



# **POLICY PROPOSAL**

## **PP 1816US**



# **Proposed new Remotely Piloted Aircraft (RPA) Registration and RPA Operator Accreditation Scheme**

<b>Date</b>	January 2019
<b>Project number</b>	US 18/09
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## Proposed Outcome

CASA proposes to introduce a remotely piloted aircraft (RPA) registration and RPA operator accreditation requirement as a way of monitoring the safe and lawful operation of RPAs. The registration and accreditation requirements are proposed to apply, with certain exceptions, to the following RPA:

- RPA more than 250 g operated recreationally
- all RPA operated commercially, including excluded RPA operations, regardless of weight.

The RPA registration and accreditation requirements are not proposed to apply to the following:

- RPA 250 g or less operated recreationally  
or
- Model aircraft operated at CASA-approved model airfields,  
or
- RPA operated recreationally indoors.

## Policy overview

This document should be read in conjunction with Annex A - *Policy Statement - Proposed new remotely piloted aircraft registration and remotely piloted aircraft systems operator accreditation scheme*. Doing so ensures a more complete understanding of the proposal, as it encompasses high-level policy considerations as well as the operational aspects.

The adoption of remotely piloted aircraft systems (RPAS) technologies (commonly referred to as ‘drones’) is currently taking place at an exponential rate in both the recreational and commercial sectors.

The Civil Aviation Safety Authority (CASA) has responsibility under section 9 of the *Civil Aviation Act 1988 (the Act)* for the safety regulation of civil air operations including RPAS in Australian territory.

CASA’s policy is to implement an effective aviation safety regulatory framework in order to enable the safe and efficient integration of RPAS into the Australian aviation sector. To accomplish this, CASA will continue to develop policy, standards, regulations and guidance material that reflect an appropriate and proportionate approach to the relevant levels of risk, and is consistent with international best practice.

A Remotely Piloted Aircraft System (RPAS)<sup>1</sup> is made up of a remotely piloted aircraft (RPA), a remote pilot station (RPS) and a command and control link (C2).

$$\text{RPAS} = \text{RPA} + \text{RPS} + \text{C2}$$

The Governor-General is empowered under paragraph 98(3)(a) of the Act to make regulations

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<sup>1</sup> ICAO Document 10019 - Manual on Remotely Piloted Aircraft Systems (RPAS) page xviii  
<https://skybrary.aero/bookshelf/books/4053.pdf>

concerning the registration of aircraft. The Act does not mention remote pilot stations (RPS), otherwise known as 'ground control stations'. Therefore, it is only the registration of remotely piloted aircraft (RPA) that is proposed and not its associated RPS.

For accuracy, this document will propose registration of an RPA, but will discuss 'operations of RPAS' and 'RPAS operators'.

The term 'RPAs' is used as the plural of RPA and is not to be confused with "RPAS".

Conventionally piloted aircraft (CPA) —both commercially and privately-operated— are easily identifiable in Australia through an existing registration and marking scheme and includes these aircraft on the Australian Civil Aircraft Register. However, there is currently no such registration scheme in Australia for RPA below 150 kg (all RPA greater than 150 kg are required to be on the Australian Civil Aircraft Register). Likewise, there is currently no licensing or alternative accreditation scheme to license recreational RPAS operators, irrespective of the size of the device they are operating, including those operating RPAs commercially and which are in the excluded category below 2kg. Those conducting commercial operations of an RPAS above 2 kg are required to be licensed with a CASA-issued Remote Pilot Licence (RePL).

The purpose of this policy proposal is to inform the consultation of a proposed scheme for accreditation and mandatory education for recreational and excluded RPAS operators, and national mandatory RPA registration.

Issues covered include:

- a. Mandating two forms of accreditation. The requirement of completion of an online education course that incorporates a quiz that is designed to validate the attainment of knowledge for the safe and lawful operation of RPAS:
  - i. by individuals operating RPAS recreationally
  - ii. by individuals operating RPAS commercially<sup>2</sup> in the excluded category.
- b. Mandating a national registration scheme as a way of monitoring the safe and lawful operation of RPAS.

## Why are we consulting

CASA published a discussion paper<sup>3</sup> - *Review of RPAS operations (DP 1708OS)*<sup>4</sup> from 11 August to 29 September 2017. Among other questions, the discussion paper invited the public, drone, RPAS and model aircraft operators, as well as their associations, to comment on the following:

- Should all RPA be registered?
- Should all RPA users be required to meet specified training, experience, knowledge and/or assessment requirements?

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<sup>2</sup> Commercial RPAS operations conducted under an RPAS Operating Certificate ReOC require a Remote Pilot Licence (RePL). RePL privileges would be extended to incorporate accreditation privileges.

<sup>3</sup> <https://consultation.casa.gov.au/regulatory-program/dp1708os/>

<sup>4</sup> An analysis of responses to the Discussion DP 1708OS is published at [https://consultation.casa.gov.au/regulatory-program/dp1708os/user\\_uploads/analysis\\_responses\\_discussion\\_paper\\_drone\\_operations\\_dp1708os-1.pdf](https://consultation.casa.gov.au/regulatory-program/dp1708os/user_uploads/analysis_responses_discussion_paper_drone_operations_dp1708os-1.pdf)

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AND RPAS OPERATOR ACCREDITATION SCHEME

In May 2018, CASA published the *Review of aviation safety regulation of remotely piloted aircraft systems*<sup>5</sup> with the following findings:

- a. CASA supports mandatory RPA registration in Australia for RPAs weighing more than 250 g.
- b. CASA should develop a simple online course for recreational and excluded category RPA operators on safe RPA operations, followed by a quiz that has a minimum pass mark.

On 31 July 2018, the report of the Senate enquiry entitled *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems*<sup>6</sup> was tabled in Parliament.

Recommendation 2 of the Senate enquiry reads:

The committee recommends that the Australian Government introduce a mandatory registration regime for all remotely piloted aircraft systems (RPAS) weighing more than 250 grams. ....RPAS operators should be required to successfully complete a basic competence test regarding the safe use of RPAS, and demonstrate an understanding of the penalties for non-compliance with the rules.

On 27 November 2018, the Federal Government's response to the Senate enquiry was tabled in Parliament; the Government agreed<sup>7</sup> with Recommendation 2.

This consultation<sup>8</sup> sets out policy proposals that, if implemented, would provide for a remotely piloted aircraft (RPA) registration scheme, as well as an RPAS operator education and accreditation scheme.

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<sup>5</sup> <https://www.casa.gov.au/files/review-aviation-safety-regulation-remotely-piloted-aircraft-systems>

<sup>6</sup>

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Rural\\_and\\_Regional\\_Affairs\\_and\\_Transport/Drones/Report](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Drones/Report)

<sup>7</sup> <https://infrastructure.gov.au/aviation/publications/index.aspx>

<sup>8</sup> Section 16 of the Civil Aviation Act 1988 requires that CASA must, where appropriate, consult with government, commercial, industrial, consumer and other relevant bodies and organisations.

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# 1 Introduction

## 1.1 Background

The RPAS industry is a relatively new aviation sector. With certain exceptions when operating these aircraft in Australia, all commercial RPA operators and private operators of large RPA (above 150 kgs) must hold a remote pilot licence (RePL) and RPA operator's certificate (ReOC). The process to obtain a RePL and ReOC is well-established and includes CASA mechanisms to ensure commercial operators are competent to operate their RPA safely. In addition, existing legislation requires that RPA weighing above 150kg must be registered.

However, there is no such requirement for an RPA weighing 150kg or less, operated either commercially or recreationally, to be registered.

Additionally, there is no requirement for individuals operating RPAs weighing less than 150kg for non-commercial purposes to hold a RePL, or complete any mandatory education or testing. Similarly, there is no requirement for operators of excluded RPA to complete any mandatory education or testing.

CASA proposes to introduce RPA registration and RPA operator accreditation requirements as a way of monitoring the safe and lawful operation of RPAs below 150kg.

## 1.2 Mandating a personal accreditation scheme for RPAS flight proficiency

It is not known how many individuals operate RPAs within Australian territory; this number could be in the hundreds of thousands. It is relatively easy and cheap to buy and operate small RPAs. While many of these small RPAs typically do not pose a serious threat to people or property, there have been several incidents that have increased public concern about the inappropriate operation of them.

There are immediate and enduring benefits of a training/knowledge test. A better-informed RPAS operator is more likely to exhibit improved safety behaviours because of their increased safety knowledge and operational awareness. The training/knowledge test should be provided separately from a requirement to register RPAs and be available to anyone who has access to an RPA.

### 1.2.1 Other Australian accreditation and licensing schemes

There are several licensing schemes in other comparable sectors within Australia, with varying levels of structure and regulatory oversight. These include a nationally recognised Recreational Pilot Licence (RPL) for conventionally piloted aircraft, state-based motor vehicle driver licences, and state-based boating and powered-water-craft licences. Examples of these schemes are summarised in table 1 at 1.3.1.

#### 1.2.1.1 International RPAS Operating Environment

In the RPAS sector, internationally, each national aviation administration (NAA) mandates the requirements for their own licensing model. Internationally, there is no current harmonisation in terms of age limits or qualifications for non-commercial RPAS pilots/operators:

- **Canada:** for devices between 250g and 1kg, pilots must be 14 years or older; for devices 1kg to 25kg, pilots must be 16 years or older.
- **UK:** a discussion paper released in July 2018 has proposed a minimum age of 18 for a small RPAS operator, but no decision has been made on this point. The UK has legislated requirements that will come into effect on 30 November 2019, with an online safety test being mandatory for all recreational remote pilots.
- **The US and Sweden** - There is a comprehensive list of 'safety tips', or minimum recommended safety practices, but no formalised scheme.

### 1.2.2 Cost recovery considerations - accreditation

The safety education aspect of an RPAS course and quiz is something that CASA currently does at no cost to participants. Safety education is a CASA function under s9(2) of the Act, and a proportion of its budget is committed to budget to the safety education of pilots of conventionally piloted aircraft without cost recovery. The safety outcomes CASA seeks with this policy depend on a strong uptake by those who are already actively flying without accreditation.

Consistent with this approach, CASA is envisaging accreditation would be free so as not to inhibit uptake of the initiative by RPAS users. However, there would be a fee to register an RPA.

### 1.2.3 Benefits and costs of an accreditation scheme for RPAS flight proficiency

#### 1.2.3.1 Benefits

- Safer operation through increase in lawful operation due RPA ownership being more identifiable to authorities.
- Better operator understanding of how to operate safely through education thereby reducing likelihood of incident/accident.
- Differentiation of the accredited population to inform CASA's risk-based surveillance program (also useful to other government entities).
- Safety information - provision of a mechanism to proactively target RPA users.
- Demographic profile within the RPAS sector to assist in the development of safety campaigns
- Industry sector intelligence made available to CASA decision makers.

#### 1.2.3.2 Costs to individuals and industry

- Time to undertake the accreditation.
- Time to renew accreditation when it expires after three years.

## 1.3 Mandating an RPA and model aircraft Registration Scheme

The 2017 CASA Discussion Paper, *Review of RPAS operations (DP 17080S)*, sought public opinion on whether Australia should have a register for drones. Eighty-six percent of 910 respondents supported registration<sup>9</sup>.

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<sup>9</sup> Review of aviation safety regulation of remotely piloted aircraft systems (Page 8)  
<https://www.casa.gov.au/files/review-aviation-safety-regulation-remotely-piloted-aircraft-systems>

Registering RPAs will create a system that identifies and associates an operator/pilot with an RPA, incentivising responsible use. Identification and association of an individual/organisation with an RPA is key to improving the safety of future RPA operations.

However, the requirement to register a device does not, on its own, mean easy identification of the RPAS operator. Some legacy RPAS and certain RPAS makes, do not have an electronic identification that can easily be interrogated from the ground. This means that even if the registration system is implemented, the RPA might not be able to be identified unless the RPA is physically 'captured', and the serial number read. Nevertheless, the fleet of RPAs is expected to have a short lifespan, like most electronic goods, and the fleet will be renewed over the coming years with RPAs that have electronic identification enabled from manufacture.

In all other regulated transport modes operating within Australia, there are well recognised registration or identification systems. The registration 'numbers' act as an effective means to identify the owner and, where required, act as reference to what other records can be attached.

### **1.3.1 Other Australian registration schemes**

Due to the uniqueness of RPA devices – size and independence of operation – they do not readily lend themselves to traditional registration schemes. However, there have been some comparable schemes utilised by government agencies and these schemes<sup>10</sup> are as follows:

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<sup>10</sup> Schemes current at time of publishing.



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**Table 1 - Comparable schemes utilised by government agencies**

Category	Authority	Registration Scheme	Licence Required	Accreditation Scheme	Minimum Age Requirements	Training Requirements	Additional Requirements
Commercial RPA	CASA	Yes (150kg over)	RePL	Theory exam + practical test		5 hours practical experience	
Excluded RPA	CASA						Must comply with standard operating conditions and notify CASA
Recreational, conventionally piloted aircraft	CASA	Yes	RPL	RPL theory Exam + flight test	16 years	Min 25 hours flying time	English language assessment
Motor Vehicle	State	Yes	Driving Licence	Driving knowledge theory test + driving test	16 years (SA 17 years)	Mandated supervised practical training	Eyesight test and medical depending on State
Motorcycle	State	Yes	Rider Licence	Driving knowledge theory test + driving test	16 years (SA 17 years)	Mandated supervised practical training	Eyesight test and medical depending on State
Boat/ Powered Water Craft (PWC)	State	Yes	Boat Licence	Boating/PWC knowledge theory test + practical test	12 years	Mandated supervised practical training	

### **1.3.2 Benefits and costs of an RPA registration system**

#### **1.3.2.1 Benefits**

- a. Registration would support the identification of the operator following an RPA-related safety accident, incident or audit, provided that the RPA can be identified (visually or electronically) and can be associated with the CASA-held record.
- b. A CASA-held registration system would allow other government agencies lawful access to address social nuisance, privacy, security and noise concerns.
- c. Registration would facilitate future electronic identification (eID) systems that would support in-flight identification of an RPAS operator, as well as providing a mechanism to support a future RPAS traffic management system.
- d. Registration would also provide CASA, the government, industry and the community with a more accurate picture of the nature and size of the Australian commercial and recreational RPA fleet to assist with current and future policy settings related to this technology. This would expand knowledge to include RPA ownership demographics and information across the geographic spread of ownership and areas of operation.
- e. Registration would also provide CASA with the opportunity to target education campaigns regarding safe flying that are aimed at improving the flying ability of those operating RPAs.

#### **1.3.2.2 Costs – RPAS user**

The costs to the RPAS user include the time required to register each RPA, and the cost of the registration fee for that category of registration.

It is proposed that different fee structures would be based on whether the user indicates the RPA will be used for recreational or commercial purposes:

- a. Recreational RPAS or model aircraft operators would pay a single annual fee for all RPA/model aircraft that are registered.
- b. Commercial and excluded RPAS operators would be charged a fee per commercial RPA that is registered and based on a scale of fees linked to the weight category of the RPA.

A discussion on time and cost impacts categorised by industry sector is presented in chapter 2.4 of this policy proposal.

CASA systems would be configured to generate a warning to the user when they select the RPA as recreational only, advising them that the RPA must not be used for commercial purposes.

Re-registration would be required on the anniversary of the initial registration and would involve payment of the requisite fee and validation of the data held by CASA and if required updating (e.g. change of address).

#### **1.3.2.3 Costs – Government**

There are significant upfront costs for CASA to implement an RPA registration system. CASA will have to implement IT systems to support registration and accreditation, and amend legislation to support and require its use. It is expected that these costs would be recovered over time through the collection of registration fees.

For a discussion on cost recovery, see chapter 1.7 of this document.

## 1.4 Identification and registration

Each RPA may ultimately need several identifiers, including:

- An electronic identification (eID) for interacting and providing recognition within traffic management systems and to other RPAs.
- An identification that is visible on the RPA:
  - a physical, human-readable serial number, or similar identifier
  - a machine-readable serial number, barcode or QR code that enables easy, error-free recording of manufacturers' serial numbers or similar identifiers and which is electronically linked to the eID.

### 1.4.1 Key Terms – registration, marking, identification and association

**RPA registration** is the mechanism whereby people (including organisations) would be required to provide information to CASA that associates them with an RPA and provide enough reliable contact information so they can be contacted, or found if, required. Registering an RPA would create a CASA record of the registration.

**Marking** is the utilisation of a unique physical mark (serial number) on the RPA that associates it with the person to whom it is registered. It will associate the RPA with the CASA record of registration.

Marking can be human readable (alphanumeric) or machine readable (barcode or QR code). If a unique manufacturer's mark is not present<sup>11</sup>, a unique number/barcode may be affixed. CASA's provision of a mark 'sticker' would represent a significant cost to implement and does not seem to be proportionate to the benefit expected. However, an identifier might be provided by email or through the registration portal which would be legibly and indelibly marked onto the RPA by the user in writing at lower cost. This means accepting a lower registration (marking) system integrity. Allowing a system of RPA self-marking does have the potential for the alphanumeric registration number to be made unreadable. However, this is a small risk compared to the lower cost compared to a system in which CASA would need to mail a sticker to the registered operator.

**Identification** is the act of accessing the CASA record of registration for an RPA. This might be done by a person reading the alphanumeric label<sup>12</sup> or serial number; or by scanning a barcode or a QR code. Alternatively, identification might be achieved by passively receiving a broadcast eID or actively electronically interrogating the RPA for its eID.

**Association** of the RPA to its owner/operator/remote pilot cannot be achieved in all conceivable circumstances with only a physical label, or only with an eID. Although a system that would provide a physical label comes at significant cost to a future RPA registration system, it has some benefits, particularly post-event, if the RPA is found or seized by police, or in circumstances where an eID system is inoperative after impact.

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<sup>11</sup> Typically, smaller low-cost drones and any home built or experimental research and development RPA

<sup>12</sup> Caution should be exercised about adoption of a policy requiring actual personal information (name, address) that is humanly readable on the drone due to the potential social implications of the emotional responses that a minority of people express to drones in 'their personal space'

Inflight identification of an RPA is only possible using forms of eID. However, a substantial proportion of legacy RPAs would be unable to support eID, and mandating its use may impose an unreasonable cost to manufacturers and thereby increase prices.

The IMEI code embedded in all computer processors (CPUs) provides a unique electronic identifier that can distinguish one RPA from another, but CASA may need to wait for an industry standard<sup>13</sup> to be agreed upon and implemented by manufacturers before eID of all RPAs is practical.

## 1.5 Choosing what to register

It is impractical to seek registration for every unmanned flying RPA no matter how small. To do so would be complex, costly and could potentially impose inconvenience on society exceeding the safety<sup>14</sup> benefit.

Risk delineators that could justify inclusion on a safety basis in a registration system include the following.

### 1.5.1 Potential airspace hazard

Any remotely piloted aircraft that is airborne has some potential to create a hazard to conventionally piloted aircraft and, therefore, may be considered a candidate for registration. However, for the avoidance of air collisions, existing operational restriction is a more effective tool than a mass threshold.

Registration, including future eID initiatives, will provide real safety benefits and societal and security disincentives against those with bad intentions. They will also facilitate the provision of systems for safe, efficient unmanned air traffic management.

### 1.5.2 Mass/potential energy

A 250 g delineator is not necessarily a safety related weight-break; it is an internationally common threshold that aligns with mass delineations made by the US, the UK, China, Germany and Brazil as the lower limit for RPA registration. Japan is an outlier having elected to set its threshold at 200 g. Ireland has a higher threshold.

EASA has approached the potential energy issue differently and determined registration will be required at above 80 joules potential impact transfer<sup>15</sup>. The weakness of this proposed delineation is that in the absence of specific manufacturer affixed labelling (absent in the legacy RPA fleet), even a reasonably well-informed user cannot easily determine their own compliance status. On the other hand, the benefit of a potential-energy-based measure is that registration can capture high-speed, lower mass racing drones that are potentially more dangerous, and include them based on risk.

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<sup>13</sup> The Consumer Technology Association (CTA) has a proposed standard ANSI/CTA-2063 on Small UAS serial numbers.

<sup>14</sup> Mandatory registration >250 g is consistent with most international aviation safety practice currently.

<sup>15</sup> 80J is approximately 1kg dropped from 8 metres (on Earth in a vacuum).

### 1.5.3 Commercial use

Commercial RPAS operators already have a relationship with CASA in one of three ways: as a holder of an RPA Operating Certificate (ReOC); a Remote Pilot Licence (RePL); or by way of a notification to CASA as an excluded category operator. Consultation<sup>16</sup> conducted to date supports that all these commercially used RPAs be registered.

### 1.5.4 Research and development testing

Australia has a growing RPA manufacturing and components industry. RPAs are used for a significant variety of research and development purposes that extend from the testing of new RPA design features, to concepts for conventionally-piloted aviation and avionics testing.

The life-cycle development and test platforms for RPAS might be as short as a single flight. This makes registration of individual test platforms potentially problematic.

A solution may be for manufacturers to have flexibility within the registration system and to be permitted to self-transfer registration identity across iterations of the same design.

### 1.5.5 Home-built RPAs and model aircraft

Home-built recreational RPAs and model aircraft are similar to research and development RPAs with many lacking a unique formal serial number allocated at time of manufacture.

A similar solution may be that home builders be provided flexibility within the registration system and be permitted to self-transfer registration identity across iterations of the same design.

## 1.6 What RPAs would NOT have to be registered?

### 1.6.1 Model aircraft or recreational RPA operations indoors

Indoor operations are free from airspace risk. Risks to people and property of indoor operations are already regulated via existing provisions in Part 101 of the *Civil Aviation Safety Regulations 1988 (CASR)*.

### 1.6.2 Model aircraft operated exclusively at approved model aircraft fields

Model aircraft, including RPA that are operated in first-person-view (PFV) and are operated exclusively at model aircraft fields in a non-commercial context and under supervision of peers, pose few risks to people and airspace.

CASA proposes that, to lessen the impact of registration and accreditation initiatives on the model aircraft community, a list of model aircraft fields across Australia be created and maintained by CASA in cooperation with model aircraft associations. Field sites would be eligible for admission to the list if they met both the following criteria.

- People not associated with the model aircraft operation could be excluded from the site while flying takes place.
- The site is acceptable to CASA in terms of airspace risk.

Model aircraft fields would not have to be permanent sites dedicated to model aircraft, but rather

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<sup>16</sup> Paper published in August/September 2018; A technical working group met in November 2018.

some form of tenure that assures a right to exclude third parties. However, this would have to be demonstrated. Public parks and beaches would not meet the proposed access test unless specific arrangements with the landholder (council etc.) are made. Operations in public places would still be possible but would require operators to hold a registration of the RPA or model aircraft and an accreditation or RePL.

Model aircraft associations, such as the Model Aeronautical Association of Australia (MAAA) and Australian Miniature Aerospots Society Inc (AMAS), have a large membership and contribute a valuable safety benefit to their members. This benefit is extended to the general public through their procedures, training programs and promotion of safe operations.

Requiring persons who operate model aircraft solely at model aircraft fields to register model aircraft merely for safety reasons is not convincing enough, and potentially may undermine the value of such organisations with which CASA seeks to cooperate.

### **1.6.3 RPAs that are required to be registered in accordance with Part 47 of CASR and marked in accordance Part 45 of CASR**

The conventionally-piloted aircraft registration framework which is already required for RPA/model aircraft >150 kg might reasonably be reserved for all remotely piloted aircraft that require 'conventionally-piloted aircraft like' support structures. This includes RPAs that have the one or more of the following attributes:

- integrated airspace operations (IFR) with conventionally piloted traffic
- integrated airport operations with conventionally-piloted traffic
- continuing airworthiness requirements
- for which security risks imply tighter operator controls
- international operations
- aircraft mass or size.<sup>17</sup>

## **1.7 Cost recovery considerations - registration**

Present CASA funding arrangements<sup>18</sup> include appropriation (tax payer funds from general revenues), a portion of the aviation fuel levy, and the fees and charges that CASA collects. However, the remotely piloted sector consumes very little aviation fuel for which an excise is added to the price in order to fund the safety regulator. The introduction of a registration fee is an attempt to, over time, re-balance CASA's funding across the conventionally piloted and remotely piloted sectors<sup>19</sup>.

There will be significant upfront costs to implement a national RPA registration and accreditation scheme. There will also be associated ongoing costs in the maintenance systems that support the scheme.

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<sup>17</sup> Large wing span, low mass.

<sup>18</sup> CASA income is comprised of 3 sources 1. Appropriation by government, 2. Fuel excise levied on aviation fuels 3. Fees levied on users for services provided (approvals, permissions etc.).

<sup>19</sup> The commercial remotely piloted sector pays service fees to CASA for operating certificates and permissions on an equitable basis with the conventionally sector.



CASA anticipates that there will be a cost recovery regime associated with RPA registration consistent with the Australian Government's cost recovery guidelines<sup>20</sup>.

CASA has not determined a final fee structure; an **indicative** structure is as follows:

- Recreational – less than \$20 for annual registration per person (not per RPA)
- Any commercial operation, including Excluded RPA operations, and those under a ReOC – between \$100 to \$160 per RPA per year.

The cost difference between recreational and commercial registration reflects the cost to CASA to appropriately oversight each sub-sector of the RPAS community. Commercial activity, including excluded RPA operations, are inherently more complex than recreational operations requiring proportionally more of CASA resources to appropriately oversight.

CASA will undertake further work to determine an appropriate fee structure that is consistent with its obligations under the Australian Government Charging Framework.

Early consultation with RPAS and model aircraft communities conducted through the Aviation Safety Advisory Panel – Technical Working Group (TWG) put a view to CASA that cost recovery should be balanced to the delivery of safety policy outcomes. The TWG surmised that a reasonable fee will maximise safety benefits through encouraging increased compliance rates. CASA has set the recreational RPA/model aircraft registration fee deliberately low in order to encourage participation.

CASA will publish a Cost Recovery Implementation Statement (CRIS) outlining the new/amended fees in accordance with the Australian Government Charging Framework for public consultation in February 2019.

### **1.7.1 Fee-free registration system, or a fee-free period to encourage compliance**

To encourage early uptake, the FAA allowed US users to register free of charge for a period prior to levying the fee. While discussing CASA's proposed cost recovery model, the TWG noted the advantages of grace periods for registration and advocated CASA consider them. The TWG observed that CASA's primary objective should be to maximise registration and accreditation in the RPA sector.

### **1.7.2 Overseas experience**

The US (i.e. FAA)<sup>21</sup> fee to register recreational RPAs is \$5 USD (around \$7.00 AUD) per person for 3 years, for multiple RPAs. The FAA registration for commercial use costs \$5 USD<sup>22</sup> per aircraft and is valid for 3 years.

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<sup>20</sup> Australian Government cost recovery guidelines – <https://www.finance.gov.au/sites/default/files/australian-government-cost-recovery-guidelines.pdf>

<sup>21</sup> FAA - Fly under the Special Rule for Model Aircraft [https://www.faa.gov/uas/getting\\_started/model\\_aircraft/](https://www.faa.gov/uas/getting_started/model_aircraft/)

<sup>22</sup> FAA - UAS Registration [https://www.faa.gov/uas/getting\\_started/registration/](https://www.faa.gov/uas/getting_started/registration/)

The UK (CAA)<sup>23</sup> is considering, but has not yet implemented, an annual registration fee of not more than £5 (\$8.85 AUD - at time of conversion).

## 1.8 Data sharing

CASA's principle aims of the RPA registration and accreditation system are aviation-safety focused. It is recognised that benefits of robust user registration will also flow to other areas of government, including those concerned with privacy, security, noise and anti-social behaviour, where this is appropriate.

The initial safety benefits will be enhanced once eID and RPA Traffic Management (RTM) tracking systems become more readily available and able to be used in Australia.

It is recognised that there will not only be demand for access to CASA-held RPA registration data from various government and non-government bodies, but also the need to share that data in near real-time.

As well as being used by CASA staff for audit, compliance and analysis purposes, other entities that may wish to legitimately access RPA registration data, include:

- Federal, State and Territory law enforcement agencies
- Security services
- Privacy commissioners
- Airservices Australia (for traffic management and noise monitoring responsibilities)
- The Department of Infrastructure, Regional Development and Cities;
- Australian Transport Safety Bureau (ATSB)
- Australian Maritime Safety Authority (AMSA)
- Future RTM Flight Information Service (FIMS) providers [potentially privately<sup>24</sup> operated] and
- Emergency services.

Robust, seamless and swift data transfer to legitimate users will be factored into the design of the RPA registration system, while protecting personal details of RPA operators. CASA will need to adhere to Australian Government and international standards to ensure data integrity, as well as ensuring the security of personal information.

## 1.9 Industry cooperation

The possibility exists for CASA to work with major RPAS manufacturers to better facilitate registration for new RPAS purchasers.

If CASA can obtain data packages direct from manufacturers that contain the eID, serial number and basic RPA information direct from the scanned serial number, the customer registration experience will be easier, more accurate and with compliance uptake likely to be stronger.

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<sup>23</sup> Registration requirements for drones - Impact Assessment [RPC Reference No: DfT00359] (Page 4). [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/579511/drones-registration-ia.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/579511/drones-registration-ia.pdf)

<sup>24</sup> Release of private information to a non-government entity in this circumstance is expected to be on the basis of an explicit permission to do so provided by the registration holder.



## 1.10 Regulatory issues

### 1.10.1 Senate enquiry

On 31 July 2018, the report of the Senate Standing Committee on Regional and Rural Affairs and Transport enquiry, *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems*<sup>25</sup> was tabled in Parliament.

Recommendation 2 of the Senate enquiry reads:

The committee recommends that the Australian Government introduce a mandatory registration regime for all remotely piloted aircraft systems (RPAS) weighing more than 250 grams. As part of registration requirements, RPAS operators should be required to successfully complete a basic competence test regarding the safe use of RPAS, and demonstrate an understanding of the penalties for non-compliance with the rules.

### 1.10.2 Federal Government's response to the Senate enquiry

On 27 November 2018, the Federal Government's response to the Senate enquiry was tabled in Parliament - the Government agreed<sup>26</sup> with Recommendation 2.

## 1.11 Previous consultation

### 1.11.1 Discussion paper DP 1708OS

CASA published a discussion paper *Review of RPAS operations (DP 1708OS)*<sup>27</sup> - from 11 August to 29 September 2017. Among other questions, the discussion paper invited drone, RPAS and model aircraft operators, and their associations, to comment<sup>28</sup> on the following:

- Should all RPA be registered?
- Should all RPA users be required to meet specified training, experience, knowledge and/or assessment requirements?

### 1.11.2 Review of aviation safety regulation of remotely piloted aircraft systems

In May 2018, CASA published the *Review of aviation safety regulation of remotely piloted aircraft systems*<sup>29</sup> with the following findings:

- a. CASA supports mandatory RPA registration in Australia for RPAs weighing more than 250 g.
- b. CASA should develop a simple online course for recreational and excluded category RPA operators on safe RPA operations, followed by a quiz that has a minimum pass mark.

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<sup>25</sup>

[https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Rural\\_and\\_Regional\\_Affairs\\_and\\_Transport/Drones/Report](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Rural_and_Regional_Affairs_and_Transport/Drones/Report)

<sup>26</sup> <https://infrastructure.gov.au/aviation/publications/index.aspx>

<sup>27</sup> <https://consultation.casa.gov.au/regulatory-program/dp1708os/>

<sup>28</sup> An analysis of Response to DP 1708OS can be found at [https://consultation.casa.gov.au/regulatory-program/dp1708os/user\\_uploads/analysis\\_responses\\_discussion\\_paper\\_drone\\_operations\\_dp1708os-1.pdf](https://consultation.casa.gov.au/regulatory-program/dp1708os/user_uploads/analysis_responses_discussion_paper_drone_operations_dp1708os-1.pdf)

<sup>29</sup> <https://www.casa.gov.au/files/review-aviation-safety-regulation-remotely-piloted-aircraft-systems>

### **1.11.3 Aviation Safety Advisory Panel - Technical Working Group**

A meeting of a Technical Working Group (TWG) established by the Aviation Safety Advisory Panel was held in Brisbane on 7-8 November 2018 to consider the policy proposals.

The TWG was attended by representatives from:

- Australian Certified UAV Operators (ACUO)
- Australian Association for Unmanned Systems (AAUS)
- UAS International
- Model Aeronautical Association of Australia (MAAA)
- Australian Miniature Aerosports Society Inc (AMAS)
- Da Jiang Innovations (DJI)
- Boeing
- National Drones
- AR Consortium

The following organisations were invited to attend and chose to provide submissions to the working group prior to the meeting:

- Australian Airline Pilots' Association (AusALPA)
- Parrot Drones SAS

The TWG meeting recommended that CASA proceed with public consultation on a new remotely piloted aircraft (RPA) registration as well as an RPA operator education and accreditation scheme.

### **1.11.4 Federal and State government consultation**

CASA conducted further consultation with Federal and State government agencies on 27 November 2017. The meeting considered:

- a suitable proposed policy to meet the whole-of-government needs
- access by government and other entities to information gathered by CASA
- the impact of proposed policy on governments using RPAs.

## 2 Policy assessment

### 2.1 Intended policy position - accreditation

Civil Aviation Act s98 (3)(c) provides for the power to make regulations about licences for the operation of aircraft. CASA is proposing amendments to Part 101 and other regulations and Part 101 Manual of Standards (MOS).

Prospective operators of RPAs and some model aircraft who are not already RePL holders (with some exceptions) would need to:

- provide a single form of identity (passport or Australian birth certificate)
- undertake mandatory online education
- successfully complete a safety quiz
- be issued with and continue to hold an accreditation.

There would be separate accreditations for recreational operators and excluded category commercial remote operators. CASA already issues a professional licence known as the Remote Pilot Licence (RePL) (101.F.3); however, the term 'accreditation' has been chosen for this different form of authorisation to differentiate between the privileges of an accreditation and licence.

### 2.2 Intended policy position – accreditation and licence privileges

It is intended that each licence/accreditation would include the privileges of the licence or accreditation listed below it and they would be required in order to remotely pilot an RPA or model aircraft.

RePL holders (existing and future) would have the following privileges:

- Commercial operations under a certified RPA (ReOC) operator (101.F.4).
- Commercial operations under excluded category (101.F.5).
- Recreational operations of an RPA or model aircraft.

Future Excluded RPA accreditation holders would have the following privileges:

- Commercial operations under excluded category (101.F.5.).
- Recreational operations of an RPA or model aircraft.

Future Recreational RPA accreditation holders would have the following privileges:

- Recreational operations of an RPA or model aircraft.

Proposed legislation would also address administrative matters relating to application for the accreditation, eligibility, show cause, and variation and cancellation of the accreditation. Further, the legislation would provide the exceptions to accreditation requirements, the requirement to re-accredit after a fixed period, and consequential amendments to existing regulations to enable the scheme to take effect.

A requirement for an individual to produce accreditation to an authorised person, such as a CASA officer or a law enforcement officer would be legislated. CASA also proposes covering RPA accreditations with existing provisions related to exam cheating, impersonation at exams and exam misconduct.

### **2.3 Intended policy position – registration**

Civil Aviation Act s98 (3)(a) provides for the power to make regulations about registration. CASA is proposing further amendments to CASR and associated Manuals of Standards (MOS) to require, as a prerequisite for operation (with some exceptions), mandatory registration of all RPAs or model aircraft weighing more than 250 g. RPAs would be able to be registered in one of two categories with the higher (and more expensive) category of registration having all the privileges of the lower category.

Proposed privileges of the two registration categories are to use the RPA for:

- Commercial RPA registration:
  - o Commercial operations of that RPA under a certified RPA (ReOC) operator (101.F.4)
  - o Commercial operations of that RPA under excluded category (101.237, 101.F.5)
  - o Recreational operations of that RPA or model aircraft
- Recreational RPA registration:
  - o Recreational operations of that RPA or model aircraft.

Recreational RPA operators intending to operate in the Excluded category, would be required to undertake the accreditation process for the Excluded category and register the RPAs to be used for commercial operations, regardless of weight.

The legislation proposed would require certain RPAs or model aircraft to be registered, as well as identification and marking requirements undertaken, before flight. The required information to be provided about the RPA or model aircraft, and the individual or corporate entity that sought to register it, would also be legislated. The legislation would provide the required differentiation between commercial and recreational registered RPAs or model aircraft.

A detailed explanation would accompany CASA's cancellation of registration of an RPA or model aircraft, either at the request of the registered party, or for other reasons. Legislation would cover the requirements relating to operation of foreign registered RPAs or model aircraft in Australia.

Visitors to Australia who intend to operate a foreign registered RPA in Australian territory, that weighs over 250 g or would be used for commercial purposes, would be required to apply for a permission which would also attract a fee. The process and the permission fee would be similar to the domestic registration and accreditation scheme.

## **2.4 Impacts on industry and community**

### **2.4.1 Industry**

CASA has advanced the development of its online tools and processes to assist people accrediting and registering an RPA or model aircraft in Australia. The process has been designed to be completed either on a desktop or on a mobile device.

The expected impact across affected stakeholders is detailed below by each stakeholder group:

POLICY PROPOSAL FOR PROPOSED NEW REMOTELY PILOTED AIRCRAFT (RPA) REGISTRATION AND RPAS OPERATOR ACCREDITATION SCHEME

Table 1: Requirements for RPA registration and accreditation

Criteria	Obtain ARN (3 minutes*)	Obtain ReOC	Obtain RePL	Recreational accreditation online video (3 minutes*)	Recreational accreditation online quiz (8 minutes*)	Excluded category accreditation online video & quiz (30 minutes*)	Register RPA (4 minutes per RPA*)	Affix CASA generated registration mark (if no serial number on RPA)	Pay fee online Recreational \$20 (or less) Excluded and Commercial <150 kg \$100 - \$160
Recreational Operator; RPA over 250 g	✓			✓	✓		✓	✓	✓
Child under 16-years-old/ Guardian; RPA over 250 g	✓ Guardian			✓ Child and Guardian	✓ Guardian		✓ Guardian	✓ Guardian	✓ Guardian
Excluded Category Operator; Any RPA weight	✓					✓	✓	✓	✓
Commercial operator other than Excluded; Any RPA weight	✓	✓	✓				✓	✓	✓
Model Aircraft enthusiast (including FPV <sup>1</sup> ); RPA over 250 g in public space	✓			✓	✓		✓	✓	✓
Foreign Recreational Operator in Australia; RPA over 250 g	✓			✓	✓		✓	✓	✓
Foreign Excluded Operator in Australia; Any RPA weight	✓					✓	✓ If RPA is registered in another country, a 'permission' will be granted	✓ If RPA is registered in another country, a 'permission' will be granted	✓
RPA above 150 kg; IFR Operations <sup>2</sup> / International Operations <sup>3</sup>	✓	✓	✓				Register using existing conventionally piloted aircraft registration process		

<sup>1</sup> FPV – First Person View (drone racing)

<sup>2</sup> IFR operations of RPAS will likely be required by future ICAO Standards and Recommended Practices (SARPS) to be registered in accordance with ICAO Annex 7 – Aircraft Nationality and Registration Marks.

<sup>3</sup> International operations of RPAS will likely be required by future ICAO SARPS to be registered in accordance with ICAO Annex 7 – Aircraft Nationality and Registration Marks.

\* Estimated average processing time

## 2.4.2 Community

The wider non-aviation community is also expected to benefit from the RPA registration and accreditation initiative. Future RPA electronic identification provides for CASA and other government entities to easily distinguish the legitimate commercial and recreational RPA users from those that may have motives at odds with societal expectations.

Accreditation and registration will encourage safer and lawful operation and operate as a deterrent to unlawful and unsafe activities. Where appropriate, these benefits may extend beyond safe operation to privacy, security, noise monitoring, and irresponsible RPA use.

Accreditation provides CASA the opportunity to establish a mutually beneficial relationship with the remotely piloted community and provides a mechanism to proactively target RPA users with relevant safety information. Furthermore, it provides CASA with a demographic profile of the RPA sector that is useful to assist in developing future safety campaigns.

Data collection of the total RPA numbers, RPA types, locations and the operational categories of RPAs can be used to maximise the use of CASA's limited resources. The data available to CASA management and organisational decision makers enables risk identification and early corrective intervention strategies. Registration provides for future-ready technologies, such as electronic identification (eID) being developed, and will in future enable integrated RPA using UAS traffic management systems<sup>30</sup> (UTMs).

## 2.5 Implementation and transition

### 2.5.1 Implementation considerations

CASA is working towards a commencement date of 1 July 2019. To minimise risks associated with the supporting information technology systems, a staged implementation is planned, whereby registration and accreditation are progressively introduced:

- 1 July 2019 – RPA operator certificate (ReOC) holders (registration only)
- 1 September 2019 – Excluded RPA operators (accreditation and registration)
- November 2019 – Recreational RPA operators (accreditation and registration)

### 2.5.2 Transitional considerations

CASA will need to change the current RPAS legislation and establish the necessary data and technological systems to give effect to an accreditation and registration scheme. CASA processes and systems that support the implementation of the registration project are planned to:

- shadow the legislative development project
- be configured to the endorsed policy, and be ready to deliver registration, education and accreditation when the legislation is registered.

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<sup>30</sup> See <https://utm.arc.nasa.gov/index.shtml>

### **2.5.2.1 Transitional considerations - recreational RPAS operator accreditation scheme**

CASA has existing RPAS operator educational material including a quiz on its *Droneflyer* website<sup>31</sup>. The material is a video that contains all required information and, as presented, is fit for recreational user purposes and it will be improved and enhanced. The available material is, however, voluntary and provides no record for someone who completes the quiz to validate their completion. A scheme that obliges drone/RPAS operator engagement and that provides users with proof of completion is required.

### **2.5.2.2 Transitional considerations - recreational RPAS operator accreditation scheme**

A separate accreditation course and quiz is required for excluded RPAS operators that, additional to the core safety of operation elements, reflects the extended knowledge requirement of operating within the permitted commercial scope.

### **2.5.2.3 Transitional considerations - RPA registration system**

Industry estimates provided to CASA suggest that there are well in excess of 150,000 RPAs currently operating in Australia. A present lack of data means CASA is uncertain about exactly how many RPAs there are. The total number required to be registered will be less than that number as many RPAs are not required to be registered (<250 g, model aircraft, indoors operations etc.). However, registration numbers will still be substantial, and it will require time and national publicity to achieve effective compliance. The UK<sup>32</sup> has, and the US had, substantial implementation periods to enable registration to take place.

### **2.5.2.4 The consequence of operating an unregistered RPA or operate without accreditation**

Incentives, positive and/or negative, imposed by CASA to 'drive' the desired RPAS operator behaviour must be sufficient to produce the desired compliance outcome.

CASA would emphasise the positive attributes of the accreditation-registration policy (e.g. airspace access, legitimacy of operation, wider social benefits).

A penalty would be introduced to provide a disincentive to those who illegally operate a non-registered RPA or operate without accreditation. As with all RPAS regulatory breaches, the difficulty for CASA would be to prove non-compliance and to enforce the relevant regulatory provisions.

The level of CASA enforcement action will depend not only on its own resourcing, but also on its continuing efforts to establish an effective framework with support from various Federal, State and Territory law enforcement agencies. CASA will seek to balance the following two issues:

- Provide an RPAS user with and understanding that they should comply with future requirements. Doing so would have social benefits, while not doing so would result in legal consequences.
- Not to overstate the prospect that police will immediately be technically or legally equipped, or are necessarily resourced, to enforce future requirements.

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<sup>31</sup> <https://droneflyer.gov.au/>

<sup>32</sup> UK legislation recently made – operators are not required to be registered until 30 November 2019, although UK CAA starts taking applications for registration from 1 October 2019.



### 3 Conclusion

The Government response to the Senate Standing Committee on Rural and Regional Affairs and Transport inquiry report: *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems* tabled in Parliament on 27 November 2018, has agreed to progress an accreditation and registration system for RPAS in Australia.

Accreditation will encourage better educated RPAS operators to constructively participate in the aviation-safety system and be better equipped to operate responsibly and competently. An interactive short online course that imparts the required knowledge, followed by an accreditation scheme indicating the attained proficiency is achievable and its implementation would have a safety benefit.

While CASA's most important consideration is safety, the national registration scheme should also be of benefit in relation to Government agencies handling privacy, noise, security and undesirable social behaviour concerns associated with RPAS operations. A registration system will also provide a foundation for other identification and marking initiatives, some of which involve emerging technologies, will ultimately further improve safety performance.

Data associated with RPA registration will provide a valuable resource not only for CASA, but, where appropriate, for other Government agencies. Access to this data, however, will need to be covered by appropriate protocols and handling of associated privacy issues.

CASA has an established aircraft registration system that caters for the complexities of conventionally-piloted aircraft. Complex and large remotely piloted aircraft can be accommodated in the existing registration system and doing so provides for a fundamentally simpler RPA registration system.

The greatest challenges of the national accreditation and registration system will be to promote compliance by recreational RPAS operators, many of whom have no aviation background or previous engagement with CASA. Another difficulty is to encourage commercial RPAS operators' continual involvement with the safety regulatory system.

Therefore, a national education campaign and making accreditation and registration easily accessible to RPAS operators, without impacting on the accuracy and authenticity of the information received, are vital in the implementation of these initiatives in Australia.

#### 3.1 Closing date for comment

CASA will consider all comments received as part of this consultation process and will incorporate changes to the regulation as appropriate. Comments on the draft new policy should be submitted through the online response form by close of business 22 February 2019.