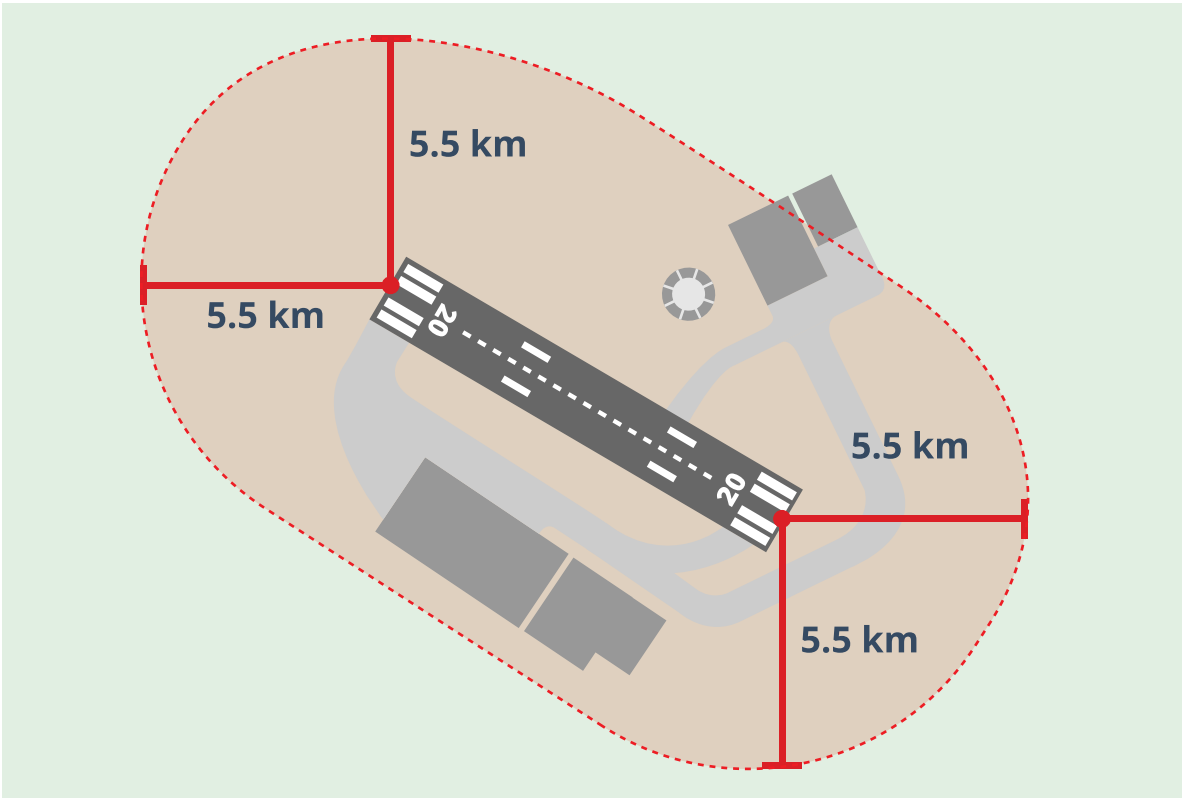
(CASR 101.075, Part 101 MOS chapters 4 and 9)

An aerodrome can range in size from a small dirt airstrip on an outback cattle station to a large airport in a capital city. An aerodrome (which includes helicopter landing sites) can be found just about anywhere – even a helideck on a cruise liner is an aerodrome. No-fly zone refers to the area around a controlled or non-controlled aerodrome.

Measurement point

The measurement point is any point on the actual or notional centreline of a runway between the 2 threshold centrepoints. The threshold is the beginning of the portion of the runway usable for landing, and the threshold centrepoint is where the centreline and the threshold intersect.

Figure 2: View of the area within 5.5 km from the measurement point



Controlled aerodromes

A controlled aerodrome generally has an air traffic control tower. At a controlled aerodrome, there is increased air traffic and strict rules about where you can and cannot fly. You must not fly an excluded RPA:

- over or in the approach or departure path (where crewed aircraft approach or depart the aerodrome)
- over the movement area (runways, taxiways, manoeuvring areas and aprons)
- within 5.5 km of the measurement point of the runway of a controlled aerodrome.

Micro RPA may be flown within 5.5 km of the measurement point of the runway of a controlled aerodrome, up to an operating height of 45 m, provided they are:

- *not operated over the movement area*
- *not operated over or in the departure or approach path*
- *not operated inside the boundary of the aerodrome*
- *not creating a collision hazard to other aircraft taking off or landing.*

Figure 4 is a snapshot taken from a CASA-verified drone safety app. It illustrates the no-fly zone near the Alice Springs controlled airport including the approach and departure paths, and the 5.5. km boundary from the measurement point of the runway.

Figure 4: No-fly zone for Alice Springs airport

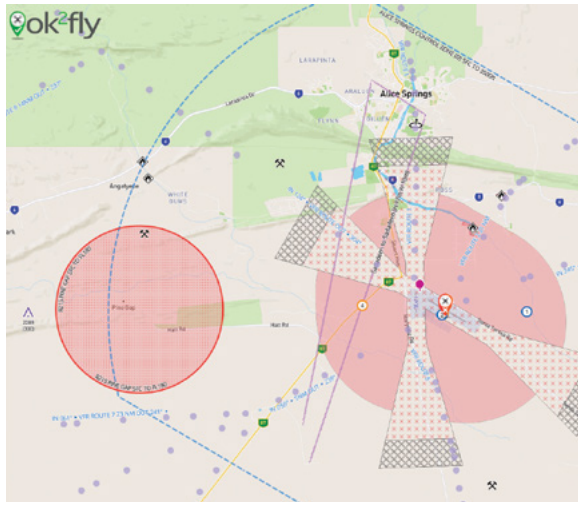
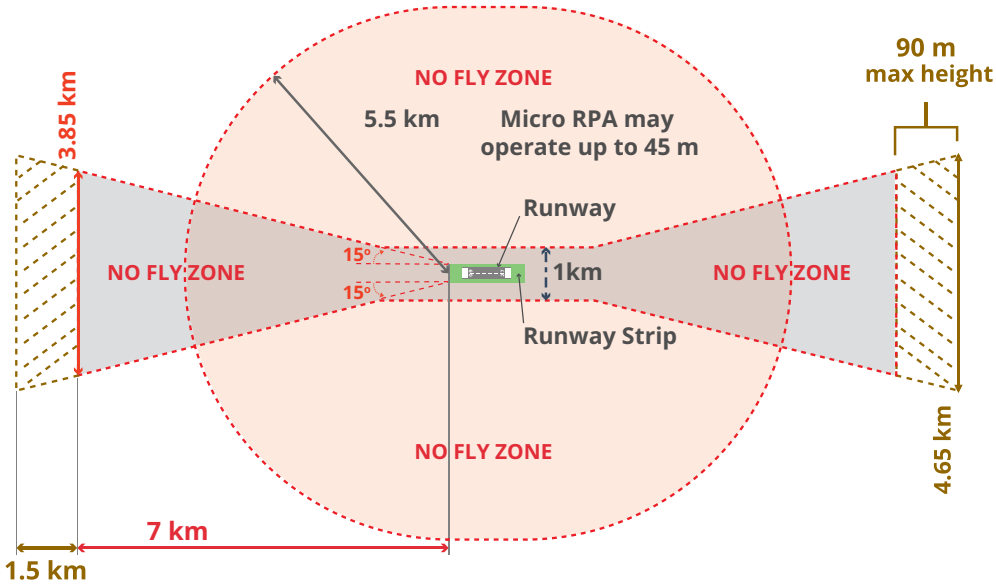


image: Ok2Fly | AvSoft Australia

Figure 3: No-fly zone around controlled aerodromes



Non-controlled aerodromes

Many aerodromes in Australia are non-controlled. A non-controlled aerodrome does not have an air traffic control service and generally does not have a control tower. To maintain separation and to sequence landing and take-off, crewed aircraft communicate via radio.

Near a non-controlled aerodrome when **crewed aircraft are operating**, you must not fly an excluded RPA:

- over or in the approach or departure path (where crewed aircraft approach or depart the aerodrome)
- over the movement area (runways, taxiways, manoeuvring areas and aprons)
- within 5.5 km of the measurement point of the runway of the aerodrome.

Operation of crewed aircraft includes aircraft on approach or take-off (departure), taxiing or anywhere on the movement area of the aerodrome.

Micro RPA may be flown within 5.5 km of the measurement point of the runway of a non-controlled aerodrome, up to an operating height of 45 m, provided they are:

- *not operated over the movement area*
- *not operated over or in the departure or approach path*
- *not creating a collision hazard to other aircraft taking off or landing.*

Near a non-controlled aerodrome when **no crewed aircraft are operating**, you may fly an excluded RPA within 5.5 km of the measurement point of the runway of the aerodrome. However, you must land your RPA and keep it on the ground:

- from the moment a crewed aircraft begins to taxi for departure and until it has departed the area
- at any time you become aware of the arrival of a crewed aircraft.

Aircraft may come and go from unexpected angles, particularly where there are helicopter, agricultural, ultralight or sports operations.

Aircraft flying under 'instrument flight rules' may also appear suddenly from low cloud, unaligned with a runway, when conducting a 'non-precision circling approach'.

You or an observer will normally become aware of a crewed aircraft by hearing or seeing it.

If you are unsure whether there is an aerodrome in the area you plan to operate, it is good practice to check a CASA-verified drone safety app. If you are in a more remote location, check with local aviation operators (e.g. aero clubs, flying schools, agricultural and aerial work operators).

Figure 5: No-fly zone around non-controlled aerodromes when crewed aircraft are operating

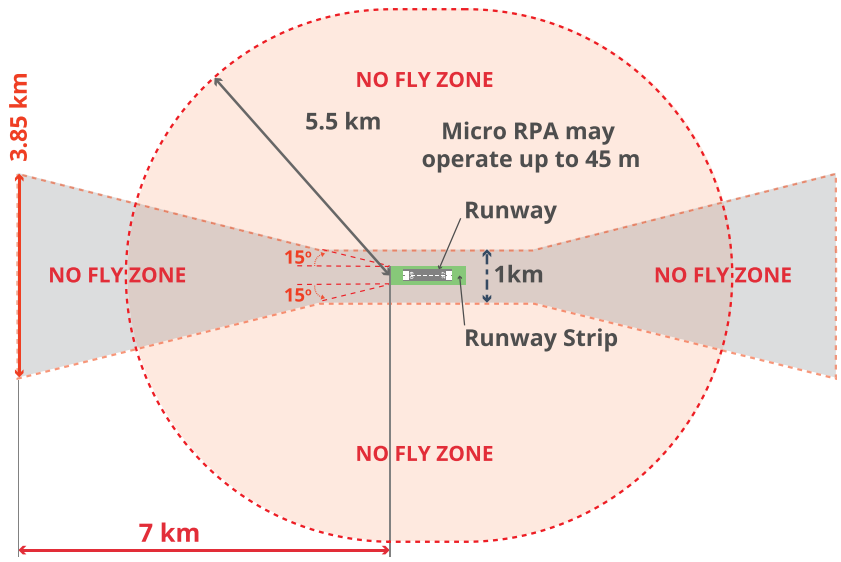


Figure 6: No-fly zone for a non-controlled aerodrome

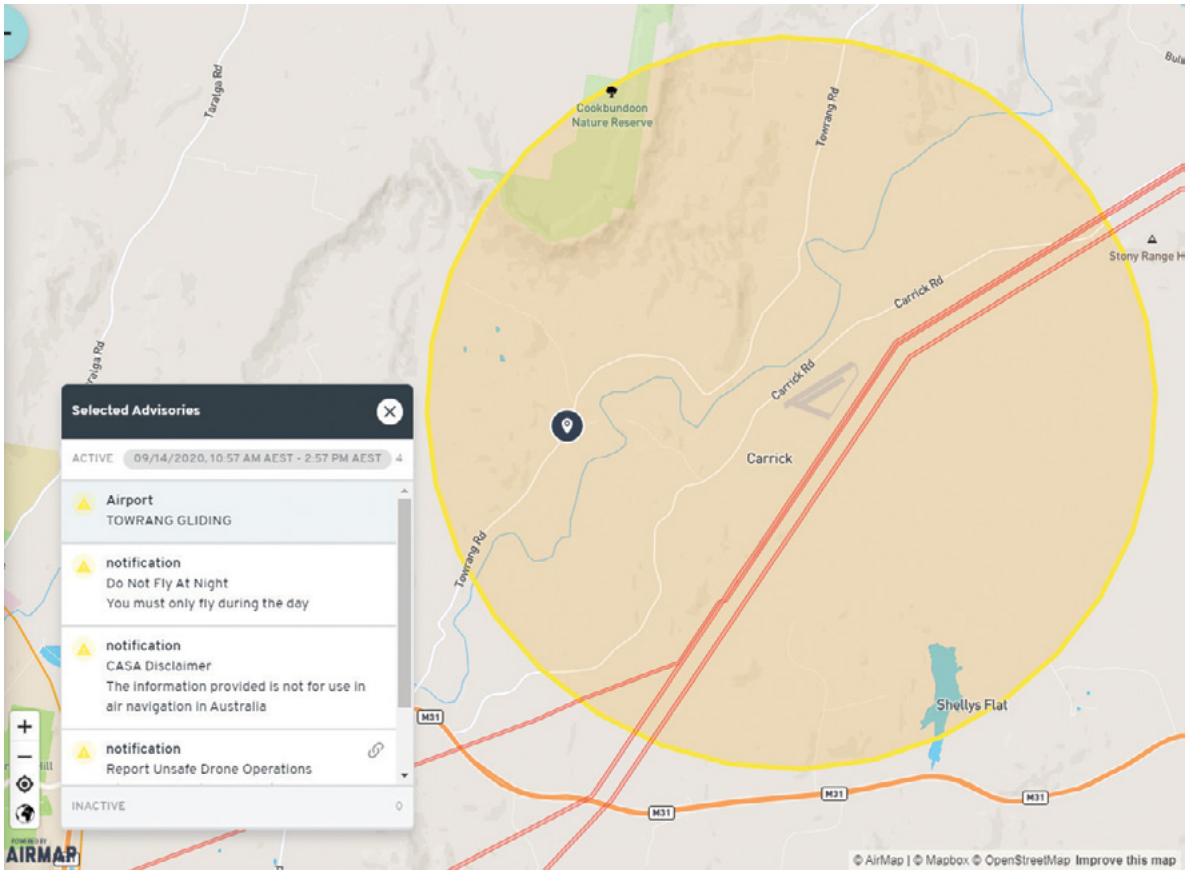


image: AirMap | AirMap Inc

Figure 6 is a snapshot from a CASA-verified drone safety app. It illustrates the no-fly zone for the Towrang gliding aerodrome when a crewed aircraft is in the area. The image does not show the departure and approach paths for this aerodrome; it only shows the no-fly zone as a circle with a 5.5 km radius from the centre of the aerodrome.

Helicopter landing sites

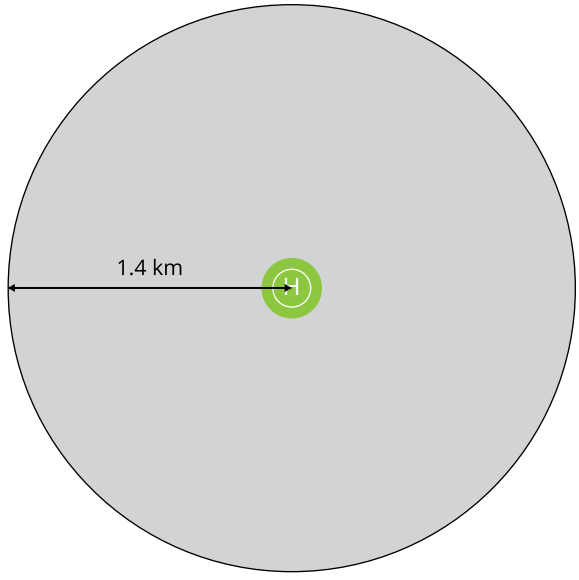
A helicopter landing site (HLS) is a designated location used by helicopters for taking off and landing.

You can fly your drone within 1.4 km of a helicopter landing site. However, when you become aware of a helicopter flying to or from the HLS, or taking off or landing, you must:

- not launch your drone
- safely manoeuvre your drone away from the path of the helicopter and land as soon as possible.

We measure this distance from the centre of the HLS.

Figure 7: No-fly zone around helicopter landing site when crewed aircraft are operating



RPA observers and other remote crew

You may appoint a person as an observer. This is not a requirement but it may assist in reducing hazards.

Observers should be trained and thoroughly briefed on how they will alert you to situations when hazards arise.

Before flying, discuss and agree:

› the role of everyone involved in the flight

› the actions everyone will take

› what procedures and expressions you will use.

Examples of expressions are:

› land immediately at the RPA's current location

› return to home (the location of the remote pilot) now.

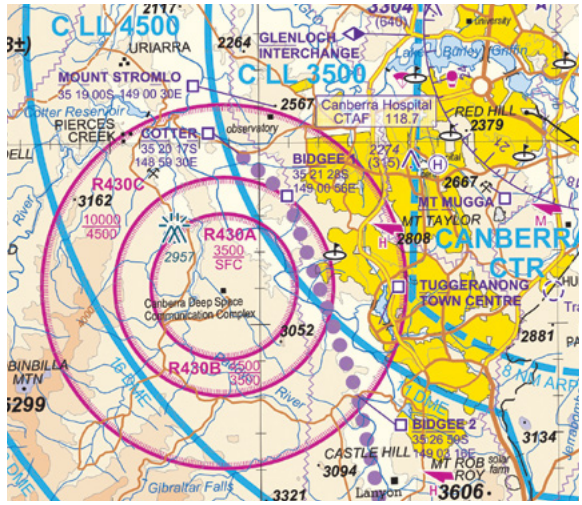
The use of an observer does not relieve remote pilots from their primary responsibility to ensure safe flight of the RPA and to maintain visual line of sight of the RPA at all times.

Restricted zones (CASR 101.065)

No-fly areas associated with restricted zones

Restricted zones are quite common in Australia. An RPA is not permitted to be flown when the restricted zone is active. Restricted zones are often (but not always) associated with military flight or weapons training, but can be established for many reasons. Radio or optical telescopes, for example, may be the reason why the area is classified as a restricted zone.

The visual navigation chart (VNC) extract shows the restricted zone around the Tidbinbilla Deep Space Tracking Station, west of Canberra.



It is the controller's responsibility to check if an area is restricted before commencing operations.

image: © Canberra Deep Space Communication Complex

The CASA-verified drone safety apps show the locations of most restricted areas, and some also show their activation times (see Figure 8). These apps would also show prohibited areas should any be declared.

Figure 8: Drone safety app depiction of restricted area with activation times

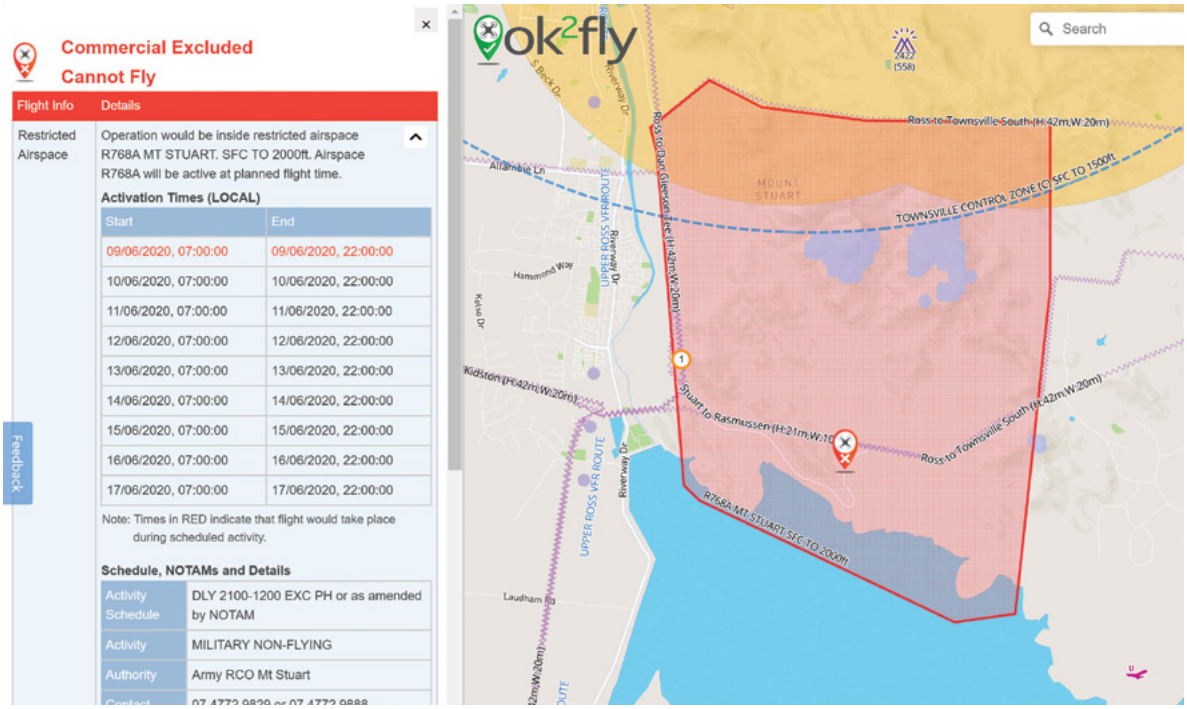


image: ok2fly | AvSoft Australia

Airservices Australia also publishes the activation times for some prohibited, restricted and danger areas in the AIP ERSA: airservicesaustralia.com/aip/aip.asp. Activation times may vary and become active with very little notice. Activation times may also be published via NOTAM (please see the next section).

NOTAM

A NOTAM is a notice to airmen, which is advice to pilots that contains information immediately relevant to flight operations. It is normally published electronically and can be issued at short notice.

Instead of fixed activation times, some restricted areas are activated as needed, for example, when the Australian Defence Force is conducting training activities in the area. The times for these areas are published in a NOTAM.

Where a restricted area can be activated by NOTAM, the visual terminal chart (VTC) or visual navigation chart (VNC) illustrating the restricted area will bear an annotation – NOTAM (see the extract as shown here).

NOTAMs are freely available through Airservices Australia's online National Aeronautical Information Processing System. Alternatively, some CASA-verified drone safety apps show NOTAM information (see Figure 9).

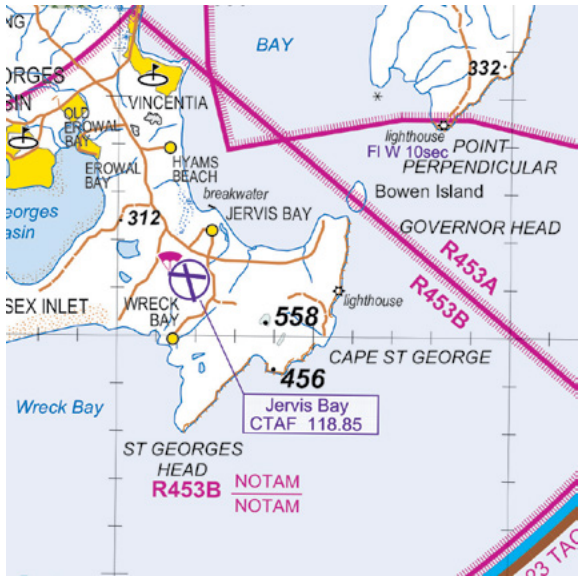


Figure 9: Drone safety app depiction of restricted area activation time by NOTAM

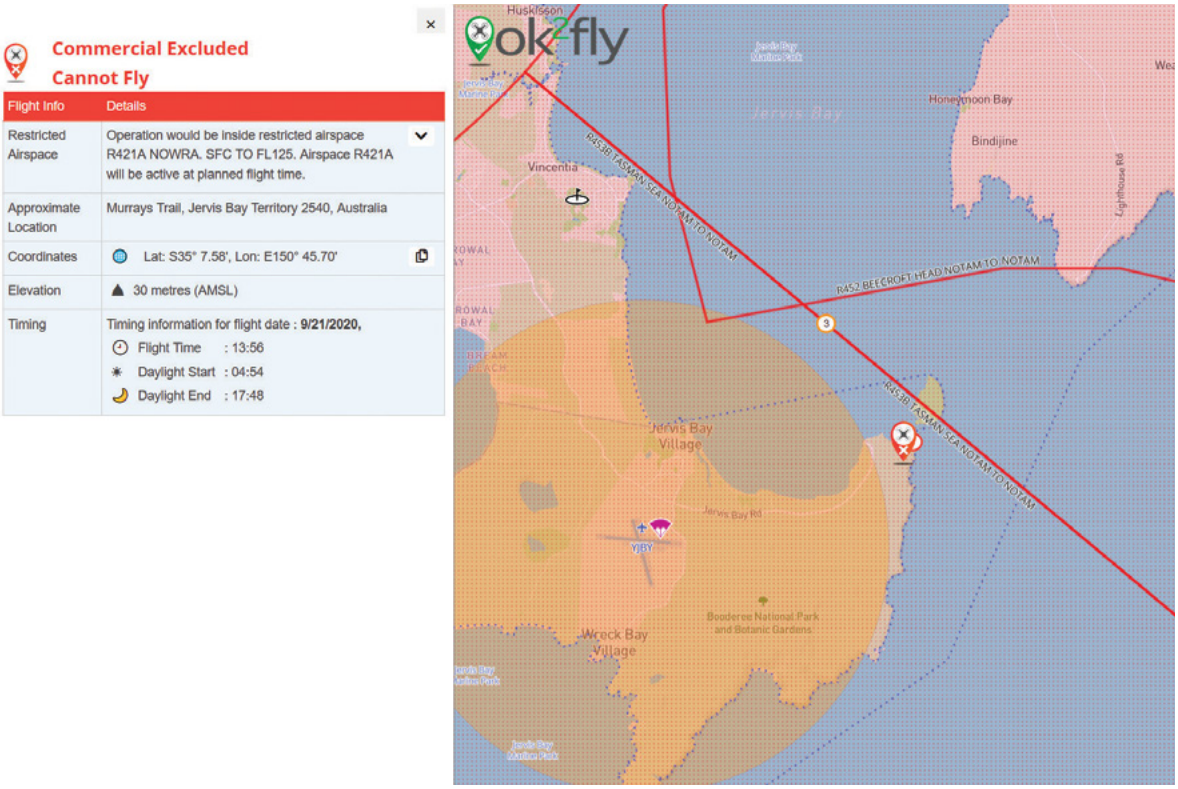


image: ok2fly | AvSoft Australia

Operating micro and excluded RPA in restricted airspace

Under the standard operating conditions, micro and excluded RPA are not permitted to operate in restricted areas without the approval of the controlling authority for the area.

The ERSA lists restricted area categories in the Special Use Airspace (SUA) section:

airservicesaustralia.com/aip/aip.asp.

CASA-verified drone safety apps display information about restricted areas. See Figure 10 in relation to an area of Sydney, NSW.

Sydney Harbour has large areas of restricted airspace. CASA approval is required to fly in this airspace.

image: Nico Smit | unsplash.com

Figure 10: Drone safety app depiction of Sydney Harbour restricted area

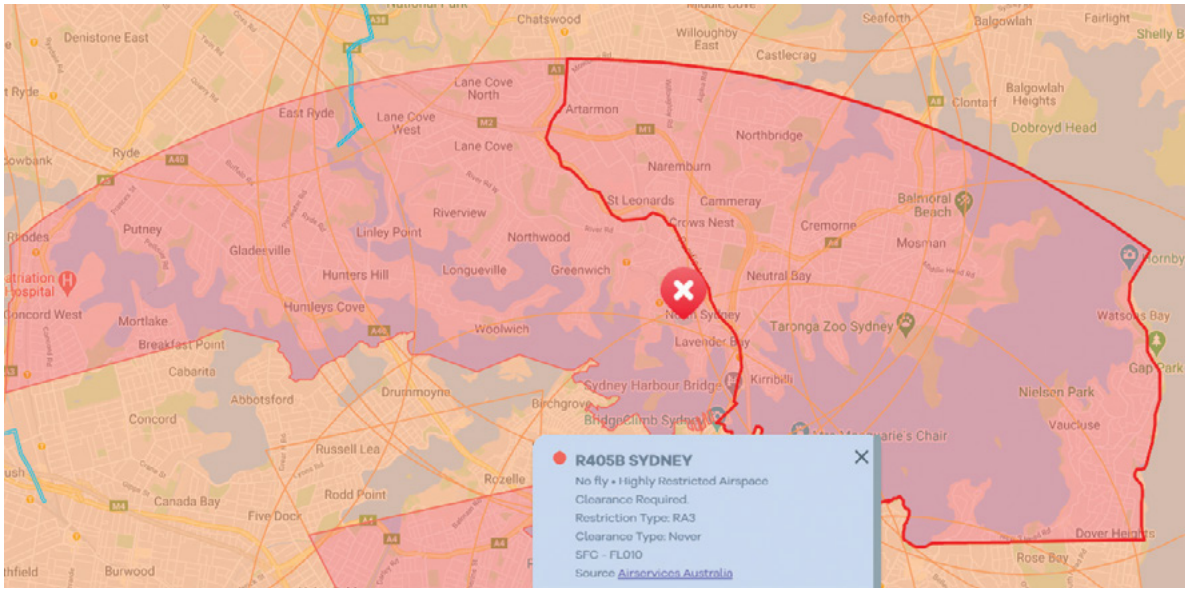


image: OpenSky | Wing Aviation

Danger areas (AIP-ENR 1.4–12)

Danger areas exist where there is activity taking place that may pose an increased risk to aviation safety. These danger areas include activities such as flying training, parachuting, blasting, rifle ranges, firing ranges, high-velocity exhaust plumes, gliding and visual flight rule transit lanes. Uncrewed aerial vehicle testing areas may also be classified as danger areas.

A micro or excluded RPA is permitted to operate in a danger area; however, the controller should be aware of the activity and evaluate the risk before a flight.

All CASA-verified drone safety apps display the location of danger areas, and some also detail the reason and the hours of activity.

Figure 11: Drone safety app depiction of danger area associated with parachuting

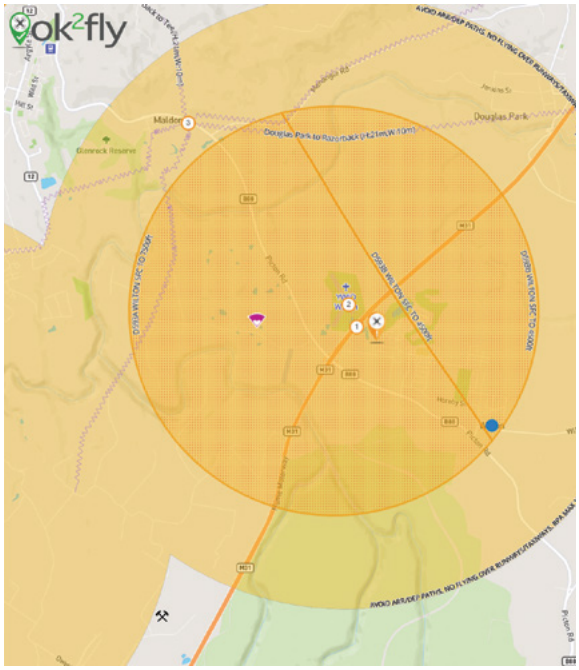


image: ok2fly | AvSoft Australia

Aviation charts (such as VNCs) also show danger areas. Details of the activity in the danger area can also be found in ERSA, see airservicesaustralia.com/aip/aip.asp.

Emergency procedures

RPA flown under a ReOC are required to detail the procedures to be followed in the event of an emergency. There is no regulatory requirement on micro and excluded RPA used commercially to detail the procedures. However, it would be good practice to consider what you would do in the case of:

- an engine or propeller failure
- loss of the data link
- loss of control
- failure of navigation equipment
- airframe damage.

Emergency procedures may include the use of recovery or fail-safe devices, such as parachutes, that help to mitigate the risk of injury to people or damage to property. CASA encourages the use of such recovery devices when they are available for the RPA type.

Note: Where an RPA is fitted with a recovery device such as a ballistic parachute system including a pyrotechnic charge, it must be compliant with dangerous goods regulations (Part 92 of CASR). The relevant area or panel on the RPA should be clearly marked to warn crew of the potential danger.

A mission plan should be prepared for each flight of an RPA. The plan should include information about the local area and any hazards. It should also contain procedures about planned emergency flight profiles in the event of a lost data link. Depending on system capabilities, these profiles should include either:

- an RPA automated transit to a pre-designated recovery area, followed by an automated recovery, or
- an RPA automated transit to a pre-designated recovery area, followed by activation of a flight termination system.

The RPAS data link should be continuously and automatically monitored while the RPA is in flight, and a real-time warning should be displayed to the remote pilot in the case of failure.

Checklist 3 – Before every flight

STEP 1

Is your flight planned in a no-fly zone near a controlled aerodrome?

- ☐ **Yes** – you cannot fly your RPA unless it is a micro RPA and is not operated above 45 m, within the aerodrome boundary, over or in the departure and approach paths or within 500m either side of the runway centreline
- ☐ **No** – go to **Step 2**

STEP 2

Is your flight planned in a no-fly zone near a non-controlled aerodrome?

- ☐ **Yes** – are there any crewed aircraft operating in the no-fly zone?
  - › **No** – go to **Step 3**
  - › **Yes** – are you operating wholly indoors?
    - » **No** – do not launch or, if already airborne, land
    - » **Yes** – go to **Step 3**
- ☐ **No** – go to **Step 3**

STEP 3

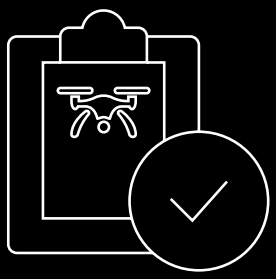
Is your flight planned in a prohibited, restricted or military operating area?

- ☐ **Yes** – is the prohibited, restricted or military operating area active?
  - › **Yes** – you must not fly your RPA unless permission is obtained from the area's controlling authority
  - › **No** – go to **Step 4**
- ☐ **No** – go to **Step 4**

STEP 4

Is your flight planned in a danger area?

- ☐ **Yes** – you can fly your RPA provided you mitigate the risk. See Chapter 4
- ☐ **No** – you can fly your RPA. Follow the drone safety rules. See Chapter 4



CHAPTER 4: DURING EVERY FLIGHT

One RPA at a time (CASR 101.238)

You must not operate more than one RPA at a time.

Maximum operating height

(CASR 101.085)

The maximum height a micro or excluded RPA can be flown is 120 m, which is about the height of a 35-storey building or the length of a football field.

Crewed aircraft do not usually operate below a height of 150 m unless they are near an aerodrome or performing some form of aerial work such as an emergency service operation. Operating RPA at or below a height of 120 m aims to provide a 30 m buffer between RPA and crewed aircraft.

When at the maximum height of 120 m, you must be aware of the elevation of the natural surface over which you are operating your RPA. If the surface elevation decreases – over a ravine, for example – your RPA must descend. When clear of the ravine and over rising terrain, your RPA may once again climb providing it doesn't exceed the maximum height of 120 m (see Figure 12).

image: Neil Palmer | CIAT

It is your responsibility to know the height and altitude of the RPA at all times during a flight. Most RPA operating in Australia do not have sensors to provide the operator with an indication of height. Unless the operating area is completely flat, the RPA height will only be accurate when the RPA is over the position it was first turned on (initialised).

Figure 12: Relationship between height and altitude with changes to the elevation of the natural surface

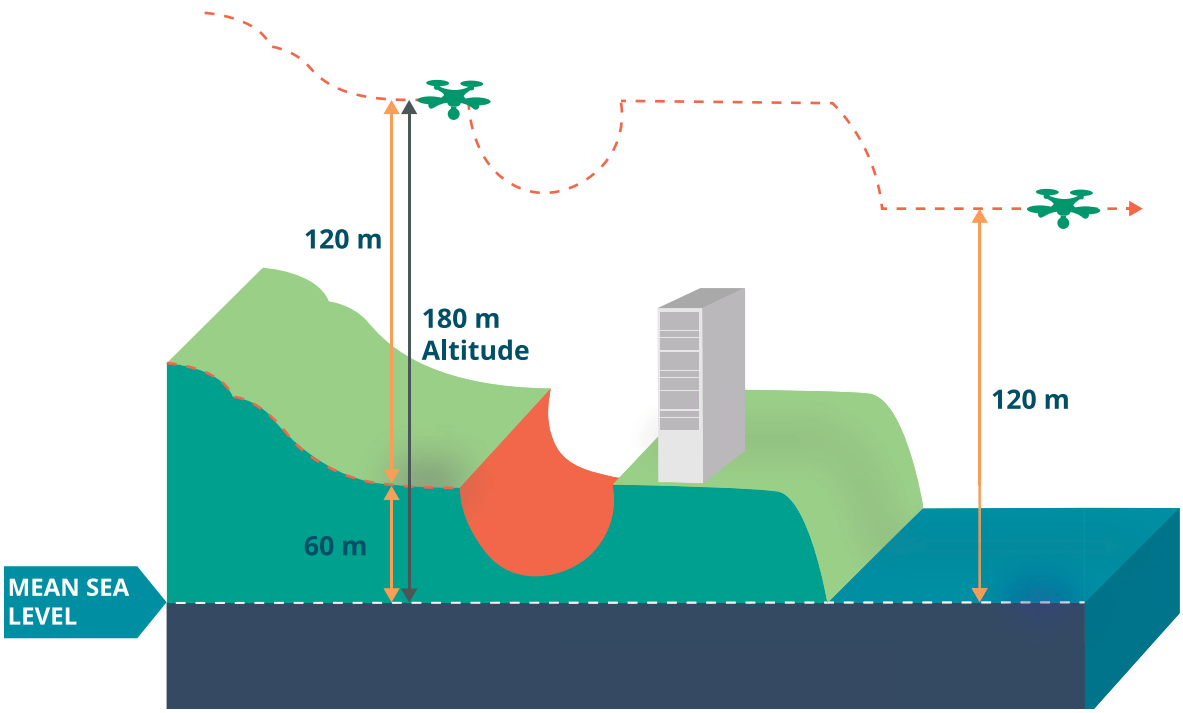


image: Jonathan Lampel | unsplash.com

Weather limitations (CASR 101.095)

You must not operate an RPA in cloud, thick fog, at night or whenever you do not have good visibility. You must operate an RPA only when you can see the RPA with your own eyes.

Operating in cloud, mist, fog, rain, dust or smoke can reduce:

- your ability to maintain visual line of sight
- your ability to see and avoid other aircraft or obstacles.

Micro RPA can apply to CASA for an approval to operate in cloud, thick fog, at night or with low visibility.

Wind and temperature

All RPA can be affected by wind, temperature and other environmental factors. Many RPA are not designed to be flown in moisture, snow, sleet or rain. An RPA should only be operated within its manufacturer's documented limits.

Operating an RPA outside the manufacturer's recommended limits increases risk of failure.

Daylight

Excluded RPA must only be operated during the daytime.

Day means the time between morning civil twilight and evening civil twilight. Civil twilight times can be obtained from Geoscience Australia.

The easiest way to ensure that the RPA is operated by day is not to operate after sunset or before sunrise.

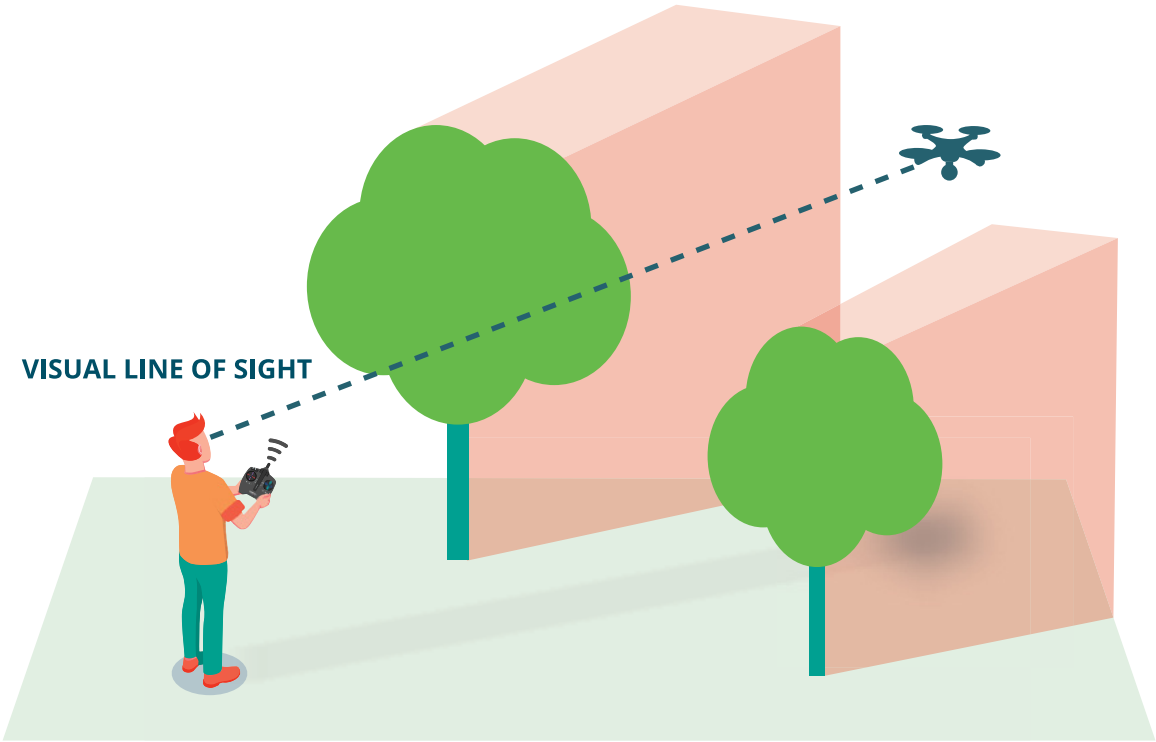
Visual line of sight (CASR 101.073)

An RPA must be operated within the visual line of sight of the person controlling the RPA (see Figure 13). You must always be able to see, orient and navigate the RPA with your own eyes and not view it through a device. You may use prescription glasses, contact lenses or sunglasses while operating an RPA.

You must not operate the RPA from a position where an obstacle may block your view of the RPA.

You must not navigate the RPA using the view provided by an onboard camera (referred to as first person view).

Figure 13: Unaided visual line of sight



Populous area (CASR 101.025)

A populous area is an area where, if the RPA were to fail, it could pose an unreasonable risk to the life, safety or property of a person in the area. A crowded beach, a busy road or sporting event may constitute a populous area. (See figure 14). However, an area doesn't need to be densely populated to be considered a populous area. What matters is that if something goes wrong, another person could be affected.

Figure 14: You must not operate an excluded RPA in a populous area

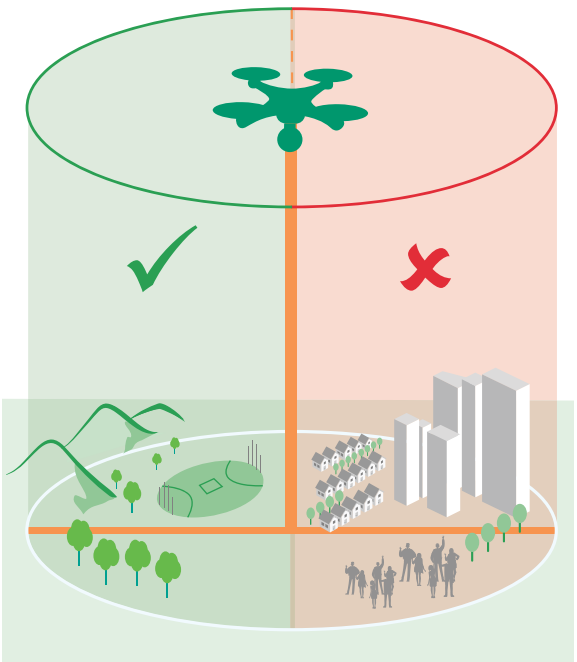


image: Jay Wennington | unsplash.com

Operations near people

(CASR 101.245 (8))

You must not operate an RPA closer than 30 m laterally to a person, unless that person is assisting in the control or navigation of the RPA (see Figure 15).

Keeping at least 30 m from people provides a buffer zone in case you lose control of the RPA or there is a system failure. This area is also referred to as an *exclusion zone*. The 30 m exclusion zone must be measured from the point on the ground directly beneath the RPA.

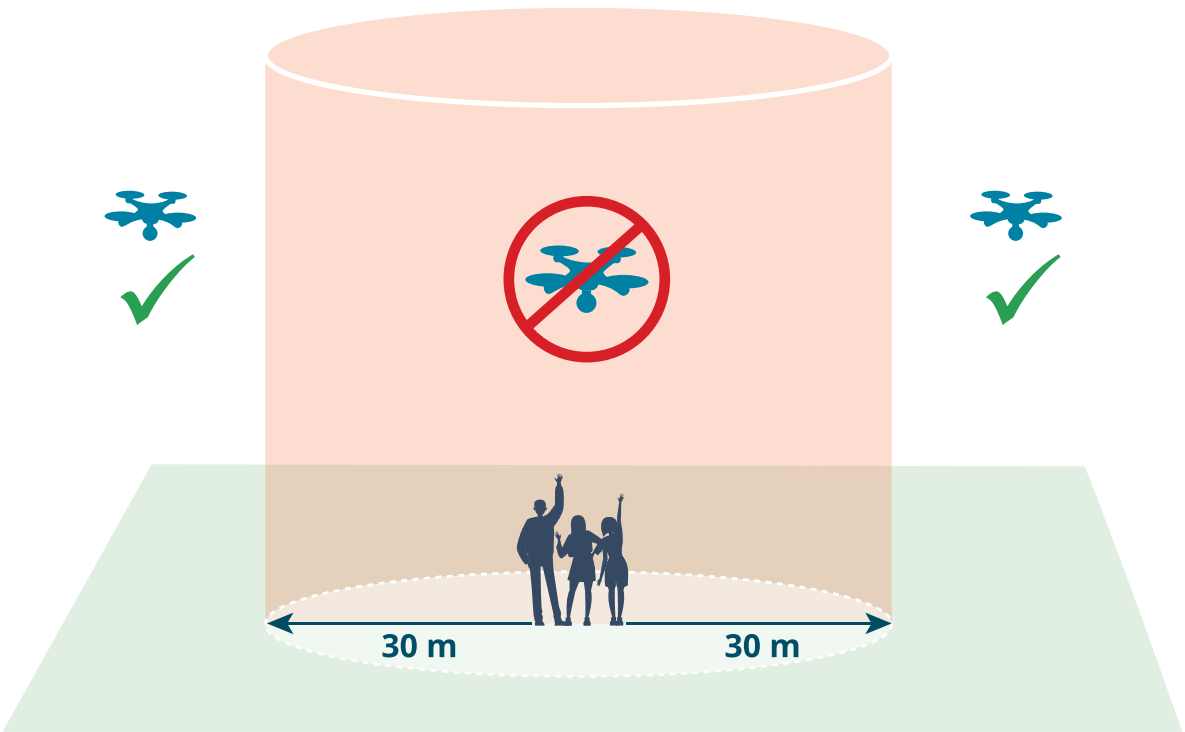
The 30 m measurement is a lateral measurement. It does not allow the RPA to be flown above people at any time during flight.

Dropping objects from an RPA (CASR 101.090)

You are permitted to drop or discharge an object from an RPA; however, it may only be done if you do not create a hazard to another aircraft, person or property.

If you do drop an object, you should consider the weight and size and the potential for it to drift. The performance and safety of the RPA may also be affected by the additional weight.

Figure 15: The 30 m rule



Operating with care and skill

(CASR 101.055)

You must ensure the RPA is not operated in a way that creates a hazard to another aircraft, person or property.

An RPA can be dangerous, particularly if it is not operated with care and skill. What is hazardous will depend on the circumstances and the controller should always consider the risk the RPA may pose to aircraft, people and property in the vicinity.

Keeping clear of public safety operations (CASR 101.238)

RPA must not be operated over or near an area of a public safety or emergency operation. This includes operations such as:

- firefighting
- law enforcement
- emergency medical services
- search and rescue.

During public safety and emergency operations such as firefighting, both crewed and remotely piloted aircraft are often used. In such situations, these aircraft cannot operate if there is a risk of collision with an unknown RPA. A collision between even a very small RPA and a crewed aircraft has the potential to be catastrophic. Where there is a benefit, a person in charge of conducting a public safety or emergency operation may give permission for you to operate your RPA in the same area.

Permission is generally only given in exceptional circumstances and only to RePL holders operating under a ReOC who have established procedures and protocols in place with the public safety or emergency response agency.

Carriage of dangerous goods

Some RPA operations may be subject to the 'carriage of dangerous goods' regulations (for example where an RPA is fitted with a recovery device such as a ballistic parachute system including a pyrotechnic charge). You should familiarise yourself with the requirements. See the CASA website at casa.gov.au/operations-safety-and-travel/safety-advice/dangerous-goods-and-air-freight/understanding-dangerous-goods.

Autonomous RPA operations

(CASR 101.097)

Autonomous operation of an RPA is not permitted. You must be able to control the RPA during all stages of flight.

Automation – as opposed to autonomy – can improve the quality, accuracy and precision of an RPA operation. Operating to a pre-programmed flight plan or utilising subject tracking is permitted. However, you must ensure that you can always immediately override the automation and resume control of the RPA.

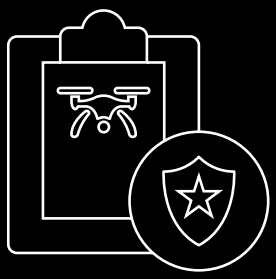
You should never put your radio control transmitter down or leave your remote pilot station during flight.

image: Robdownunder | flickr.com

Checklist 4 – During every flight

If you cannot comply with the checklist items below, you must not take off or, if already airborne, you must safely land.

Fly only one RPA at a time	☐ Yes	☐ No
Do not operate your RPA in an autonomous mode	☐ Yes	☐ No
Remain at or below a height of 120 m	☐ Yes	☐ No
Fly during daylight only	☐ Yes	☐ No
Fly in good visibility	☐ Yes	☐ No
Fly clear of cloud	☐ Yes	☐ No
Always keep your drone in sight	☐ Yes	☐ No
Stay clear of populous areas	☐ Yes	☐ No
Stay at least 30 m clear of people	☐ Yes	☐ No
Ensure you do not fly over people	☐ Yes	☐ No
Do not create a hazard to other aircraft, people or property › when flying › in the event your drone malfunctions › when dropping things	☐ Yes	☐ No
Keep clear of the following public safety operations › firefighting › law enforcement › emergency medical services › search and rescue	☐ Yes	☐ No
Operate within the manufacturer's meteorological and other limitations	☐ Yes	☐ No



CHAPTER 5: ENFORCEMENT PROVISIONS

image: Duncan Grant | grantdesign.com

Operation of an RPA in contravention of the *Airspace Act 2007* and the *Civil Aviation Act 1988*, and the various pieces of subordinate legislation such as the CASR and MOS, can have significant penalties, including, in some instances, terms of imprisonment. Most of the aviation laws that apply to RPA are strict liability offences carrying fines. For more information, please see the RPA Enforcement and Penalties page of the CASA website casa.gov.au/drones/drone-rules/enforcement-and-penalties

A strict liability offence is one where there is no need for CASA to prove the operator intended to break the rule, the act of breaking the rule is sufficient for the offence to be committed.

Misrepresentation of authorisations

Where a ReOC or RePL holder may apply to CASA for an exemption against the regulations, operators and pilots who intend to operate excluded RPA are not eligible for exemptions against the relevant regulations.

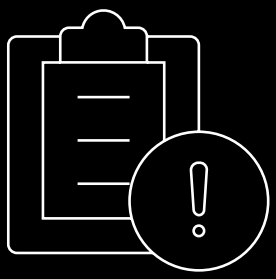
Any operation conducted outside the regulations and conditions is not an excluded RPA operation.

You should be aware that Part 117 of CASR contains severe penalties for a person misrepresenting that they hold civil aviation authorisations.

Depending on the severity of the contravention, CASA may:

- issue an infringement notice to pay a penalty
- take administrative action such as suspending or cancelling your accreditation
- compel the operator to enter into enforceable voluntary undertakings
- refer a matter for criminal prosecution.

Not only can a contravention be expensive, but it can also result in a prohibition on future involvement with RPA.



CHAPTER 6: OTHER RELEVANT CONSIDERATIONS

The CASR Part 101 and its associated MOS, contains the rules relating to aviation safety for the operations of RPA and model aircraft. There are other rules an RPA operator should be aware of before operating. This section briefly details some of the other rules as well as some of the non-operational rules relating to aviation safety.

The controller is responsible for complying with all rules that may apply to the operation of RPA.

Reporting of incidents and accidents (TSIA Pt.3)

The Australian Transport Safety Bureau (ATSB) is responsible for investigating aviation incidents and accidents. For micro and excluded RPA operators, reporting incidents and accidents is voluntary.

Details on how to make a report about an incident or accident can be found on the ATSB website.

Operations in national and state parks (and forests)

Each state and territory has rules about RPA operations in national parks and forests. These rules differ from state to state, but generally prohibit RPA from operating without consent from the park's controlling authority. Before you fly, you should check the local state or territory laws.

Generally, any commercial or business activity carried out in connection with a national or state park requires a formal approval from the park's controlling authority in the form of a lease, licence, permit or consent.

If an RPA is flown over a national or state park, consent is generally required from the park's controlling authority.

image: Cynthia | stock.adobe.com

Operating near wildlife

Some states and territories have specific rules about operating RPA near wildlife, including minimum distances and limitations on the direction in which wildlife can be approached. Penalties may apply, so check the local laws before you fly.

The NSW Government states that drones must not be flown within 100 m of marine mammals (see Figure 16). Breaking these rules can incur a fine.

Figure 16: Height restrictions for aircraft in the vicinity of whales, dolphins, and dugongs

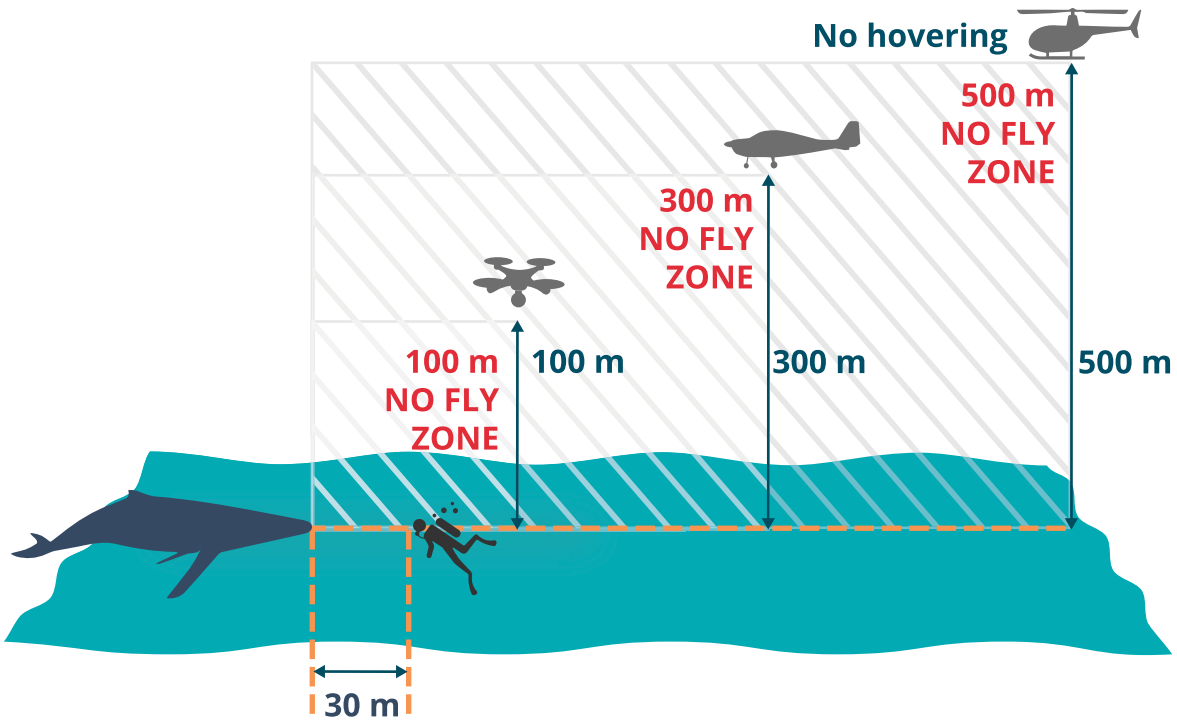


image: modified, based on NSW Department of Planning, Industry and Environment

image | Vecteezy

Using RPA for chemical application

Some states and territories have rules about the aerial application of pesticides, fertilisers or other chemicals using RPA. These rules can include additional licensing requirements, spray quality and equipment standards. Before you fly, check the local state or territory laws.

The Australian Pesticides and Veterinary Medicines Authority also has information about the regulation of agricultural chemicals and spray drift management in aerial application.

Privacy

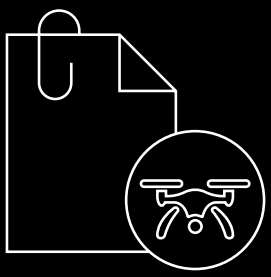
A range of privacy laws can apply to RPA operations. These differ by state and territory, the type of RPA activity and the size of the operator's organisation.

In some cases, an RPA activity may be considered a criminal offence. This can include activities where an RPA is used to record a person conducting a private act without their consent, or where the RPA is used as a surveillance device.

The Office of the Australian Information Commissioner has more information about some of the privacy rules that apply.

Insurance requirements

There are no aviation rules that require the owner or operator of an RPA to hold public liability insurance. However, an operator may be exposed to potentially large financial liability should something be damaged or someone be injured by an RPA you operate. You should consider obtaining liability insurance for your operations. Also, most landowners and administrators, such as the various state park administrators, will not give a permit to operate an RPA unless they have sighted an insurance certificate.



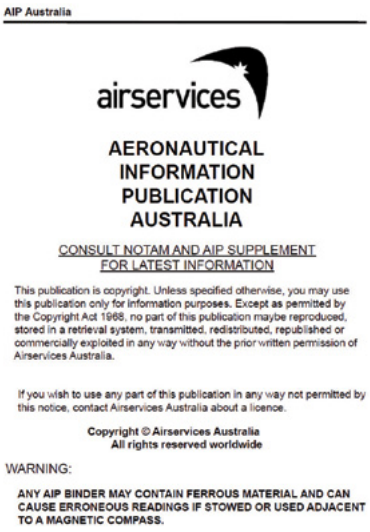
APPENDICES AND REFERENCES

Appendix A: Aviation charts and publications

Airservices Australia is the Commonwealth corporate entity that provides Australia's air navigation services. Airservices Australia publishes aviation maps and other relevant publications. The majority of the publications are available for free from the Airservices website: airservicesaustralia.com/aip/.

Aeronautical Information Publication

The Aeronautical Information Publication (AIP) has useful information regarding aeronautical radio operation, airspace and meteorology. It can be accessed at: airservicesaustralia.com/aip/aip.asp.



AIP Australia

airservices

AERONAUTICAL INFORMATION PUBLICATION AUSTRALIA

CONSULT NOTAM AND AIP SUPPLEMENT FOR LATEST INFORMATION

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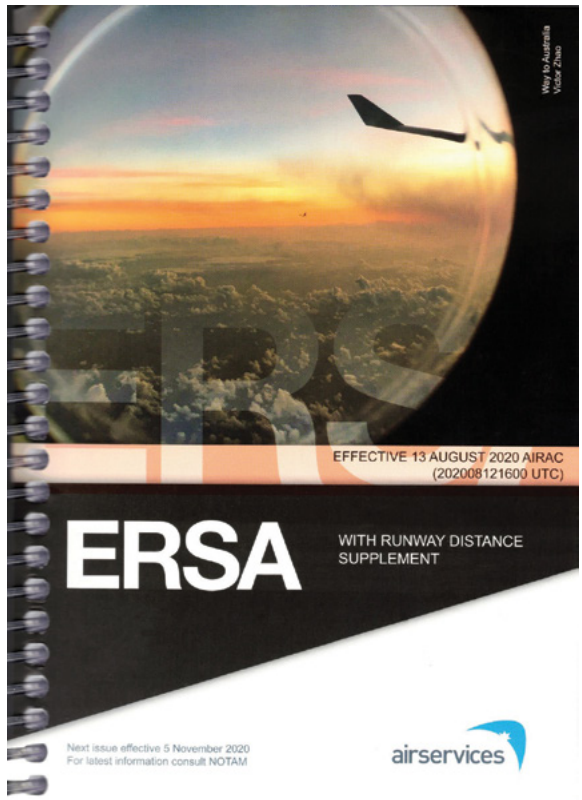
WARNING:

ANY AIP BINDER MAY CONTAIN FERROUS MATERIAL AND CAN CAUSE ERRONEOUS READINGS IF STOWED OR USED ADJACENT TO A MAGNETIC COMPASS.

En Route Supplement Australia (ERSA)

Refer to: airservicesaustralia.com/aip/aip.asp.



The ERSA is part of the Aeronautical Information Package and contains details of:

- special use airspace including standard activation times, refer to airservicesaustralia.com
- aerodrome details for all registered and certified aerodromes in Australia, as well as details on many uncertified aerodromes
- meteorological information service availability.

RPA operators are subject to applicable local noise abatement requirements (such as operating hour limitations and flight path/altitude restrictions) in the area of operation. Details of noise abatement procedures, including 'Fly Neighbourly' areas, are published in ERSA.

Times in the ERSA are published in Coordinated Universal Time (UTC), meaning they must be converted to the relevant Australian time zone.

The ERSA SUA extracts show that if you wished to operate in the restricted area designated R430A, categorised RA2, it might be permitted subject to approval by the controlling authority, CSIRO Tidbinbilla, which can be contacted on 02 6201 7940.

Restricted airspace extract from ERSA SUA-5

SUA 28 NOV 2024 SUA - 4

IDENT	STATUS	LIMIT	HOUR	AUTHORITY	ACTIVITY
R421A(NWX)	RA1	SFC - FL125	NOTAM	(3) FLTCDR 453SQN NOWRA	MILITARY FLYING
R421B(NWX)	RA1	2500 - FL125	NOTAM	(3) FLTCDR 453SQN NOWRA	MILITARY FLYING
R424	RA3	SFC - 3500	H24	(6) SRPSU	RADIO TELESCOPE
R430A	RA2	SFC - 3500	H24	(84) CSIRO Tidbinbilla	RADIATION HAZARD
R430B	RA2	3500 - 4500	H24	(84) CSIRO Tidbinbilla	RADIATION HAZARD
R430C	RA2	4500 - 10000	H24	(84) CSIRO Tidbinbilla	RADIATION HAZARD
R469(RIX)	RA1	2500 - 4500	MON-THU 2200-1300, FRI and JF 2200-0830 (1HR EARLIER HDS)	(78) FLTCDR 453SQN RICHMOND	MILITARY FLYING

Controlling authority contact detail extract from ERSA SUA-14

(81)	03 9739 0333
(82)	08 8951 2025 or 08 8951 2010 or 08 8951 2000
(83)	02 8782 7531
(84)	CSIRO Tidbinbilla Control Room 02 6201 7940
(85)	1300 765 033
(86)	07 4844 4000

Aerodrome hours of operation

The extracts below are from the ERSA entry for Tamworth (YSTW), which sets out the aerodrome hours of operation.

ATS AND AERODROME COMMUNICATION FACILITIES

FIA	BRISBANE CENTRE	127.1 Circuit Area (Outside TWR HR)
ATIS	TAMWORTH	116.0 123.8 (1)
SMC	TAMWORTH GROUND/ DELIVERY	121.9 (2)
TWR	TAMWORTH TOWER	118.25 (3) 119.4

(1) or Phone 02 6764 5288
(2) Taxi clearance required on all TWY.
(3) HJ only.
1. TWR HR:
   a. MON-FRI: 2100-1015 UTC (1HR earlier during HDS.)
   b. SAT-SUN: 2200-0530 UTC (1HR earlier during HDS.)
   Phone: 02 6764 5271^

AIP Australia 05 SEP 2024 FAC YSTW - 3

Note: All times 1HR earlier during HDS. TWR HR may change at short notice, check status of airspace with ATS or Tamworth ATIS.
2. Tamworth TWR provides combined TWR and APP CTL services within Class D airspace 4,500FT AMSL and BLW DRG TWR HR. CTC TWR for a clearance.
3. Outside TWR HR, Tamworth Class D airspace 4,500FT AMSL and BLW and Class C airspace BLW 8,500FT becomes Class G.

The following is an explanation in plain English. Tamworth tower (TWR) operates between 2100–1015 UTC from Monday to Friday and from 2200–0530 UTC Saturday and Sunday. To obtain local time (in this case Eastern Standard Time, AEST), add 10 hrs to the UTC times. This means Tamworth's aerodrome and airspace is controlled only between 0700 and 2015 (AEST) Monday to Friday, and between 0800 and 1530 (AEST) Saturday and Sunday. Check the status of the aerodrome and its airspace by listening to the Aerodrome Terminal Information Service (ATIS) on the VHF radio frequency 123.8 MHz or by telephoning 02 6764 5288.

See airservicesaustralia.com/aip/aip.asp.

Locations of controlled aerodromes

- All Australian capital city aerodromes are controlled.
- There are other controlled aerodromes near the larger regional centres, and these can be found by referring to the VTCs and noting the areas marked as CTR (control zones).
- A VTC will also show the lateral and vertical dimensions of a CTR, refer to: airservicesaustralia.com/aip/aip.asp.

You should assume an aerodrome is controlled unless you can positively establish otherwise.

Controlled aerodromes operate at specific times. Controlled aerodrome hours of operation are published in the AIP ERSA, refer to Aerodrome hours of operation.

Visual Terminal Chart

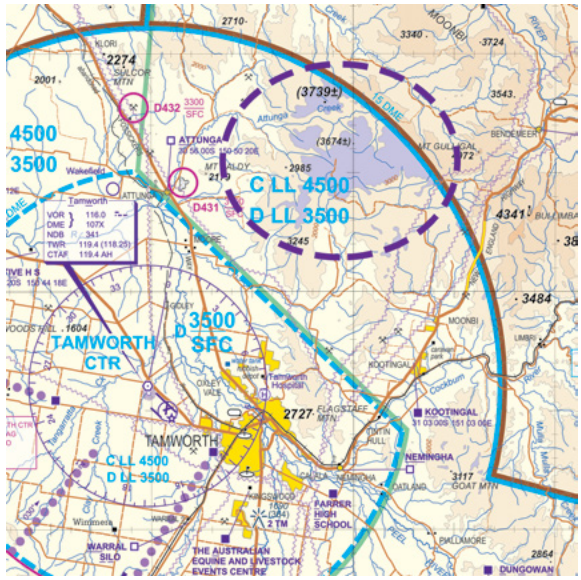
The VTC is an aviation chart that can show airspace and aerodrome information including the location of danger areas, restricted areas, controlled airspace, overlying controlled airspace areas and aeronautical radio frequencies.

VTCs are available for aerodromes listed here:

airservicesaustralia.com/aip/aip.asp

In this example, the lower limit of controlled airspace (D) to the north-east of Tamworth is 3500 ft above MSL. Where the underlying terrain is less than 500 ft below this controlled airspace lower limit, it is shown in a purple tint. In fact, in this example, there are two spot heights – 3739 ft and 3674 ft – which are already in class D controlled airspace.

Aviation documentation (including maps) typically gives height in feet, and distance in nautical miles. This guide uses metric units for heights and distances. Always check which units you are using.



Visual Navigation Chart

The VNC is an aviation chart which shows similar things to the VTC.

VNCs are available for the following areas:

airservicesaustralia.com/aip/aip.asp

Acronyms and initialisms

AIP	Aeronautical Information Publication
ARN	Aviation Reference Number
ATSB	Australian Transport Safety Bureau
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations 1998
ERSA	En Route Supplement Australia
FPV	First-person view
MOS	Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019
MSL	Mean sea level
NOTAM	Notice to airmen
RA	Restricted airspace
ReOC	Remotely piloted aircraft operator's certificate
RePL	Remote pilot licence
RPA	Remotely piloted aircraft
SUA	Special Use Airspace
TSIA	Transport Safety Investigation Act 2003
UTC	Coordinated Universal Time
VTC	Visual Terminal Chart
VNC	Visual Navigation Chart

Units

ft	feet
g	grams
m	metres
kg	kilograms
km	kilometres
NM	nautical miles

Version history: Part 101 Micro and Excluded remotely piloted aircraft operations

Updated: December 2024 (version 2.2)

Latest print version: 2.0

Version 2.2 December 2024	**Details**
Throughout the guide	Removed references to feet and nautical miles. The guide now has only metric measurements.
Terminology table Page IV	Defined *altitude* as: the vertical distance measured above mean sea level (AMSL). Defined *height* as: the vertical distance measured above ground level (AGL). Inserted *no-fly zone of a helicopter landing site (HLS)*: the area and airspace from the centre of a HLS with a radius of 1.4 km and a vertical height of 120 m. Adjusted definition of no-fly zone of a non-controlled aerodrome to be parallel with the definition of no-fly zone of a controlled aerodrome.
Chapter 1: Introduction Page 6	Under heading *Excluded category operations,* removed last bullet – *operator accreditation holders are not required to obtain recreational accreditation* Removed the word *accreditation* in sideways text.
Chapter 2: Before the first flight Page 11	Removed the word *now* in the second sentence. Removed section about notification requirements.
Chapter 3: Before every flight Page 14	Under heading *drone safety apps, changed no fly-zones and restricted airspace* to *no-fly zones, restricted areas and military operating areas.*
Chapter 3: Before every flight Controlled aerodromes Page 16	First bullet point changed from *over an approach or departure path* to *over or in the approach departure path.* Changed first sentence of the note to read: *Micro RPA may be flown within 5.5 km of the measurement point of the runway of a controlled aerodrome, up to an operating height of 45 m, provided they are*: Adjusted Figure 3 to reflect above text. Adjusted graphic design of Figure 3. Added a note for Micro RPA to read: *Micro RPA may be flown within 5.5 km of the measurement point of the runway of a controlled aerodrome, up to an operating height of 45 m, provided they are:* *> not operated over the movement area* *> not operated over or in the departure or approach path* *> not creating a collision hazard to other aircraft taking off or landing.*
Chapter 3: Before every flight Non-controlled aerodromes Page 17	Corrected first bullet point to read *over or in the approach*. Adjusted graphic design of Figure 5.
Chapter 3: Before every flight Helicopter landing sites Page 18	Added new section: Helicopter landing sites (HLS). Adjusted pages 17, 18, 19 to fit new content.
Chapter 3: Before every flight Restricted areas Page 19	Changed *Restricted areas* to *Restricted zones* in headings and text.

Version 2.2 **December 2024**	**Details**
Chapter 3: Before every flight Operating micro and excluded RPA in restricted airspace Page 22	Changed 2nd paragraph from *Prohibited Restricted Danger (PRD)* to *Special Use Airspace (SUA).* Corrected 2nd Lightbulb text to read *CASA approval is required to fly in this airspace.*
Chapter 3: Before every flight Emergency Procedures Page 23	Corrected Regulatory reference from *Part 99* to *Part 92* in the note.
Chapter 3: Before every flight Checklist 3 Page 24	Step 1 removed entirely. Steps 2 to 5 re-labelled as steps 1 to 4. Changed Step 1 'Yes' response to read: Yes – you cannot fly your RPA unless it is a micro RPA and is not operated above 45 m, within the aerodrome boundary, over or in the departure and approach paths or within 500m either side of the runway centreline. Amended step 4 from *Prohibited of restricted areas* to *prohibited, restricted or military operating areas.*
Chapter 4: During every flight Populous area Page 29	Paragraph re-written to better explain 'populous area' as: *A populous area is an area where, if the RPA were to fail, it could pose an unreasonable risk to the life, safety or property of a person in the area. A crowded beach, a busy road or sporting event may constitute a populous area. (See figure 14). However, an area doesn't need to be densely populated to be considered a populous area. What matters is that if something goes wrong, another person could be affected.*
Chapter 4: During every flight Autonomous RPA operations Page 31	Amended 2nd paragraph to read *Operating to a pre-programmed flight plan or utilising subject tracking is permitted.*
Chapter 6: Other relevant considerations Reporting of incidents and accidents Page 36	Section removed and replaced with: The Australian Transport Safety Bureau (ATSB) is responsible for investigating aviation incidents and accidents. For micro and excluded RPA operators, reporting incidents and accidents is voluntary. Details on how to make a report about an incident or accident can be found on the ATSB website.
Appendix A AIP and ERSA Pages 40, 41 and 42	Pages 40, 41 and 42 re-ordered for a better explanation of the AIP and ERSA. Changed the term *PRD* to *SUA.* Added a lightbulb stating: Aviation documentation (including maps) typically gives height in feet, and distance in nautical miles. This guide uses metric units for heights and distances. Always check which units you are using. Updated extract from the ERSA for Tamworth (YSTW) and updated the following associated text.
Acronyms and initialisms	Changed PRD to SUA – Special Use Airspace.

Version 2.1 **June 2023**	**Details**
Terminology table Page IV	Definition of a no-fly zone of a controlled aerodrome amended to read: any area of a controlled aerodrome within 5.5 km of the measurement point of the runway, or over an approach or departure path, or over the movement area Definition of a no-fly zone of a non-controlled aerodrome amended to read: any area within 5.5 km, in any direction, from the measurement point of any runway of the non-controlled aerodrome or the approach and departure path that is being used (or will be used) by a crewed aircraft.

casa.gov.au