Explanatory Statement

Civil Aviation Safety Regulations 1998

Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019

Purpose
The *Part 101 (Unmanned Aircraft and Rockets) Manual of Standards Instrument 2019* (the ***MOS***) is the first issue of a MOS in relation to unmanned aircraft and rockets (including kites, fireworks, unmanned tethered and free balloons). The power to issue a MOS was conferred on CASA by the *Civil Aviation Safety Amendment Regulations 2016* (the ***amendment regulations***).

The MOS prescribes a range of miscellaneous matters in relation to the safety and regulatory oversight of remotely piloted aircraft (***RPA***), including training and competency standards for remote pilot licences (***RePL)***, and standing approvals for certain kinds of operations near aerodromes and beyond visual line of sight (***VLOS***) provided they meet conditions and requirements prescribed by the MOS.

In particular, the MOS prescribes requirements for the following:
- RPA training courses in the aeronautical knowledge and practical competencies required for the issue of a RePL, including how a RePL may be upgraded to a different category of RPA
- RPA training organisations to deliver RPA training courses and assess applicants
- the operation and use of unmanned aircraft in controlled airspace
- unmanned aircraft operations in prescribed areas in the vicinity of aerodromes
- RPA operations beyond VLOS
- record keeping
- notifications to CASA regarding very small RPA for hire or reward for commercial remote pilot aircraft system (***RPAS***) operators.

The MOS commences on the day of registration but, effectively, only the provisions relating to beyond VLOS operations, and certain provisions requiring that notifications be given to CASA, take effect on that date. Implementation of the remaining provisions is deferred for 12 to 18 months, to enable RPA training organisations in particular to prepare for the transition.

(The abbreviation ***RePL*** is used in the MOS and in this Explanatory Statement to avoid confusion with a "recreational pilot licence" which is usually abbreviated to "RPL". References below to a provision with the prefix "101." are to the provision in Part 101 of CASR.)

Legislation — the Act
Under subsection 98 (1) of the *Civil Aviation Act 1988* (the ***Act***), the Governor-General may, among other things, make regulations prescribing matters required, permitted, necessary or convenient for the Act and in the interests of the safety of air navigation. Part 101 of the *Civil Aviation Safety Regulations 1998* (***CASR***) deals with the operation of unmanned aircraft, rockets and fireworks.

Legislation — Part 101 of CASR
Under regulation 101.028, CASA may issue a MOS prescribing matters required or permitted by the Regulations to be prescribed, or necessary or convenient to be prescribed for carrying out or giving effect to Part 101.

This power is complemented by other provisions in Part 101 which empower CASA to prescribe specific matters in the MOS. These complementary provisions are described in Appendix 2 in the context of the explanations of the particular provisions that rely on them.

Background

Part 101 of CASR was initially made in 2001 to make rules in relation to the operation of unmanned aircraft and rockets. There was no empowerment for the making of a MOS. With continuing technological and commercial developments in unmanned aircraft, by 2016 it was considered that such an empowerment would better facilitate the effective regulatory oversight of RPA. Under that new empowerment, the MOS provides necessary standards for the regulatory scheme set out in Part 101 of CASR.

These standards are grouped around 4 core themes: training and competency, airspace use and restrictions, RPA operations that may extend beyond the remote pilot's visual sight and essential record keeping and notifications.

Competency standards and units of competency

Introduction of formal aeronautical knowledge and practical competency standards provide for more professional and relevant training standards for the issue of a RePL to competent applicants.

RePL training course administration involves RePL training instructor qualifications and RPL training organisation standards used in delivering units of training and testing to achieve the aeronautical knowledge and practical competency required to enable an applicant to qualify for the issue of a RePL.

RPA training organisations must develop training courses covering prescribed units of competency that must be successfully completed by applicants if they are to be eligible for the issue of a relevant licence. Other requirements are prescribed, such as flight tests, and proficiency checks, for the issue of particular authorisations.

Airspace and aerodromes

Subregulation 101.072 (1) empowers CASA to prescribe requirements for operations in controlled airspace. Under this power, the MOS will provide sufficient protection for conventionally piloted aircraft operations and flexibility for certified RPA operators in the vicinity of controlled aerodromes with general alleviations for indoor operations and tethered operations by certified operators with clearance from ATC.

Subregulation 101.247 (1) empowers a MOS to prescribes requirements for operations in prescribed airspace. Under this power, relevant standards in the MOS will provide sufficient protection for conventionally piloted aircraft operations and flexibility for certified RPA operators, including the ability to receive a standing approval for operations within no-fly areas of a non-controlled aerodrome, provided the conditions and requirements of the MOS ae complied with.

RPA operations beyond VLOS

RPA operations must generally be conducted within the VLOS of the RPA remote pilot. However, requirements are prescribed to facilitate the granting of CASA approvals for certified RPA operators to conduct extended visual line of sight (***EVLOS***) class 1 and 2 operations.

The certified RPA operator must have documented practices and procedures, relevant staff must have successfully completed the prescribed training, and other safety requirements must be complied with before CASA will grant an approval.

Record keeping for certain RPA

The MOS sets out training and record-keeping requirements for RPA operators. CASA has provided some alleviations for some less complex RPA operations by single-person holders of a remote operating certificate (***ReOC holders***) so that they are not required to complete the "Operational release" since by definition they would be directing themselves. Requirements for the "Technical log" will also be streamlined for smaller RPA. This brings the standards in closer alignment with excluded RPA provisions while preserving some of the differences due to relative risk. CASA will provide the certified RPA operator industry with some suitable templates to assist in compliance with record-keeping and notification requirements.

Legislation Act 2003 **(the *LA*)**

Under paragraph 98 (5A) (a) of the Act, regulations made "for" that same provision may empower CASA to issue instruments in relation to matters affecting the safe navigation and operation of aircraft.

Under subsection 98 (5AA) of the Act, an instrument (like a MOS) issued under paragraph 98 (5A) (a) is taken to be a legislative instrument if it is expressed to apply in relation to a class of persons or aircraft or aeronautical products.

The MOS is an instrument empowered by regulation 101.028 made by the amendment regulations "For subsection 98 (5A) of the Act".

The standards set by the MOS apply, not to a particular remote pilot or a particular RPA but to the class of such pilots and aircraft. The MOS is, therefore, by virtue of subsection 98 (5AA), a legislative instrument and subject to registration, and tabling and disallowance in the Parliament, under sections 15G, and 38 and 42, of the LA.

Incorporation by reference

The following documents are incorporated by reference into the MOS as they exist or are in force from time to time, and they are available as described.

Item	Document	Description	Availability
1	*CASA RePL Upgrade Supplement for the Part 101 MOS*	Standards to be met for upgrading a RePL for a small RPA to include a medium or large RPA of the same category	Free on the CASA website
2	*CASA RePL Upgrade Supplement for the Part 101 MOS*	Standards to be met for upgrading a RePL for a medium or large RPA to include another medium or large RPA of the same category	Free on the CASA website *Note* Items Nos. 1 and 2 are the same document covering 2 separate sets of standards.
3	*Unit 1.2.1 — RARO, in Section 1.2 of Appendix 1 in Schedule 3 of the Part 61 MOS*	Knowledge standards for training and assessment in the operation of an aeronautical radio	Free on the CASA website

Item	Document	Description	Availability
4	*Part C3 in Section 2: Common Standards, in Schedule 2 of the Part 61 MOS*	Competency standards for training and assessment in the operation of an aeronautical radio	Free on the CASA website
5	*Austroads Standards*	Austroads standards for private motor vehicle licensing visual acuity	Free at the Austroads website mentioned in s. 5.12 of the MOS
6	*Section 1: English Language Proficiency, GEL — General English language proficiency, in Schedule 2 of the Part 61 MOS*	General English language proficiency standards and evidence for the training	Free on the CASA website
7	*CASA 01/17 – Approval – operation of RPA at night*	Standing CASA approval (subject to conditions) for RPA operations at night	Free on the CASA website
8	*AC 101-10, Remotely piloted aircraft systems — operation of excluded RPA*	Guidance for operators, remote pilots and other remote crew on the requirements for safe operation of excluded RPA and recommended training to safely operate an excluded RPA	Free on the CASA website

Consultation
In accordance with section 17 of the *Legislation Act 2003*, and section 16 of the Act, CASA developed the MOS in consultation with the relevant aviation community and the public over a relatively extended period of time.

CASA initially undertook specific industry consultation to assist in developing the proposed MOS. This included the presentation and discussion of preliminary policy ideas and proposed inclusions for the MOS at several meetings of the former Unmanned Aircraft Standards Sub-Committee of the Standards Consultative Committee (***UASSC***), between August 2014 and November 2016. The UASSC was, at the time, the principal CASA/industry consultation forum for RPAS matters. Presentations were also made to members of the former Standards Consultative Committee, the overarching forum for CASA's consultative processes at the time.

When a mature working draft of the MOS was prepared, CASA, in compliance with CASR *Subpart 11.J—Manuals of a Standards—Procedures*, published its consultation document *Proposed Part 101 (Unmanned aircraft and rockets) Manual of Standards 2018 (CD 1807US)* on the CASA Consultation Hub for almost 2 months from 24 September to 18 November 2018. This consultation document set out the proposed Part 101 Manual of Standards for general public and industry comment.

In response, CASA received a total of 270 submissions. The main respondent groups included certified RPA operators (76), remote pilot licence holders (63), recreational model flyers (49), excluded RPA operators (24) and responses from conventional aviation industry participants (10). Around 50% of respondents provided substantive comments in their response. All comments were carefully considered by CASA in further developing the MOS.

Respondents were generally supportive of the direction CASA was taking with the training, airspace access and record-keeping provisions in the draft MOS. Those in favour ranged from 10:1 for well-supported proposals to 5:1 for lesser-supported proposals.

CASA's consultation resulted in some modifications to the MOS affecting, for example:

- transitional taking of effect dates
- the training syllabus
- training in degraded modes of automation
- definitions of manual and automated modes
- examination requirements and re-sits
- simulation of some practical flying competencies
- flight test examiner requirements
- maximum class sizes
- mandated contact time between instructors and students
- permitting certain operations within 3 NM of a controlled aerodrome (subject to ATC clearance)
- allowing certain tethered RPA operations
- modification of the RPAS control link performance figure for EVLOS operations
- record-keeping provisions for RPA with a gross weight less than 2 kg
- record keeping for single-person operators
- record keeping for operators of very small excluded RPA.

Office of Best Practice Regulation (*OBPR*)

Following preparation of a preliminary impact statement for the amendment regulations, OBPR issued CASA with an exemption from the requirement to prepare a Regulatory Impact Statement (***RIS***) with respect to those amendment regulations (OBPR id: 16320). The amendment regulations specifically empowered the making of the MOS so that, insofar as the MOS imposes obligations or requirements, those obligations and requirements arise from the amendment regulations. In these circumstances, the OBPR exemption extends to the MOS also.

Statement of Compatibility with Human Rights

The Statement of Compatibility with Human Rights at Appendix 1 has been prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*. The legislative instrument indirectly engages some of the applicable rights and freedoms, but, in the context of aviation safety, does so in a reasonable, necessary and

proportionate way to ensure safety and is, therefore, compatible with human rights, as it does not improperly infringe any human rights.

Commencement and making

The MOS commences on the day of registration but, effectively, only the provisions relating to beyond VLOS operations, and certain provisions requiring that notifications be given to CASA, take effect on that date.

The implementation of most of the other provisions in the MOS is delayed for 12 months after registration to allow remote pilots, RPA training organisations, and certified RPA operators to prepare their transition to full compliance with the MOS. Implementation of the requirements for RePL training instructors is delayed for 18 months after registration to allow relevant persons time to become qualified in accordance with the MOS.

Appendix 1

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the
Human Rights (Parliamentary Scrutiny) Act 2011

Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019

The *Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019* (the ***MOS***) is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Overview of the legislative instrument
The *Part 101 (Unmanned Aircraft and Rockets) Manual of Standards Instrument 2019* (the ***MOS***) is a first issue of a MOS in relation to unmanned aircraft and rockets (including kites, fireworks, unmanned tethered and free balloons). The power to issue a MOS was conferred on CASA by the *Civil Aviation Safety Amendment Regulations 2016* (the ***amendment regulations***).

The MOS prescribes a range of miscellaneous matters in relation to the safety and regulatory oversight of remotely piloted aircraft (***RPA***), including training and competency standards for remote pilot licences (***RePL)***, and standing approvals for certain kinds of operations near aerodromes and beyond visual line of sight (***VLOS***) provided that they meet conditions and requirements prescribed by the MOS. In particular, the MOS prescribes requirements for the following:

- RPA training courses
- RPA training organisations
- the operation and use of unmanned aircraft in controlled airspace
- RPA operations beyond VLOS
- RPA operator record keeping
- RPA operator notifications to CASA regarding very small RPA for hire or reward for commercial remote pilot aircraft system (***RPAS***) operators.

Human rights implications

Privacy
The right to the protections against arbitrary and unlawful interferences with privacy, contained in Article 17 of the *International Covenant on Civil and Political Rights* (***ICCPR***), provides that no-one shall be subjected to arbitrary or unlawful interference with his or her privacy, nor to unlawful attacks on their honour and reputation. The right to privacy may be engaged when personal information is collected, used and stored.

Under Chapter 10, Division 10.2, of the MOS, certified RPA operators (that is, particular commercial operators) are required to keep for 3 to 7 years a range of records in relation to RPA operations, for example, operational and maintenance records and logs, and training course and competency records on individual trainees.

Under Chapter 10, Division 10.3, persons operating small or medium RPA in operations over their own land, that, but for the fact that the operation *is* over their own land and in standard operating conditions, would otherwise require commercial certification, are required to keep, for 3 to 7 years, a range of records in relation to the RPA operations, for example, operational and maintenance records and logs.

These 2 record-keeping obligations are essential in the interests of aviation safety to ensure that an evidentiary trail is made and preserved by operators to demonstrate that the safety standards required to be observed for these kinds of RPA operations have been complied with.

Under Chapter 10, Division 10.4, operators of small and medium excluded RPA must supply CASA with initial identification and operational information before operations commence and they must update that information every 3 years.

These 2 notification obligations are essential in the interests of aviation safety to ensure that an evidentiary trail is made and preserved by operators to demonstrate that the safety standards required to be observed for these kinds of RPA operations have been complied with.

Under regulation 101.372 of the *Civil Aviation Safety Regulations 1998* (***CASR***), operators and pilots who engage in RPA operations with very small RPA for hire or reward, must notify CASA of their intent to engage in these commercial operations. Under Chapter 10, Division 10.4, and Chapter 11, these operators must notify CASA of changes in identification or operational information they have supplied to CASA, and must, every 3 years, update the identification and operational information they had submitted to CASA.

These notification requirements for non-certified commercial operators are essential to ensure that the nature of operations that have not been pre-certified by CASA can be monitored in the interests of aviation safety.

Under Chapter 10, Division 10.4, certified RPA operators must notify CASA of changes to the information that was presented to CASA for the purposes of the operator becoming certified.

This notification requirement is essential to ensure that the safety basis on which commercial certification was initially granted is preserved over time.

The protections afforded by the *Privacy Act 1988* continue to apply to all of the records and notifications required under the provisions of the MOS.

To the extent that the provisions under Chapters 10 and 11 of the MOS limit the rights protected under Article 17 of the ICCPR, the limitations are necessary to protect aviation safety. This is particularly the case in relation to commercial and semi-commercial RPA operations because of the rapidly growing use of RPA and the aviation dangers these operations and their prolific expansion may create for other aircraft and for people and property on the ground. Thus, the limitations imposed on the Article 17 rights are reasonable and proportionate to ensure the proper administration and enforcement of Australia's aviation safety system.

The right to work

The MOS may engage the right to work that is protected under Article 6 (1) of the *International Covenant on Economic, Social and Cultural Rights* (the ICESCR). This right includes the right of everyone to the opportunity to gain their living by work which they freely choose or accept.

The right to work may be engaged by the requirements in Chapter 2 prescribing for RPL training organisations the content and administration of RPL training courses, and the requirements to be satisfied before person may be an RPL training course instructor.

However, in the interests of aviation safety, it is necessary that persons to be issued with RePLs be trained to the highest reasonable standard of competency and proficiency, and that their instructors are sufficiently qualified and experienced to achieve this outcome.

Therefore, in the circumstances, the requirements themselves are a reasonable, necessary and proportionate requirement under aviation safety law to ensure the integrity of the aviation safety system. The right of relevant persons to the opportunity to gain their living by work is recognised, however, that right would be lost if the person fails to obtain the qualifications necessary to carry out their aviation safety responsibilities. Accordingly, any potential limitation on the right to work is itself necessary, reasonable and proportionate in achieving the aim of protecting and improving aviation safety.

Conclusion

This legislative instrument is compatible with human rights and, to the extent that it may limit human rights, those limitations are reasonable, necessary and proportionate to ensure the safety of aviation operations and to promote the integrity of the aviation safety system.

Appendix 2

Details of the *Part 101 (Unmanned Aircraft and Rockets) Manual of Standards Instrument 2019*

CHAPTER 1 PRELIMINARY

1.01 Name of instrument
This section names the MOS.

1.02 Commencement
This section provides that the MOS commences on the day of registration but only takes effect in accordance with section 1.03.

1.03 Provisions which take effect later than on commencement
This section provides a "take effect" Table for the provisions of the MOS.

Chapters 1 and 5, Division 9.2 of Chapter 9, Divisions 10.1 and 10.4 of Chapter 10, and Chapter 11 take effect on commencement. Chapters 3, 6, 7 and 8, are reserved.

The Chapters mentioned in the Table take effect on the day that is the specified period after commencement. The specific dates of effect for the provisions mentioned in the Table are set out on the CASA website.

Item	Provision (Column 1)	Period after commencement (Column 2)
1	Chapter 2, except Division 2.7	12 months
2	Chapter 2, Division 2.7	18 months
3	Chapter 4	12 months
4	Chapter 9, except Division 9.2	12 months
5	Chapter 10, except Divisions 10.1 and 10. 4	12 months

1.04 Definitions
This section provides the key definitions for the MOS. It also specifies the requirements for a certified RPA operator's documented practices and procedures, what they must contain and how they are to be dealt with and circulated. It also provides that an RPA that is a helicopter must be in the helicopter (single rotor class) category or the helicopter (multirotor class) category.

1.05 References to documents
This section provides that references in the MOS to documents and legislative instrument that are applied, adopted or incorporated are to the document or instrument as it exists from time to time.

1.06 Abbreviations
This section provides for Schedule 1 to ascribe meaning to acronyms or abbreviations used in this MOS.

1.07 Tables, Figures and Notes

This section provides that numbered Figures in the form of drawings, diagrams or similar representations are labelled as either ***illustrating matters***, (that is, guidance that is to be taken into account in interpreting the provision) or ***showing matters*** (that is, it is to be read with, and may supplement, the information in the provision).

1.08 Table of Contents

This section provides that the Table of Contents for this MOS is not part of this MOS and is for guidance only.

CHAPTER 2 RePL TRAINING COURSE

Division 2.1 General

2.01 Purpose

Under the definition of ***RPL training course*** in the CASR Dictionary, RPA training is to be conducted by a certified RPA operator whose operations include training (a RePL training organisation). This section provides that for the definition of ***RPL training course*** this Chapter prescribes the standards and requirements for the conduct of training in the operation of RPA for the grant of a RePL.

2.02 Application

This section provides that the standards and requirements in the Chapter apply to the theory component of a RePL training course (the ***aeronautical knowledge component***), and to the practical component for the manual or automated operation of a category of RPA (the ***practical competency component***).

Division 2.2 Aeronautical knowledge and practical competency standards

2.03 General English language proficiency standards under Part 61

This section provides that a RePL training course may include training and assessment in general English language proficiency in accordance with the standards and evidence in Section 1: English Language Proficiency, GEL — General English language proficiency, in Schedule 2 of the Part 61 MOS. This material is incorporated into the MOS as in force from time to time and is available for free on the CASA website as part of the Part 61 MOS.

2.04 Aeronautical radio operator — knowledge and competency standards

This section provides that a RePL training course may include training and assessment in the operation of an aeronautical radio. The knowledge standards are as set out in Unit 1.2.1 — RARO, in Section 1.2 of Appendix 1 in Schedule 3 of the Part 61 MOS, and the competency standards are as set out in Part C3 in Section 2: Common Standards, in Schedule 2 of the Part 61 MOS, both also incorporated as mentioned above.

2.05 Aeronautical knowledge standards

This section provides that a RePL training course for a category of RPA must include training and assessment in the units of aeronautical knowledge

(including common units) that are for the category in accordance with the standards and requirements in Schedule 2 of the MOS.

The section also specifies the units of knowledge required for the various RPA aircraft categories, and, when training to upgrade a remote pilot licence (***RePL***) allows credit to be given for certain training already completed for an existing licence.

2.06 Practical competency standards

This section provides for the practical competency component of a RePL training course for a category of RPA (including with a liquid-fuel system or otherwise). The section specifies the units of practical competency required for the various RPA aircraft categories.

CHAPTER 2 RePL TRAINING COURSE

Division 2.3 Examinations — RePL training course theory component

2.07 Aeronautical knowledge examinations for a RePL training course

This section provides that the Chapter is also for the definition of ***RPL training course***.

As defined in the CASR Dictionary, ***RPL training course*** relevantly means training in the operation of RPA, for the grant of a remote pilot licence, that is conducted by a certified RPA operator whose operations include training. The training must be in accordance with any standards or requirements prescribed by the MOS.

Relevantly, under subregulation 101.295 (2) of CASR (eligibility for remote pilot licences), CASA must grant the licence to an applicant if he or she has passed the theory component of an RPL training course, and has completed an RPL training course in the manual or automated operation of a category of RPA that he or she proposes to operate.

2.08 Aeronautical knowledge examinations for a RePL training course

This section provides for the examinations to pass the theory component of a RePL training course and that the examination must be a closed-book examination except for any official CASA or Airservices Australia documents concerning RPAS.

2.09 Examination pass mark, examiner and resits

This section provides the pass mark for the examinations (85%), who may do the assessing, and what opportunities there are to resit a failed examination.

2.10 Examination questions

This section provides for the methodology for creating the sets of multiple-choice examination questions, based on the significance (Priority A, B etc) of particular topics in the training course syllabus in the Schedules for the aeronautical knowledge units.

2.11 Examination duration

This section provides for how the duration of an examination is to be calculated, based on the numbers of questions asked.

2.12 Examination question sets

This section provides for unique, rotating, sets of examination questions.

2.13 Examination results

This section provides for how candidates are to be notified of examination results.

2.14 Examination records

This section provides for the different periods for the retention of different sets of examination records.

2.15 Examination security

This section provides for the measures to be taken to preserve the security of the sets of examination question, and to ensure the absence of cheating during examinations.

2.16 Post- examination knowledge deficiency reports (KDRs)

This section provides that candidates who have passed, but not achieved 100% passes, in the aeronautical examination must remedy, and be orally tested on, their deficient knowledge.

2.17 Documented practice and procedures for examinations, KDRs etc.

This section provides that the RePL training organisation must have documented practices and procedures for compliance with the MOS in relation to examinations.

CHAPTER 2 RePL TRAINING COURSE

Division 2.4 Practical competencies — completion of RePL training course for manual or automated operation component

2.18 Assessment of practical competencies for a RePL training course

This section provides that the Chapter is also for the definition of ***RPL training course***. To complete the RePL training course component for the operation of a category of RPA (the ***practical competencies***), the applicant must be assessed as competent in the relevant unit of competency and pass a RePL training course flight test in a relevant RPA in accordance with the prescribed standards in Schedule 6 of the MOS.

CHAPTER 2 RePL TRAINING COURSE

Division 2.5 RePL training course to upgrade a RePL

The sections in Division 2.5 set out the detailed requirements for the holder of a RePL for a particular type or category of RPA to upgrade his or her privileges to a larger, different type or category of RPA.

For upgrade a RePL for a small RPA to include a medium or large RPA of the same category (section 2.22), the aeronautical knowledge and practical competency components of the RePL training course (including examination

and assessment) must comply with the requirements in *CASA RePL Upgrade Supplement for the Part 101 MOS* for the relevant RPA, as in force from time to time. This document sets out modified, concessional requirements for an upgrade of this nature. The document may be freely accessed through the CASA website: www.casa.gov.au.

To upgrade a RePL for a medium or large RPA to include another medium or large RPA of the same category (section 2.24), the aeronautical knowledge and practical competency components of the RePL training course (including examination and assessment) must comply with the requirements in *CASA RePL Upgrade Supplement for the Part 101 MOS* for the relevant RPA as in force from time to time. This document sets out modified, concessional requirements for an upgrade of this nature. The document may be freely accessed through the CASA website: www.casa.gov.au.

CASA has set out these particular upgrade training requirements in the incorporated document because they are, to some extent, experimental and subject to ongoing monitoring, consultation and the potential need for expedited amendment.

RPAS technology is changing so rapidly and unpredictably in the more complex range of larger RPA, that a flexible approach to setting knowledge and competency standards is necessary at this stage of development to allow for immediate safety responses to developments.

To ensure that the level of remote pilot competency is commensurate with the risks associated with larger RPA (for which there is no upper weight limit), CASA continues to consult with, and seek feedback from, the RPA aviation industry on how these provisions work in practice with a view to modifying them with the benefit of experience.

This is why the standards require knowledge of, and practical competencies to be demonstrated on, the actual type of RPA to be flown in practice rather than some representative model. In some circumstances, there will be no representative model.

In the longer-term, it is predicted that aeronautical knowledge and practical competency standards for some of the larger RPA can be rationalised and refined to be a more stable set of requirements that can be incorporated into the MOS itself.

CHAPTER 2 RePL TRAINING COURSE

Division 2.6 RePL training course — administration

2.26 Student class time

This section provides that for the aeronautical knowledge component of a RePL training course students must receive specified amounts of class contact time with a RePL training instructor, meaning that the instructor is physically or virtually present, instructing and responding in real time. For the practical competency component, the training instructor must be physically present.

2.27 Student ratios

This section provides for the ratio of students to RePL training instructors and how that is to be calculated.

2.28 Means of achieving or simulating the flight conditions

This section provides that to deliver a RePL training course for any type of RPA, a RePL training organisation must have a means of achieving or simulating required relevant flight conditions and variables that cannot otherwise be reasonably demonstrated.

2.29 Certification of RePL training course completion

This section provides that an RPA training organisation must give each student who successfully completes a RePL training course a certificate of course completion after all course requirements have been satisfied, including knowledge deficiency.

A RePL training course is not completed until the relevant RPA training organisation notifies CASA that the certificate of course completion, has been issued. CASA will not issue a RePL to an applicant unless CASA has received the notification.

CHAPTER 2 RePL TRAINING COURSE

Division 2.7 RePL training course instructors

2.30 Requirements for RePL training instructors

This section provides that a RePL training course for a type of RPA may only be conducted by a RePL training instructor who meets the requirements set out in the section.

CHAPTER 2 RePL TRAINING COURSE

Division 2.8 RePL flight tests — standards and repeats

2.31 Flight tests — competency standards

This section provides for the competency standards for a flight test for a RePL in an aircraft category. A student enrolled with an RPA training organisation may attempt the relevant flight test at any time during the RePL training course, provided the attempt is in accordance with this section. The specific requirements are as set out in the Appendix in Schedule 6 that is for the licence in the relevant category, and comprise flight test requirements, varying knowledge requirements and practical flight standards for the test. A prescribed level of knowledge and competency is to be achieved.

The examiner conducting the flight test must be satisfied that the candidate has demonstrated prescribed knowledge and competencies. He or she must also keep prescribed records in relation to the conduct and outcome of the flight test.

CHAPTER 3 RESERVED

This Chapter is reserved for future use.

CHAPTER 4 OPERATIONS IN CONTROLLED AIRSPACE — CONTROLLED AERODROMES

4.01 Purpose

This section provides that the Division is for subregulation 101.072 (1) of CASR. This provides that the Part 101 Manual of Standards may prescribe requirements relating to the operation of *unmanned aircraft* in controlled airspace. The Division prescribes the requirements relating to the operation in controlled airspace, below 400 ft, of certain model aircraft, and some RPA operated by a certified RPA operator. Certain unmanned aircraft are not restrained by the Division, for example, micro RPA, or those with specific CASA authorisation.

4.02 Definitions

This section provides for key definitions. In particular, the no-fly zones at controlled aerodromes are within 3 NM of the movement area or within the approach and departure paths whether or not they extend beyond 3 NM of the movement area.

4.03 RPA flight in the no-fly zone of a controlled aerodrome

This section provides for who may, and who must not, fly an RPA, or conduct RPA operations, in the no-fly zone of a controlled aerodrome. Thus, a person who is a certified RPA operator may conduct RPA operations in the no-fly zone if the operation is an indoors operation, or a tethered operation cleared by ATC. A person who is not a certified RPA operator may fly an RPA in the no-fly zone but only if the flight is exclusively an indoors operation. However, any person may fly a defined unmanned aircraft in the no-fly zone. These are micro RPA or other unmanned aircraft whose operators have a specific approval under Part 101 or an authorisation under CASR. Finally, an unmanned aircraft in the form of a model aircraft must not be flown in the no-fly zone unless otherwise authorised by CASA.

4.04 Approval to operate an RPA in a no-fly zone of a controlled aerodrome

This section provides that a certified RPA operator is approved to operate an RPA in the no-fly zone of a controlled aerodrome if the operation is an indoors operation or a tethered operation and various safety requirements are met.

4.05 Approach and departure paths — controlled aerodromes

This section provides description and depiction of the approach and departure paths of a controlled aerodrome.

CHAPTER 5 RPA OPERATIONS BEYOND VLOS

5.01 Application

This section provides that only a certified RPA operator may (if approved) operate an RPA beyond VLOS.

5.02 Requirements for RPA operations do not apply in an approved area

This section provides that the Chapter does not apply with respect to areas approved by CASA.

5.03 Requirements for an approval to operate an RPA beyond VLOS

This section provides that the Chapter is for paragraph 101.073 (2) (a) of CASR. Under subregulation 101.073 (1), a person commits an offence of strict liability if the person operates an unmanned aircraft and the aircraft is not operated within the person's VLOS. However, under paragraph 101.073 (2) (a), subregulation (1) does not apply if the person holds an approval under regulation 101.029 to operate the unmanned aircraft beyond VLOS, known as EVLOS.

Under regulation 101.029, if a provision refers to a person holding an approval under the regulation, the person may apply to CASA for the approval and CASA must grant it if requirements prescribed by the MOS are met.

Thus, if the requirements set out in Chapter 5 are met, CASA will grant an approval, under regulation 101.029, for a certified RPA operator to operate an RPA, other than a large RPA, beyond VLOS.

Approvals would be for an EVLOS operation class 1 or an EVLOS operation class 2, each of which has different safety requirements.

5.04 Definitions for this Chapter

This section provides for relevant definitions.

5.05 Documented practices and procedures for EVLOS operations

This section provides that, for an EVLOS operation approval, a certified RPA operator must have appropriate documented practices and procedures.

5.06 Remote pilots for EVLOS operations

This section provides for the training, experience, certification and proficiency checks a remote pilot requires to conduct an EVLOS operation.

5.07 Observers for EVLOS operations

This section provides that for EVLOS operations trained, operator-certified visual observers are required who have specific prescribed duties and responsibilities. Devices like binoculars or telescopes may be used to assist in carrying out the duties, but they must not be used as the primary means of keeping the surrounding airspace and ground in sight.

5.08 Handover procedures between 1 remote pilot and another remote pilot for EVLOS operations

This section provides that, during an EVLOS operation, control of, and responsibility for, an RPA must not be transferred from the remote pilot to another remote pilot unless prescribed requirements and documented practices and procedures are followed.

5.09 Pre-flight briefing for an EVLOS operation

This section provides that there must be pre-flight briefings on emergency and collision avoidance procedures for remote pilots and observers in EVLOS operations.

5.10 Radio and telephone communications in an EVLOS operation class 2

This section provides that for EVLOS operations class 2, the radio or telephone communication system must be supported by an alternative or backup radio or telephone communication system. If a mobile telephone is the primary communication system, a second mobile telephone is not a secondary communication system.

5.11 Orientation, height and lateral distance of an RPA in an EVLOS operation

This section provides for a number of important operational limitations that must be observed in an EVLOS operation. For example, the RPA must not be flown at a distance from the remote pilot that is more than 80% of the manufacturer's control link performance figure for flight below 500 ft or another demonstrable and recorded control link performance figure that meets prescribed requirements. Similarly, the RPA must not be flown at a distance that is more than 1 500 m from the relevant observer.

5.12 Weather and visibility conditions for an EVLOS operation

This section provides that an RPA may only be flown in an EVLOS operation if the remote pilot and observer each have the equivalent of an ordinary driver's licence standard of visual acuity (including when corrected) and if the conditions are such that there is a visibility minimum of 5 000 m. The relevant standards are in the Austroads standard for private motor vehicle licensing visual acuity, as in force from time to time. The Austroads standards may be accessed for free here: https://austroads.com.au/__data/assets/pdf_file/0022/104197/AP-G56-17_Assessing_fitness_to_drive_2016_amended_Aug2017.pdf.

5.13 Controlled airspace and EVLOS operations

This section provides that a CASA approval of an EVLOS operation conducted in controlled airspace applies only if the operation is conducted in accordance with this MOS, any approval conditions in accordance with Chapter 4, and conditions in any required permission from the relevant air traffic control service.

5.14 Night EVLOS operations

Relevantly, under regulation 101.095 of CASR, a person may operate an unmanned aircraft at night only if permitted by another provision of Part 101 or in accordance with an air traffic control direction. However, subregulation (1) does not apply if the person holds an approval under regulation 101.029 for the purposes of this subregulation.

As noted above, under regulation 101.029, if a provision refers to a person holding an approval under the regulation, the person may apply to CASA for the approval and CASA must grant it if requirements prescribed by the MOS are met.

This section provides that, for such an approval of an EVLOS operation to be conducted at night, the RPA operator must first be approved for night RPA operations under instrument CASA 01/17, or any replacement instrument to the same or similar effect, as in force from time to time. CASA 01/17 is, and any replacement instrument would be, available for free on the CASA

website. Paragraph 98 (5D) (b) of the *Civil Aviation Act 1988* permits a legislative instrument, like a MOS, to incorporate an instrument as in force or existing from time to time, including an instrument that does not as yet exist at the time the legislative instrument (the MOS) is made.

5.15 If manned aircraft are active in the airspace

This section provides that if a manned aircraft is, or is likely to be, flying within 3 NM in distance and 1 500 ft in height from where an RPA is flying in an EVLOS operation in non-controlled airspace, the remote pilot must ensure that the RPA operation does not become a hazard by using the relevant aeronautical VHF channel for regular broadcasts or direct radiocommunication with the pilot of the manned aircraft.

5.16 Procedures for loss of control of an RPA in an EVLOS operation

This section provides that for an RPA in an EVLOS operation, the RPA operator's documented practices and procedures must have procedures for the remote pilot to resolve a loss of control over the RPA.

5.17 Procedures for loss of radio and telephone communications in an EVLOS operation class 2

This section provides that for an RPA in an EVLOS operation class 2, the RPA operator's documented practices and procedures must have procedures for the remote pilot to resolve communication system or procedural failures relating to the observation of the RPA.

5.18 Conflict between the requirements of this Chapter and the documented practices and procedures

This section provides that a certified RPA operator must ensure that there is no conflict or inconsistency between the requirements of this Chapter for EVLOS operations and the operator's documented practices and procedures. If there is any conflict or inconsistency, the requirements of the Chapter must prevail and the documented practices and procedures must be immediately revised and corrected.

CHAPTER 6 RESERVED

This Chapter is reserved for future use.

CHAPTER 7 RESERVED

This Chapter is reserved for future use.

CHAPTER 8 RESERVED

This Chapter is reserved for future use.

CHAPTER 9 OPERATIONS OF RPA IN PRESCRIBED AREAS

Division 9.1 RPAS operations at or near non-controlled aerodromes

9.01 Prescribed areas

This section provides that the Division is for subregulation 101.247 (1) of CASR. Under this provision, the Part 101 Manual of Standards may prescribe requirements relating to the operation of some RPA in areas (***prescribed areas***) prescribed by the MOS. The MOS provides that the no-fly zone of a non-controlled certified aerodrome is a prescribed area, and it sets out the

requirements relating to the operation of some RPA in such zones (but certain RPA are excluded from the scope of the Division, for example, micro RPA).

9.02 Definitions

This section provides definitions for the Division.

9.03 RPA flight in the no-fly zone of a non-controlled aerodrome

This section provides that a person may fly an RPA, or conduct RPA operations, in the no-fly zone of a non-controlled aerodrome, or in the no-fly zone of a HLS provided the flight does not occur during a relevant event, that is, *when a manned aircraft is in the course of approaching, landing at, taking-off from, or manoeuvring on the movement area of, the aerodrome*. However, a certified RPA operator may conduct an RPA operation that is exclusively an indoors operation or a tethered operation during a relevant event. A person who is not a certified RPA operator may fly an RPA during a relevant event only if the flight is exclusively an indoors operation. A person may fly a defined unmanned aircraft during a relevant event. despite the presence of a manned aircraft. These are micro RPA or other unmanned aircraft whose operators have a specific approval under Part 101 or an authorisation under CASR. A model aircraft is also precluded from being flown in the no-fly zone by virtue of subregulation 101.075 (4) of CASR.

9.04 Action on becoming aware of a relevant event

This section provides that if a person flying an RPA becomes aware that a relevant event is occurring, or is about to occur, the person must immediately manoeuvre the RPA away from the path of the manned aircraft and land it as soon as safely possible.

9.05 Approval to operate an RPA in a no-fly zone of a non-controlled aerodrome

This section provides that a certified RPA operator is approved to conduct RPA operations in relevant airspace, during a relevant event, if the RPA operation is exclusively an indoors operation, or is a tethered operation that meets additional requirements in relation to the length of the tether and the area where the operation may take place. This section also permits tethered operations in relation to the no-fly zone of a HLS provided the prescribed safety conditions are met concerning the length of the tether and the distance of the RPA away from the HLS.

9.06 Non-controlled aerodromes — approach and departure paths

This section provides description and depiction of the approach and departure paths of a non-controlled aerodrome.

Division 9.2 No-fly zones in certain non-controlled airspace

9.07 Prescribed areas and requirements

This section provides that the no-fly zone of non-controlled airspace is a prescribed area. The no-fly zone in this case is airspace that is within 100 ft of the lower limit of overlying controlled airspace that is itself less than 500 ft above ground level.

9.08 Definitions

This section provides definitions for the Division.

9.09 Approval to operate an RPA in a prescribed area

This section provides that a person must not operate an RPA in the no-fly zone of non-controlled airspace unless CASA has approved the operation in writing.

CHAPTER 10 RECORD KEEPING FOR CERTAIN RPA

Division 10.1 Preliminary

10.01 Definitions for the Chapter

This section provides definitions for the Chapter.

Division 10.2 Record-keeping requirements — RPA other than excluded RPA

10.02 Purpose

This section provides that, for paragraph 101.272 (1) (a) of CASR, the Division prescribes record-keeping requirements for a certified RPA operator of an RPA other than an excluded RPA.

Under subregulation 101.272 (1), the MOS may require a person who operates, or proposes to operate, RPA to do either or both of the following:
(a) keep records, in accordance with the requirements prescribed by the MOS;
(b) give information to CASA, in accordance with the requirements prescribed by the MOS.

10.03 Chief remote pilot records

This section provides that a certified RPA operator must ensure that its chief remote pilot keeps a range of records, including those that show he or she is regularly and consistently performing his or her functions and duties. Other records include (as applicable) RPAS operational records and RePL training course records.

10.04 RPAS operational release

This section provides that before commencing an RPA operation, a certified RPA operator must make and keep an RPAS operational release for the operation detailing matters about the proposed operation. However, the requirement does not apply if the RPA is operated by a ReOC holder who is the sole remote pilot for the RPA in any operation under the ReOC.

10.05 RPAS operational log

This section provides that the certified RPA operator must ensure that the remote pilot in command of an RPA flight maintains an RPAS operational log in which he or she must record prescribed flight details, as soon as practicable after the flight.

10.06 Remote pilot log — for flight time

This section provides that the certified RPA operator must ensure that the remote pilots keep a remote pilot log to record their accumulated flight time operating RPA.

10.07 RPAS technical log

This section provides that the certified RPA operator must ensure that the operator's maintenance controller or other similar contracted person keeps an RPAS technical log setting out prescribed information about the continuing airworthiness of the RPA and related matters. The certified RPA operator must provide copies to CASA in certain circumstances, and to a person who becomes a new owner of the RPA and who requests it and pays a reasonable cost recovery price for it.

10.08 Records of qualification and competency

This section provides that for an employee of a certified RPA operator, who performs non-piloting duties for the safety of RPA operations and who obtains a related qualification or a competency, the RPA operator must keep a record of the employee obtaining the qualification or competency and must give the employee a copy.

Division 10.3 Record-keeping requirements — excluded RPA

10.09 Purpose

This section provides that, for paragraph 101.272 (1) (a) of CASR (as described above), the Division prescribes record-keeping requirements for an operator of an excluded small or medium RPA for subregulation 101.237 (4) or (7) of CASR. An operator of an excluded RPA is defined as the person who makes the relevant small or medium RPA available to the remote pilot.

Under subregulation 101.237 (4), a small RPA is an ***excluded RPA*** if it is being operated by or on behalf of the RPA owner, by a RePL holder, over the RPA owner's land, in standard RPA operating conditions, for aerial spotting, photography, agriculture, communications, or cargo-carriage, and for which no remuneration is received by the RPA operator or owner, or the owner or occupier of the land, or any person on whose behalf the activity is being conducted.

Under subregulation 101.237 (7), a medium RPA is an ***excluded RPA*** if it is being operated by or on behalf of the RPA owner, by a RePL holder, over the RPA owner's land, in standard RPA operating conditions, for aerial spotting, photography, agriculture, communications, or cargo-carriage, and for which no remuneration is received by the RPA operator or owner, or the owner or occupier of the land, or any person on whose behalf the activity is being conducted.

10.10 RPAS operational log

This section provides that the operator of an excluded small and medium RPA must ensure that the remote pilot in command of an RPA flight maintains an RPAS operational log in which he or she must record prescribed flight details.

10.11 Remote pilot log — for flight time

This section provides that the operator of an excluded medium RPA must ensure that the relevant remote pilots (who, under subregulation 101.237 (7) of CASR, must be RePL holders) keep a remote pilot log to record their accumulated flight time operating RPA.

10.12 RPAS technical log

This section provides that for excluded medium RPA, the operator of an applicable RPA must keep an RPAS technical log setting out prescribed information about the continuing airworthiness of the RPA and related matters. The operator must provide copies to CASA in certain circumstances, and to a person who becomes a new owner of the RPA and who requests it and pays a reasonable cost recovery price for it.

Division 10.4 Requirements for giving information to CASA

10.13 Purpose

This section provides that for paragraph 101.272 (1) (b) of CASR (as described above), this Division prescribes requirements for a person who operates, or proposes to operate, an RPA (the ***RPA operator***) to give information to CASA. The "RPA operator" is the person who makes the relevant RPA available to the remote pilot.

10.14 Particular small and medium excluded RPA — information about operation

This section provides for its application to an RPA operator of a small RPA that is an excluded RPA for subregulation 101.237 (4) of CASR; or a medium RPA that is an excluded RPA for subregulation 101.237 (7) (the applicable RA). Subregulation 101.237 (7) was explained above.

Under subregulation 101.237 (4), a small RPA is an ***excluded RPA*** if it is being operated by or on behalf of the RPA owner, by a RePL holder, over the RPA owner's land, in standard RPA operating conditions, for aerial spotting, photography, agriculture, communications, or cargo-carriage, and for which no remuneration is received by the RPA operator or owner, or the owner or occupier of the land, or any person on whose behalf the activity is being conducted.

The section provides that, except for certified RPA operators, before the first operation of the relevant RPA, the person must give CASA, through the approved online notification system, certain prescribed information, unless he or she has previously given CASA the same information for the same or a different RPA (a certified RPA operator has to provide such information in order to become certified). The information includes identity and RPA operational details, and a written statement, in the form and manner approved by CASA, declaring that the operator has read and is familiar with *AC 101-10, Remotely piloted aircraft systems — operation of excluded RPA*, as existing at the time of making the particular statement. *AC 101-10* is available for free on the CASA website

10.15 Particular small and medium excluded RPA — information required every 3 years

The section provides that, on triennial due dates, a continuing operator of small or medium excluded RPA, who has given CASA information in accordance with section 10.14 must resubmit updated information.

10.16 Very small RPA for hire or reward — information required every 3 years

The section provides that, except for certified RPA operators, on triennial due dates, a continuing operator of a very small RPA for hire or reward who has notified CASA under regulation 101.372 of CASR must submit updated identity and operational information through the approved online notification system.

Under regulation 101.372, a person may notify CASA, in writing, that the person intends to be, in effect, the remote pilot for a very small RPA for hire or reward, and/or the operator conducting operations using very small RPA for hire or reward. The notification must be given in the CASA-approved form.

10.17 Certified RPA operator — changes to information already given to CASA

The section provides that a certified RPA operator, who is certified to operate an RPA other than an excluded RPA, must inform CASA in writing of any change in the identity or operational information given to CASA for the purposes of the operator's certification.

CHAPTER 11 NOTIFICATION OF CHANGE TO OPERATE VERY SMALL RPA FOR HIRE OR REWARD

11.01 Change relating to operating very small RPA for hire or reward

Under regulation 101.373 of CASR, if a person has given CASA a notice under regulation 101.372 and a change of a kind prescribed by the MOS occurs, the person must notify CASA of the change within 21 business days using the form and manner approved by CASA.

The section, therefore, lists for paragraph 101.373 (1) (b), the kinds of changed information that CASA must be notified of, for example, changes in identity and operational information given in accordance with regulation 101.372.

11.02 Notice to CASA of operation of very small RPA, including for hire or reward

The section provides that, for paragraph 101.028 (b) of CASR, certain forms and manners of notification for subregulation 101.372 (1) are approved, including that the notification to CASA must be made through the CASA on-line notification system for very small RPA for hire or reward.

Schedule 1 Acronyms and abbreviations

This Schedule lists acronyms and abbreviations.

Schedule 2 Directory for aeronautical knowledge standards for a RePL training course

This Schedule provides a navigational tool for the aeronautical knowledge standards.

Schedule 3 Directory for practical competency standards for a RePL training course

This Schedule provides a navigational tool for the practical competency standards.

Schedule 4 Aeronautical knowledge units

This Schedule sets out the aeronautical knowledge units for RPA licence training.

Schedule 5 Practical competency units

This Schedule sets out the practical competency units for RPA licence training.

Schedule 6 Flight Test Standards

This Schedule sets out the flight test standards for RPA licensing.