

OFFICIAL



Australian Government
Civil Aviation Safety Authority

ANNEX A TO AC 101-01 V6.0

CASA Guidance – Remote Pilot Licence (RePL) Training Course

May 2024

OFFICIAL

About this guide

The Civil Aviation Safety Authority's *CASA Guidance for Remote Pilot Licence (RePL) Training Course* summarises the Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019 (Part 101 MOS) requirements for Remote Pilot Licence (RePL) training in a concise publication. It is issued as Annex A to the Advisory Circular 101-01 Remotely piloted aircraft systems - licensing and operations (AC101-01).

After following this guide, it is expected that an applicant will comply with the regulatory requirements pursuant to the *Civil Aviation Safety Regulations 1998* (CASR) relating to operating as a RePL training organisation.

However, this guide is not legislation and applicants are encouraged to refer to the Federal Register of Legislation at www.legislation.gov.au for the applicable legislation in force at any time.

Who this guidance is for?

This guidance is directed at all training providers intending to deliver training for the issue of a RePL. Specifically, the following material is relevant to anyone seeking to apply to:

- become an approved RePL training organisation, being someone who is certificated under regulation 101.335 of CASR to hold an operator's certificate and is authorised by that certificate to conduct RePL training
- or
- vary an existing ReOC and its associated privileges which authorise the holder to conduct RePL training under regulation 101.335 of CASR.

Publication details

Since the Part 101 MOS underpins the information in this guide, the *CASA Guidance for Remote Pilot Licence (RePL) Training Course* is subject to change. Applicants are encouraged to refer to [CASA's website](#) for current information.

We would welcome feedback on the approach adopted in this guide and whether it provides regulatory information in a simple, easy-to-read, and concise language. Please provide comments and suggestions for improvement via the [CASA website](#).

Contents

1	Reference material	7
1.1	Acronyms	7
1.2	Definitions	8
1.3	References	11
1.4	Forms	12
2	Becoming a RePL training organisation	13
2.1	What is a RePL?	13
2.2	Legislative framework	13
2.3	CASA's expectations of a RePL holder	13
2.4	Aeronautical knowledge and aviation industry knowledge	14
2.5	General aviation industry practices relating to RPAS	14
2.6	Knowledge and practical competency in the operation of a specific RPA	14
3	CASA's expectations of RePL training organisations	15
4	Guidance material	16
4.1	Pre-application meeting	16
4.2	Application submission requirements	16
4.3	Key personnel	17
4.4	Fee estimate	18
4.5	Advertising RePL training course(s)	19
5	RePL training organisation assessment	20
5.1	Application desktop assessment	20
5.2	On-site assessment	20
5.3	Post-assessment	21
6	Identifying the course	23
7	RePL training standards	25
7.1	RePL training units	25
7.2	Aeronautical knowledge component (theory component)	27
7.3	Practical competency component (practical component)	28
7.4	RePL training unit requirements for standard courses	30
7.5	Modified licensing standards for advanced RPA (medium/large) technology	32
7.6	General English Language Proficiency assessment	33
7.7	Aeronautical Radio Operator Certificate (AROC)	34
8	RePL syllabus of training	35
8.1	Developing the course	35
8.2	Documenting the syllabus	35
8.3	Syllabus assessment	38
9	RePL training course curriculum	39
9.1	Course requirements	39

9.2	Documenting a curriculum	41
9.3	Curriculum assessment	43
10	RePL training course material	44
10.1	Training format	44
10.2	Documenting lesson plans	46
10.3	RePL Instructor Handbook	48
10.4	Training course material assessment	48
11	RePL aeronautical knowledge examination	49
11.1	Examination conduct	49
11.2	Examination requirements	49
11.3	Examination security	51
11.4	Examination assessment	52
12	RePL flight test	53
12.1	Flight test requirements	53
12.2	Flight test form	54
13	RePL training operational procedures	56
13.1	Suitable practices and procedures	56
13.2	Specific required practices and procedures	56
13.3	Documented practices and procedures assessment	61
14	Online RePL training	63
14.1	Instructing and responding to students in real time	63
14.2	Documented practices and procedures for the conduct of virtually present instruction	64
14.3	Ratio of students to instructors	64
14.4	CASA assessment	64
15	Increased student instructor ratios	65
15.1	Background	65
15.2	Overview of RePL course	65
15.3	Increasing the student to instructor ratio considerations	65
15.4	Minimum requirements for increasing student to instructor ratios	66
15.5	Guidance on additional contact time requirement	66

16	Simulators and synthetic trainers	67
17	Aeronautical knowledge references	68
18	RePL training – submission checklist	69
Appendix A	Key sub-referenced legislation	70
Appendix B	Sample RePL syllabus of training	76
Appendix C	Sample RePL syllabus of training for Aeroplane (small)	83
Appendix D	CASA sample course curriculums	86
Appendix E	Example lesson - RKOP	90
Appendix F	Example lesson plans	96
Appendix G	Theoretical knowledge sample examination questions	107



Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

1 Reference material

1.1 Acronyms

Table 1. Acronyms

Acronym	Description
AC	advisory circular
AIP	aeronautical information publication
BOM	Bureau of Meteorology
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
CRP	chief remote pilot
CRI	chief RePL instructor
DPP	documented practices and procedures
ERC	en route chart
ERSA	En Route Supplement Australia
GELP	General English Language Proficiency
IAW	in accordance with
JSA	job safety assessment
KDR	knowledge deficiency report
MOS	Manual of Standards
MTOW	maximum take-off weight
NAIPS	National Aeronautical Information Processing System (Airservices)
NOTAM	notice to airmen
RA	risk assessment
RPA	remotely piloted aircraft
RPAS	remotely piloted aircraft systems
ReOC	RPA operator's certificate
RePL	remote pilot licence
VNC	visual navigation chart
VTC	visual terminal chart
VTOL	vertical take-off and landing

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this Annex and the civil aviation legislation, the definition in the legislation prevails.

Table 2. Definitions

Term	Definition
aeronautical knowledge component	The theory component of a RePL training course, as mentioned in Subparagraph 101.295 (2) (a) (iii) of CASR and consisting of training covering the RePL training unit items from the aeronautical knowledge units.
aeronautical knowledge standards	The standards and requirements for the aeronautical knowledge component of a RePL training course as defined in Section 2.05 of the Part 101 MOS.
aeronautical knowledge units	The RePL training units listed in schedule 2 of the Part 101 MOS and broken into the required learning outcomes by individual unit in schedule 4 of the Part 101 MOS.
automated operation	<p>For an RPA, means the mode of operation in which, after take-off and until it lands, the RPA:</p> <ul style="list-style-type: none"> a. either: <ul style="list-style-type: none"> i flies a predetermined flight path programmed into the RPAS before take-off; or ii changes its flight path or configuration in flight solely because of dynamic updating of pre-programmed turning, way point data, or configuration settings; and <p>Note: Dynamic updating involves electronically changing an RPA's flight path without the manual operation of command and control levers or switches.</p> <ul style="list-style-type: none"> b. is not subject to any manual operation.
category	<p>For an RPA, means one of the following:</p> <ul style="list-style-type: none"> a. aeroplane b. helicopter (multirotor class) c. helicopter (single rotor class) d. powered-lift (vertical take-off and landing – VTOL)
chief RePL instructor	The chief RePL instructor is the nominated position within a RePL training organisation who is responsible for ensuring the organisation's RePL training operations are of an acceptable quality. The position and duties and responsibilities are defined in Division 2.7 of the Part 101 MOS.
competency	In relation to the practical competency component of a RePL training course, means the consistent application of knowledge (see learning outcomes) and behaviours to the standard of performance required in the workplace and defined in the Part 101 MOS. The required competencies and performance criteria are listed in the relevant practical competency units as RePL training unit items.

Term	Definition
curriculum	For a RePL training course, a documented representation of the planned timeframe and sequence of instruction for a specific course of RePL training. It should reference modules, lessons or training periods listed in the training organisation's syllabus.
documented practices and procedures	For a certified RPA operator, means the written practices and procedures of the operator, that, to the extent required by this MOS, have been approved in writing by CASA.
examiner	For a small, very small, medium or large RPA, or for GELP assessments, means 1 of the following: <ul style="list-style-type: none"> a. the chief RePL instructor of a certified RPA operator who is qualified as a RePL training instructor; or b. a RePL training instructor who is authorised by the chief RePL instructor in accordance with the RPA operator's documented practices and procedures.
initial course	For a RePL, means the course of training approved under regulation 101.029 of CASR, which is required for the initial issue of a RePL to an applicant in accordance with subparagraphs 101.295 (2) (a) (iii) and 101.295 (2) (b) (i) of CASR.
learning outcome	In relation to the theory component of a RePL training course, means the knowledge attained by a student at the end of a period of instruction which can be measured or assessed. The required learning outcomes are listed in the relevant aeronautical knowledge units as RePL training unit items.
manual operation	For an RPA, means the use, by the remote pilot, of a manual mechanism that is part of the RPAS, in order to exercise control over the RPA, including by reconfiguring the RPA.
practical competency component	The component of a RePL training course as mentioned in subparagraph 101.295 (2) (b) (i) of CASR and consisting of training covering the RePL training unit items from the practical competency units.
practical competency standards	The standards and requirements for the practical competency component of a RePL training course as defined in Section 2.06 of the Part 101 MOS.
practical competency units	The RePL training units listed in Schedule 3 Part 101 MOS and broken into the required competencies by individual unit in Schedule 5 of the Part 101 MOS.
rating	For a RePL, means an entry on a Remote Pilot Licence issued by CASA denoting that the licensee is qualified to operate either: <ul style="list-style-type: none"> a. an RPA of a certain category and type; or b. an RPA of a certain category, type and MTOW.
RePL training course	Is the expression used to denote an RPL training course as defined in Part 1 of the CASR Dictionary.
RePL training instructor	A training instructor for a RePL training course who satisfies the requirements of Section 2.30 of the Part 101 MOS.
RePL training organisation	A person certified as an RPA operator under regulation 101.335 of CASR whose operations include the conduct of a RePL training course.

Term	Definition
RePL training organisation's procedures	A RePL training organisation's documented practices and procedures for Paragraph 101.335 (1) (d) of CASR. See <i>documented practices and procedures</i>
RePL training unit	Means a unit of aeronautical knowledge, or practical competency for a RePL training course: listed in Schedules 2 and 3 of the Part 101 MOS; and contained in Schedules 4 and 5 of the Part 101 MOS
RePL training unit item	For a RePL training unit, means the learning outcomes and competencies required for the RePL training unit: <ul style="list-style-type: none"> a. mentioned in column 2 of an item in an Appendix of Schedules 2 and 3 of the Part 101 MOS; and b. described for the corresponding unit in Schedules 4 and 5 of the Part 101 MOS, respectively.
remotely piloted aircraft	For the purposes of this AC, an aircraft other than a balloon, a kite, or model aircraft, where the pilot flying is not on board the aircraft. Note: remotely piloted aircraft and RPA have different meanings in the CASR; this definition reflects the definition of RPA in the CASR.
RPL training course	See RePL training course.
syllabus	For a RePL training course, a list which documents the title and RePL training unit items covered in each structured module, lesson or training period included in a course of RePL training.
theory component	In reference a RePL training course, see aeronautical knowledge component.
type	Refers to whether the RPA is of a particular gross weight, being: <ul style="list-style-type: none"> • Micro: not more than 250 g • Very small: greater than 250 g but not more than 2 kg • Small: greater than 2 kg but not more than 25 kg • Medium: greater than 25 kg but not more than 150 kg • Large: greater than 150kg
upgrade course	For a RePL, means the course of training approved under regulation 101.029 of CASR, which is required for the subsequent issue and variation of the privileges and ratings on an applicant's existing RePL in accordance with Subparagraphs 101.295 (2) (a) (iii) and 101.295 (2) (b) (i) of CASR.
unit code	For a RePL training unit, it is the code listed in the unit code column for each RePL training unit found in Schedules 2 and 3 of the Part 101 MOS.
virtually present instruction	For a RePL training course, means the RePL instructor is: <ul style="list-style-type: none"> a. instructing and responding to students in real time; and b. instructing and responding visually and with sound; and c. conducting training in accordance with an operator's documented practices and procedures for the delivery of virtually present instruction; and d. with a ratio of students to instructors no greater than 10:1.

1.3 References

Legislation

Legislation is available on the Federal Register of Legislation website <https://www.legislation.gov.au/>

Table 3. [Legislation references](#)

Document	Title
Part 61 of CASR	Part 61—Flight crew licensing, Civil Aviation Safety Regulations 1998
Part 61 MOS	Part 61 Manual of Standards
Part 101 of CASR	Part 101 -Unmanned aircraft and rockets, Civil Aviation Safety Regulations 1998 (CASR)
Part 101 MOS	Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019

Advisory material

CASA's advisory materials are available at <https://www.casa.gov.au/publications-and-resources/guidance-materials>

Table 4. [Advisory material references](#)

Document	Title
AC 1-01	Understanding the legislative framework
AC 61-08	Teaching and assessing non-technical skills for single-pilot operations
AC 101-01	Remotely piloted aircraft systems – licencing and operations

1.4 Forms

CASA's forms are available at <http://www.casa.gov.au/forms>

Table 5. [Forms](#)

Form no.	Title
Form 101-01	Application for Remote Pilot Licence (RePL), Initial or variation
Form 101-02	Application for RPA Operator's Certificate (ReOC) (initial issue/variation/renewal)
Form 101-05	Application for Remote Pilot Licence (RePL) and Training Notification of Results
Form CASA-04-4541	Notification of English Language Proficiency (61-9ELP) (Assessment or Validation)

2 Becoming a RePL training organisation

This AC 101-01 Annex A (Annex A) has been developed to support the overview of how to become a RePL training organisation as outlined on [CASA's website](#).

2.1 What is a RePL?

A RePL is an Australian licence issued by CASA which permits the holder to conduct commercial operations within a particular category¹ and complexity of remotely piloted aircraft system (RPAS) (including type/weight, manual and/or automated mode, power source etc.) for an operator holding a Remotely Piloted Aircraft Operator's Certificate (ReOC).

The RePL recognises the holder as having completed standardised training by having met a specific set of aeronautical knowledge and practical competency standards.

2.2 Legislative framework

The assessment of an organisation offering practical and/or theory RePL training is conducted in accordance with (IAW) the core 3-tier system of laws that govern CASA:

- a. The *Civil Aviation Act 1988* (CAA).
- b. The *Civil Aviation Safety Regulations 1998* (CASR).
- c. The Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019 (Part 101 MOS), with particular reference to Chapters 2 and 10.

The CASR requirements for RePL training are expanded on in the Part 101 MOS. It gathers together the more detailed and technical requirements associated with particular CASR regulations into a dedicated manual.

The Part 101 MOS requirements relating to RePL training aims to:

- prescribe requirements for RePL training course administration including requirements for RePL training instructors
- prescribe aeronautical knowledge and practical competency standards
- prescribe theoretical knowledge examination requirements
- prescribe practical flight-testing standards
- impose record-keeping and notification requirements for RePL training organisations.

Key sub-referenced legislation that underpins CASA's determination of a complete and acceptable application is further outlined in Appendix A of this Annex.

2.3 CASA's expectations of a RePL holder

CASA expects a RePL holder to have the skills and knowledge to safely operate an RPA for commercial purposes in compliance with current legislation. To do so, it is important that the holder understands the legal, operational and safety requirements relevant to aviation operations using RPAS. The knowledge and

¹ For example, aeroplane, multirotor, helicopter or powered lift.

practical skills relating to the operation of a specific RPA is only one element of the knowledge and skills expected of a RePL holder.

As illustrated in Figure 1, a RePL holder should demonstrate several inter-related knowledge and skill elements.

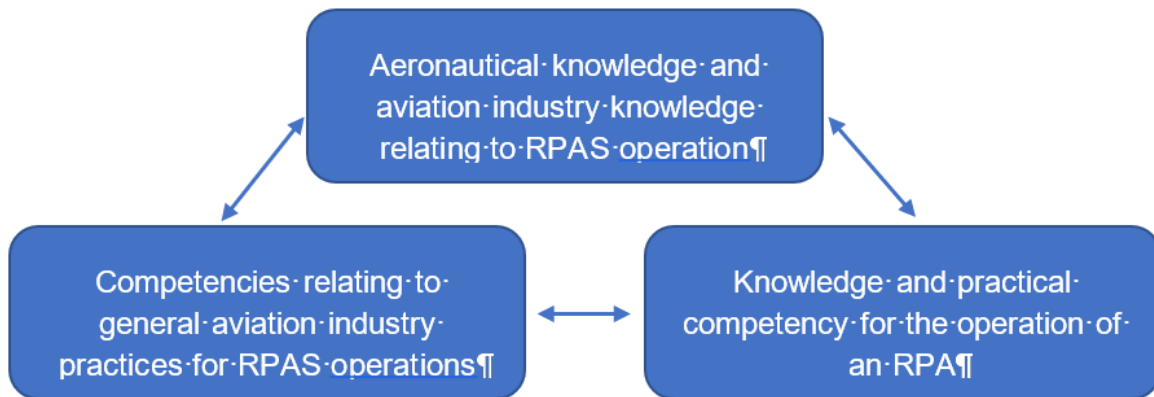


Figure 1. Elements of knowledge and skills expected of a RePL holder

2.4 Aeronautical knowledge and aviation industry knowledge

The 'Aeronautical knowledge and aviation industry knowledge' element relates to the foundation knowledge that is essential for remote pilots to understand their operating environment and forms the foundation for further development of their competency and practical skills. It includes the broad spectrum of knowledge that a professional remote pilot needs to make informed decisions throughout all phases of a commercial RPAS operation.

2.5 General aviation industry practices relating to RPAS

The 'General aviation industry practices relating to RPAS' element relates to a remote pilot's practical experience conducting RPA operations in accordance with industry standard practices. It covers all skills and competencies which are not directly related to the actual operation or flying of a RPA, such as non-technical skills.

2.6 Knowledge and practical competency in the operation of a specific RPA

The 'Knowledge and practical competency in the operation of a specific RPA' element relates to a remote pilot's knowledge related to a category of RPA. It includes knowledge of the systems functionality and competency in the operation and piloting of a specific RPAS.

3 CASA's expectations of RePL training organisations

A RePL training course refers to training in the operation of an RPA for the grant of a RePL that is conducted:

- a. by a legal person who is certificated under regulation 101.335 of CASR and whose operations include conducting training
- b. in accordance with any standards or requirements prescribed by the Part 101 MOS.

CASA's expectation of RePL training organisations is that they will conduct courses of training which will take a student with no RPAS or aviation experience to a level of knowledge and proficiency where they meet CASA's expectations for a RePL holder.

Chapter 2 of the Part 101 MOS prescribes the standards and requirements for the conduct of RePL training, ensuring that all trainers deliver standardised and high-quality training covering:

- the relevant aeronautical knowledge standards
- the relevant practical competency standards
- an aeronautical knowledge examination
- flight testing
- administrative requirements.

CASA expects that an approved training organisation clearly documents how they provide standardised training covering each aeronautical knowledge and practical competency standard required by the Part 101 MOS.

RePL training may be offered as an initial or upgrade course in various categories, types and operational modes.

4 Guidance material

This guidance has been developed to provide sample materials for the incorporation of Part 101 MOS theoretical knowledge and practical competency standards in a RePL training course. Any adopted content should be customised as required to meet the needs of the training organisation. Additional details may also be incorporated.

CASA has adopted the use of a fictitious organisation, ABC RPA, to illustrate various elements of the RePL course development and content. Operators are encouraged to consider the examples provided but note that those who elect to use the sample materials remain responsible for determining and maintaining their validity to align with CASR and Part 101 MOS.

Prior to an applicant applying to CASA for an authorisation to conduct RePL training they should familiarise themselves with this Annex A as well as the following supporting references:

- Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019 with reference to Chapters 2 and 10
- Advisory Circular AC 101-01 – Remotely piloted aircraft systems – licencing and operations.

4.1 Pre-application meeting

Prior to the submission of a RePL training organisation application, CASA strongly advises applicants to request a pre-application meeting.

The pre-application meeting lasts up to 30 minutes and covers the following topics:

- Brief overview of the RePL training course required standards and competencies
- Application submission process and standards
- Assessment process
- Pre-submitted questions.

Please refer to the [CASA website](#) to request a pre-application meeting

4.2 Application submission requirements

It is a requirement under regulation 101.330 of CASR that an applicant proposing to conduct a RePL training course provide details of the proposed training. Regulation 11.030 of CASR prescribes that an application is not taken to have been made unless it is complete (consider the checklist included in section 18). An incomplete application will not be considered by CASA.

A complete application should include the following documentation:

- [Application for RPA Operator's Certificate \(ReOC\) – Form 101-02 – initial or variation](#)
- RPAS documented practices and procedures (operations manual). To reduce the assessment time, CASA recommends that the operations manual is aligned with CASA's RPAS Sample Operations Manual template, with the following sections:
 - Syllabus of training – Refer to section 8 of this Annex for guidance and examples
 - An individual course curriculum for each course being provided – Refer to section 9 of this Annex for guidance and examples
 - Documented practices and procedures – Refer to section 13 of this Annex for guidance
- All course material, including:
 - RePL aeronautical examinations – Refer to section 11 of this Annex for guidance and examples

- RePL fight tests - Refer to section 12 of this Annex for guidance and examples
- All lesson plans - Refer to section 10 of this Annex for guidance and examples
- All lesson packs (Power Point lessons/online slide shows/video lessons/ handouts) and/or documentation for lessons conducted through other means -Refer to section 10 of this Annex
- All other relevant material, including, but not limited to the following (as relevant):
 - Student reference workbooks and material handouts (timetables, course exercises, student code of conduct, student version exam policy)
 - Student course flight log templates
 - Student pre-course material (if applicable)
 - All instructor notes
- If not included within the operator's documented practices and procedures, the application should include:
 - The proposed location(s) for theoretical (classroom, as applicable) and practical training (flying training areas). A completed JSA should be included for the flying training areas
 - Documentation describing the proposed RPAS to be operated for training and supporting role equipment. CASA may request copies of the manufacturer's documentation
 - The names and ARNs of all nominated and suitably qualified RePL training instructors.

Email the completed [Form 101-02](#) and all supporting documents to rpas.pac@casa.gov.au as directed on the form.

4.3 Key personnel

4.3.1 Chief remote pilot

To hold a ReOC, an organisation must have a CRP at all times. The CRP is the person within the organisation responsible for ensuring the safety and legislative compliance of the organisation's RPA operations. Refer to AC 101-01 for more information.

4.3.2 Chief RePL instructor

To conduct RePL training, a RePL training organisation must have a CRI at all times. The CRI is the person, within an RePL training organisation, responsible for ensuring the quality delivery of RePL training. To be a CRI the nominee must be assessed by CASA as suitable to hold the position and must²:

- hold a RePL for each type of RPA for which the RePL training organisation conducts training that also covers each make and model of the type
- meet all the requirements under subsection 2.30 (2) of the Part 101 MOS to be a RePL training instructor
- hold one or more of the following:
- a pilot instructor rating issued under Part 61 of CASR
 - a Certificate IV in Training and Assessment issued by an approved educational institution
 - or
 - a tertiary level qualification in teaching that is recognised as such by a State or Territory government.

² See section 2.29A and 2.29B of the Part 101 MOS.

The CRI may hold multiple positions within an RePL training organisation if that person is provided sufficient time and resources to satisfactorily undertake all roles.

The duties and responsibilities of the CRI are detailed in section 2.29B of the Part 101 MOS.

An operator should have documented practices and procedures detailing the relevant qualifications and experience required for the role. Refer to section 13.2 of this Annex for guidance on the organisation structure and required DPP.

Note: The ReOC holder must ensure that the CRI keeps records to show that the CRI is regularly and professionally performing their duties and discharging their responsibilities³.

4.3.3 Other personnel

4.3.3.1 RePL training instructor

All RePL training organisations must have suitably experienced and qualified RePL training instructors. Each RePL training organisation must⁴ have suitable processes to ensure that each instructor has the skills and experience to deliver quality RePL instruction. Section 2.30 of the Part 101 MOS details the minimum requirements for RePL training instructors.

4.3.3.2 RePL examiner

An examiner is either a CRI who meets the requirements to be a RePL Instructor or a RePL instructor who is authorised as an examiner by the CRI.⁵ Effectively, the examiner role is an additional responsibility to the role of RePL instructor. An authorised examiner should have the CRI's confidence that they can perform the role, which includes conducting RePL flight tests and GELP assessments.

To utilise an examiner other than the CRI, the operator must clearly identify each approved examiner and detail appropriate minimum requirements in its documented practices and procedures.⁶

4.3.3.3 Additional positions

Some RePL training organisations may choose to have additional positions to those required by legislation. Any additional positions should be outlined in the RePL training organisation's DPP detailing the duties and responsibilities of the position.

4.4 Fee estimate

When a complete application is received by CASA, the applicant will be given an estimate of the application cost. Upon payment of the estimate, the application will be assigned to a CASA RPAS Inspector for assessment. The assigned CASA Inspector will typically contact the applicant's nominated point of contact within three to four weeks after payment to provide an initial response to the application.

Travel time between the theory and practical training locations for the on-site assessment will be considered when calculating the cost of the application estimate.

CASA will issue a revised estimate if it becomes evident that the final charges to assess the application will exceed the previously estimate issued. The revised estimate must be paid before assessment can proceed.

³ See subsection 10.03 (2)(A) of the Part 101 MOS.

⁴ See section 2.29B of the Part 101 MOS.

⁵ Section 1.04 of the Part 101 MOS (definitions).

⁶ Section 1.04 of the Part 101 MOS (definitions).

4.5 Advertising RePL training course(s)

RePL training courses may not be advertised until such time as the:

- courses are approved by CASA
- ReOC has been issued
- ReOC is in the applicant's possession.

An email or verbal advice from a CASA Inspector indicating that the assessment has successfully been completed is not a basis upon which RePL training can be advertised or conducted.

The requirement to not advertise does not apply where the training course advertised is likely to be approved and the advertisement clearly states that the training course is pending regulatory approval.

Operators may not portray themselves as representing CASA or use the CASA logo, unless they have express permission from CASA under unique circumstances to do so. Use of the Commonwealth Coat of Arms is only through direct permission of the Department of Prime Minister and Cabinet.

5 RePL training organisation assessment

5.1 Application desktop assessment

For an operator to be approved to conduct RePL training under regulation 101.029 of CASR, they must submit a course of training which covers the relevant aeronautical knowledge and practical competency standards prescribed by the Part 101 MOS for the course.

The assigned CASA Inspector will assess the submitted material and provide the applicant with requests for further information or clarification where required.

Where applications contain significant deficiencies, the CASA Inspector will advise the applicant of this and provide an opportunity for the applicant to withdraw or amend their application. It should be noted that this will suspend the application process for a maximum of 90 days after which, if revised information has not been received, the application will be cancelled, and all unused monies refunded to the applicant.

Once the assessment of the documentation is completed, the assigned CASA Inspector will progress the application to the on-site assessment stage.

5.2 On-site assessment

For an initial issue or a significant variation of an authorisation to conduct RePL training, CASA will conduct an on-site assessment of whether an operator is competent in the presentation and assessment of the training material.

This assessment is usually conducted at the applicant's proposed training location(s) over one to two consecutive days as relevant to the application. The assigned CASA Inspector will liaise with the CRI to outline the assessment framework and expectations and to schedule a suitable date and location to undertake the assessment.

5.2.1 Demonstration of RPAS theory training

The RePL training organisation will be asked to deliver two or three demonstration lessons of RPAS theory over four to five hours for an initial application. This will be reduced as relevant for a variation application. Ideally, the instructor will have at least one person in the classroom to act as a student. The CASA Inspector will choose the lessons to be conducted from the submitted lesson plans and the instructor will be provided with 10 minutes of preparation time for each specific lesson to be presented.

The CASA Inspector will expect each demonstration lesson to be conducted as per the submitted lesson plan. The instructor will also be expected to demonstrate:

- an in-depth knowledge of the subject
- strong communication skills
- the ability to measure and assess a student's understanding of the subject
- strong preparation and organisation skills.

The CASA Inspector will provide feedback to the instructor after each lesson demonstration.

5.2.2 Discussion on examination and administration

The CASA Inspector may also discuss examination conduct and administrative procedures relating to operating as a RePL training organisation with the nominated instructor.

5.2.3 Demonstration of RPAS practical training

The nominated instructor will be required to demonstrate the delivery of two or three lessons of RPAS practical training over 2 to 4 hours. The instructor should have at least one person to act as a student.

Note: CASA Inspectors cannot act as the student for the practical training demonstration. The applicant is to be prepared to conduct all lessons IAW their syllabus. The inspector will decide the lesson to demonstrate on the day and provide 10 minutes for the applicant to prepare the lesson.

The CASA Inspector will expect each demonstration lesson to be conducted as per the submitted lesson plan and the operator's documented practices and procedures.

The instructor will also be expected to demonstrate:

- knowledge of the location
- an in-depth knowledge of the subject or specific RPAS in use
- strong communication skills
- the ability to measure and assess a student's competency in each unit item being performed
- the ability to control all activities being conducted during the lesson and maintain an acceptable level of safety.

5.2.4 On-site assessment debrief

The applicant will be provided their result and debriefed at the completion of each day as relevant. On completion of the site assessment, the inspector will provide an overall debrief and results. If the applicant is deemed Not Yet Competent (NYC) after the theoretical training demonstration, the on-site assessment will cease and the practical training assessment will not be conducted.

Only after the debriefed remedial action has been conducted will the reassessment be scheduled. An NYC practical training assessment result will require the applicant to be reassessed on the particular lesson once any remedial work has been conducted. This will be re-scheduled as it cannot be conducted on the same day.

5.3 Post-assessment

Once the assessment is successfully completed, the assigned CASA Inspector will discuss the outcome of the assessment with the applicant. At this point, there are two possible outcomes:

- Application not yet complete:
 - If there are any deficiencies that cannot be remediated during the assessment phase, the CASA Inspector will indicate in writing the areas that need rework. The report will cover all aspects of the assessment phase, including course content, facilities, and instructors. It should be noted that reports may contain constructive criticism of instructors
 - Further on-site assessment will be scheduled once the applicant has satisfactorily addressed all deficiencies as reviewed and approved by the CASA Inspector
- Application accepted:
 - If there are no deficiencies and once the CASA Inspector is satisfied that the course, instructors, and facilities meet all relevant requirements the application will be progressed.

Upon successful completion of the desktop and on-site assessment, the CASA Inspector will make a recommendation regarding the issuing of the ReOC to the issuing delegate. This process can take 2 to 3 weeks.

6 Identifying the course

In the first instance, operators should identify the various course options. The elements to be considered are presented in Table 6 which has been used to provide an example of a high-level overview of the RePL training to be hypothetically offered by ABC RPAS.

Table 6. RePL training course overview for ABC RPAS

Course considerations		Category			
		Multicopter	Aeroplane	Helicopter	Powered-lift
RePL	Initial	Yes	N/A	N/A	N/A
	Upgrade +type	Yes	N/A	N/A	N/A
	Upgrade +category	Yes	N/A	N/A	N/A
Type	Small* restricted	Yes	N/A	N/A	N/A
	Small	Yes	N/A	N/A	N/A
	Medium	N/A RPA specific	N/A RPA specific	N/A RPA specific	N/A RPA specific
	Large	N/A RPA specific	N/A RPA specific	N/A RPA specific	N/A RPA specific
Mode	Automated	N/A	N/A	N/A	N/A
	Manual and Automated	Yes	N/A	N/A	N/A
Power	Electric / battery	Yes	N/A	N/A	N/A
	Liquid fuel	N/A	N/A	N/A	N/A
	Other	N/A	N/A	N/A	N/A

The applicant should consider the following components of their proposed training program:

- Category:
 - This will need to align with the ReOC
- RePL:
 - Initial
 - Upgrade – add new type
 - Upgrade – add new category
- Type:
 - Small* restricted up to 7 kg
 - Small up to 25 kg
 - Medium – above 25 kg up to 150 kg for a specific RPA model
 - Large – above 150 kg for a specific RPA model

- Mode:
 - Automated
 - Manual and Automated
- Power:
 - Electric/battery
 - Liquid fuel
 - Other.

In the hypothetical scenario, ABC RPAS will need to hold a ReOC with authorisation to conduct RePL Training – Theory and RePL Training – Operation for small RPA (Multirotor up to 25 kg).

This is required to support their application to offer initial multirotor RePL courses which include theoretical knowledge and practical training, and assessment. Upgrade courses in which an applicant wishes to add a new category also require RePL Training – Theory endorsement on their ReOC.

This topic is further explored in section 7.4 of this Annex.

7 RePL training standards

Legislated standards presented in the Part 101 MOS apply to the design, development and conduct of CASA-approved RePL training courses. The purpose of these standards is to ensure that training is delivered at a consistently high quality which meets the needs of industry and individuals.

7.1 RePL training units

The standards framework for developing a RePL training package includes both aeronautical knowledge and practical competency units.

These units group CASA-recognised learning outcomes and competencies required by commercial RPAS operators as listed in Schedule 2 – aeronautical knowledge standards and Schedule 3 – practical competency standards of the Part 101 MOS. These elements are presented in summarised format in Table 7 and Table 8 respectively.

Table 7. Schedule 2 – Aeronautical knowledge standards

Common/Type	Unit code	Unit of knowledge
Common unit	RBAK	Basic aviation knowledge for RPAS.
Common unit	RACP	Airspace, charts and aeronautical publications for RPAS.
Common unit	RBMO	Basic meteorology for RPAS operations.
Common unit	REES	Electrical and electronic systems for RPAS.
Common unit	RHPF	Human performance for RPAS.
Common unit	RKOP	RPAS knowledge — operations and procedures.
Common unit	RORA	Operational rules and air law for RPAS.
Common unit	RAFM	Automated flight management systems for RPAS — knowledge.
Aeroplane	RBKA	Aircraft knowledge and operation principles.
Multirotor	RBKM	Aeronautical knowledge and operation principles.
Helicopter	RBKH	Aeronautical knowledge and operation principles.
Powered-lift	RBKP	Aircraft knowledge and operation principles.
Liquid fuel	REFE	Medium or large RPA with liquid-fuel system.

Table 8. Schedule 3 – Practical competency standards

Common/Type	Unit code	Unit of practical competency
Common unit	GEL	General English language proficiency.
Common unit	RC1	Perform pre- and post-operation actions and procedures for RPAS.

Common/Type	Unit code	Unit of practical competency
Common unit	RC2	Energy management for RPAS.
Common unit	RC3	Manage crew, payload, and bystanders for RPAS operation.
Common unit	RC4	Navigation and operations of RPAS.
Common unit	RNT	Non-technical skills for operation of RPAS.
Common unit	RAF	Automated flight management systems for RPAS — operation.
Aeroplane	RA1	Ground operation and launch.
Aeroplane	RA2	Normal operation.
Aeroplane	RA3	Land and recover.
Aeroplane	RA4	Advanced manoeuvres.
Aeroplane	RA5	Abnormal and emergency operations.
Multirotor	RM1	Control on ground, launch, hover, and landing.
Multirotor	RM2	Normal operations.
Multirotor	RM3	Advanced manoeuvres.
Multirotor	RM4	Abnormal situations and emergencies.
Helicopter	RH1	Control on ground.
Helicopter	RH2	Launch, hover, and landing.
Helicopter	RH3	Normal operation.
Helicopter	RH4	Advanced manoeuvres.
Helicopter	RH5	Abnormal situations and emergencies.
Powered-lift	RP1	Control on ground, launch, hover, and landing.
Powered-lift	RP2	Transition to and from vertical flight.
Powered-lift	RP3	Climb, cruise and descent.
Powered-lift	RP4	Advanced manoeuvres.
Powered-lift	RP5	Manage abnormal situations at altitude and near the ground.
Liquid fuel	REF	Medium or large RPA with a liquid-fuel system — operation.

The hypothetical training organisation discussed in section 6, ABC RPAS, should include all common units and the multirotor category-specific units in their proposed Initial RePL course. Similarly, their proposed upgrade course allowing a student to add new category ‘multirotor’ as a variation to their RePL should include instruction in the RBKM theoretical knowledge unit. It is important to note that RePL training units

define the skills and knowledge to conduct commercial RPAS operations safely and competently. The individual competencies and knowledge items in a RePL training unit are not necessarily listed in an order conducive to training. Refer to section 6 for more information on how the RePL training unit items can be structured logically into an efficient and effective training program.

Theory instruction (learning outcomes) and practical training (competencies) can be combined as a very effective format for delivering training. However, as the majority of the aeronautical knowledge standards are not required for RePL upgrade courses, it is recommended to design the lessons so that they are modular by separating the theory instruction and practical training into separate lessons. See section 8 for further guidance on how to structure the aeronautical knowledge and practical competency standards into individual lessons.

7.2 Aeronautical knowledge component (theory component)

The theory component of a RePL training course is intended to provide students with a foundation of knowledge on which to build their practical skills and competency.

The standards and content within the theory component have been selected to provide a person with no aviation background a basic understanding of RPAS, aviation principles, aviation law, industry standard operational procedures and safety culture.

Due to this, an initial course theory component should provide the student with information which is generically applicable to all RPAS categories and types, unless otherwise stated by the specific RePL training unit.

The theory component of a RePL training course includes three different types of units:

- Common units
 - These cover the basic principles of aerodynamics, aviation law and aviation operational/safety culture.
- Category units
 - These cover the basic aerodynamic principles and understanding of operational functionality for specific categories of RPAS.
- Liquid-fuel system unit
 - This covers the basic principles of liquid-fuel systems in RPAS. It is only required for medium and large RePL training courses in RPAS which use liquid fuel.

The aeronautical knowledge units and their associated elements/items are listed in Schedule 4 of the Part 101 MOS. The units are listed in the format illustrated in Figure 2 below.

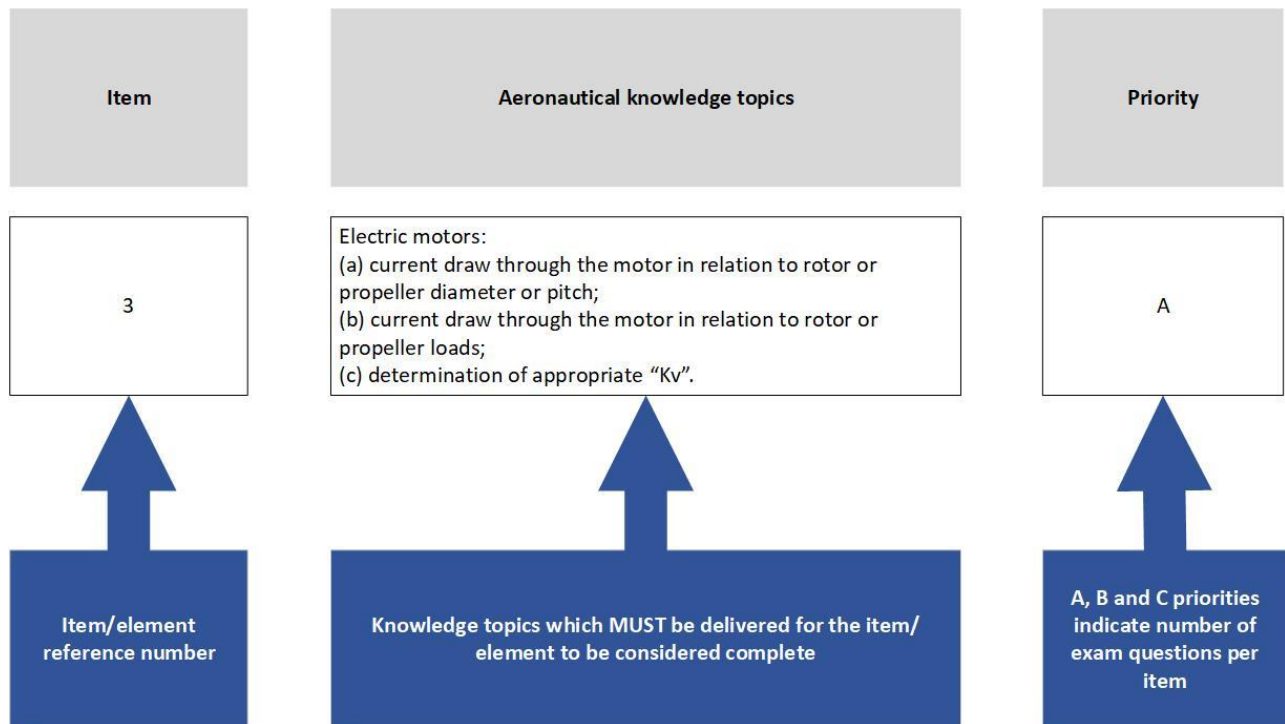


Figure 2. Unit 4, REES — Electrical and electronic systems for RPAS

Delivery of the aeronautical knowledge component of a RePL training course is commonly conducted in a traditional classroom; however, distance learning options are also popular.⁷

Theory instruction (learning outcomes) and practical training (competencies) can be combined but should be recognised as covering two different types of training standards.

The summative assessment for the theory component of a RePL training course is the aeronautical knowledge examination.

7.3 Practical competency component (practical component)

The practical competency component of a RePL training course is intended to build upon the student's knowledge to develop practical skills and experience. The Part 101 MOS provides for competency-based training where students undertake hands-on activities and/or exercises and are assessed by weighing evidence of their performance against published standards. To ensure adequate supervision and opportunity to impart knowledge, the MOS contains a maximum student to instructor ratio of 10:1 with no more than 3 RPA airborne per instructor at any one time.

Students receive instructional support until the concept and skills are fully learnt before advancing to the summative assessment.

Prior to advancing to the summative assessment, the student must:

- demonstrate to a RePL training instructor all the behaviours listed in the relevant practical RePL training unit

⁷ Note that 'classroom' is used in reference to the theory training venue in the rest of this document for simplicity but should also be read to also mean distance/remote learning.

- satisfy the RePL training instructor that each of the behaviours referred to in the relevant practical RePL training unit has been demonstrated within the relevant tolerances, and across the relevant range of variables.⁸

A RePL training organisation should review the relevant RePL training units outlined in Schedule 5 of the Part 101 MOS and design lessons which achieve the relevant competencies. Like the theory component, the practical competency component of a RePL training course includes three different types of units:

- Common units:
 - These cover training and experience in general pre/post-operational procedures, energy planning and management, crew management, navigation and using automated flight management systems.
- Category units:
 - These cover training for the operation of a specific category of RPAS. The practical training should be tailored to the specific RPAS being used for training.
- Liquid-fuel system unit:
 - This covers practical training for a specific RPA's liquid-fuel system. It is only required for medium and large RePL training courses in RPAS which use liquid fuel.

The summative assessment for the practical competency component of a RePL training course is the RePL flight test.

The practical competency units and their associated elements/items are listed in Schedule 5 of the Part 101 MOS. The units are listed in the format illustrated in Figure 3 below.

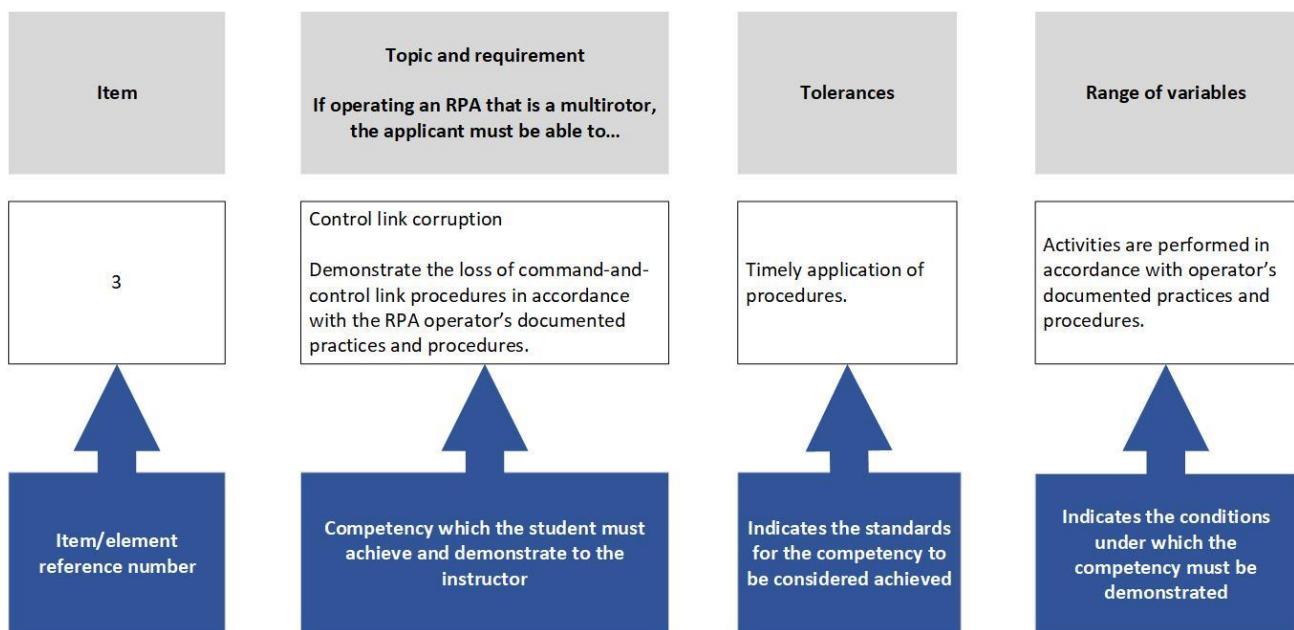


Figure 3. Unit 28, RM4 – Operation in abnormal situations and emergencies

⁸ Part 101 MOS Division 2.4 Section 2.18.

7.4 RePL training unit requirements for standard courses

A RePL training course provider conducting the following types of training for the issue of a RePL should include the below listed RePL training units in their syllabus.

7.4.1 Initial RePL training courses

An initial issue RePL training course must include all the common Units and the relevant category-specific Units as outlined in Table 9⁹ and Table 10. Each course should also include an examination and relevant flight test.

Table 9. Initial RePL – Common and category-specific units - Aeronautical knowledge units

Aeroplane	Multirotor	Helicopter	Powered Lift
RBAK	RBAK	RBAK	RBAK
RACP	RACP	RACP	RACP
RBMO	RBMO	RBMO	RBMO
REES	REES	REES	REES
RHPF	RHPF	RHPF	RHPF
RKOP	RKOP	RKOP	RKOP
RORA	RORA	RORA	RORA
RAFM	RAFM	RAFM	RAFM
GEL	GEL	GEL	GEL
RBKA	RBKM	RBKH	RBKP

Table 10. Initial RePL – Common and category-specific units - Practical competency units

Aeroplane	Multirotor	Helicopter	Powered Lift
RC1	RC1	RC1	RC1
RC2*	RC2*	RC2*	RC2*
RC3	RC3	RC3	RC3
RC4	RC4	RC4	RC4
RNT	RNT	RNT	RNT
RAF	RAF	RAF	RAF

⁹ Division 2.2 of the Part 101 MOS.

Aeroplane	Multirotor	Helicopter	Powered Lift
RA1	RM1	RH1	RP1
RA2	RM2	RH2	RP2
RA3	RM3	RH3	RP3
RA4	RM4	RH4	RP4
RA5		RH5	RP5

* Relevant practical competency units outlined in the MOS Part 101 Appendix A unit 15 RC2 – Energy reserves management for RPA are selected based on the RPA used for the instruction (either battery or liquid fuel).

For initial RePL training courses on medium or large RPA with a liquid fuel system, there is an additional theory unit REFE (medium or large RPA with a liquid-fuel system knowledge) and additional practical competency unit RLF (medium or large RPA with a liquid-fuel system - operation).

7.4.2 Initial RePL training courses – Exceptions

It should be noted that some exceptions may apply to the content of an initial RePL course for a student who holds a relevant flight crew licence (Australian or International) or an Australian Defence Force flight crew qualification (assessed by CASA to be equivalent to a flight crew licence) that is taken to satisfy the aeronautical knowledge component.

A person who holds or has held one of the following is taken to have satisfied the requirement to complete the theory component of a RePL training course, including the RePL examination.¹⁰

- a flight crew licence
- a military qualification equivalent to a flight crew licence
- an air traffic control licence, or a military qualification equivalent to an air traffic control licence.

When a student or group of students meet one or more of the above conditions, there is no need for them to complete the aeronautical knowledge component of the RePL training course. However, it may still be beneficial to run them through the basics of air law regarding RPAS as these laws differ from other aviation rules.¹¹

In these instances, the courses will run IAW with the upgrade options as described in section 7.4.4 of this document.

7.4.3 Upgrade RePL training courses – add different category

A RePL holder who has previously completed the common units of aeronautical knowledge and practical competency is not required to complete the units again as part of an upgrade training course. On this basis, an upgrade training course to add a different category of RPAS to an existing RePL generally only contains the theory and practical units of the relevant category as outlined in Table 11.¹²

¹⁰ Subregulation 101.295 (3) of CASR.

¹¹ Part 101 MOS Subsection 2.21 (3) (small RPA), 2.23 (3) and 2.25 (medium or large RPA).

¹² Part 101 MOS Subsection 2.21 (small) or 2.23 (medium or large from small), 2.25 (medium or large from medium or large).

Table 11. Upgrade RePL – add another category

Aeroplane	Multirotor	Helicopter	Powered Lift
RBKA	RBKM	RBKH	RBKP
RA1	RM1	RH1	RP1
RA2	RM2	RH2	RP2
RA3	RM3	RH3	RP3
RA4	RM4	RH4	RP4
RA5		RH5	RP5

Table 12. Upgrade RePL - liquid fuel for medium and large

Liquid fuel – medium and large RPA if relevant
REFE
REF

The theoretical knowledge units (and associated examinations) may be excluded if a student meets the criteria defined in the Part 101 MOS Division 2.5 Sections 2.21 (upgrade a RePL for a small RPA to include a different category of small RPA), 2.23 (upgrade a RePL for a small RPA to include a different category of medium or large RPA) or 2.25 (upgrade a RePL for a medium or large RPA to include a different category of medium or large RPA).

7.4.4 Upgrade RePL training courses – same category, additional type

A student who holds a RePL in the same category as the licence sought is required to complete the relevant flight assessment¹³. The student is not required to conduct any practical or theory training, other than, where the relevant RPA's energy source is liquid fuel and the student has not previously completed the relevant liquid fuel training and testing modules, these must be completed as part of the upgrade.

CASA expects that a training organisation has ensured that the student has sufficient knowledge and experience to safely operate the RPA for the purpose of the flight assessment prior to commencement.

7.5 Modified licensing standards for advanced RPA (medium/large) technology

Due to the complexity and additional risks inherent in the operation of medium and large RPA, pilots are typically required to undergo type-specific training programs. The Part 101 MOS¹⁴ provides the mechanism for organisations to develop alternative practical competency standards and assessments for medium/large RPA, that have particular characteristics, where it is not possible to demonstrate the behaviours within the relevant tolerances currently documented in Schedules 5 and 6 of the Part 101 MOS.

¹³ Part 101 MOS Subsection 2.20 (small) or 2.22 (medium or large from small), 2.24 (medium or large from medium of large).

¹⁴ Section 2.06A of the Part 101 MOS.

Operators wishing to adopt alternative practical competency standard are requested to arrange a pre-application meeting as outlined in section 4.1 of this Annex.

7.6 General English Language Proficiency assessment

To hold an aeronautical radio operator certificate the holder must have a current General English Language Proficiency (GELP) or Aviation English Language Proficiency (AELP) assessment.¹⁵ Section 2.03 of the Part 101 MOS enables RePL training organisations to conduct GELP assessments. If the organisation intends to conduct a GELP assessment, it should include the GEL unit within the RePL training course syllabus.

Assessments must be in accordance with the section 1 of Schedule 2 to the Part 61 MOS. The requirements are restated in CASA form Notification - English Language Proficiency (ELP), which is available on the [CASA website](#). A policy which directs examiners to conduct the assessment in accordance with the notification is acceptable.

There are two methods of assessment for GELP:

1. General ELP **notice**
2. General ELP **assessment**

General ELP **notice** can be used if the applicant can provide documentary evidence that they have:

- completed or is still attending a course of secondary education in Australia or New Zealand or an equivalent course in another country where the principle medium of instruction was English. For example, a letter of confirmation from school or a certificate of graduation)
- worked in Australia, New Zealand, United Kingdom, Republic of Ireland, USA or Canada for at least three of the last five years. For example, a letter of confirmation from employer, group certificates, etc.)
- satisfied the general English proficiency test criteria specified in Part 61 MOS, Schedule 2, Section 1, Clause 5.1.2 (f) (IELTS, TOEIC-SP, TOEFL, etc.); or
- completed a CASA-approved English language proficiency (ELP) course.

Note: An examiner may accept a statutory declaration that the applicant meets the education or work requirement however is unable to provide documentary evidence.

In this case there is no actual assessment, although at a minimum a confirmatory conversation should be had with the applicant and the assessor will need to be satisfied that the evidence is genuine.

General ELP **assessment** - can be conducted for an applicant who does not meet the work or education requirements (or chooses not to provide the necessary evidence or statutory declaration). The assessment requires that the assessor be satisfied of each of the criteria specified in Part 61 MOS, Schedule 2, Section 1, Clause 2. The criteria are designed to be simple and easy to confirm for any fluent English speaker using a structured assessment plan.

GELP assessments conducted under Section 2.03 of the Part 101 MOS must be conducted by one of the training organisation's RePL examiners. Section 13.2.4 of this Annex provides information on authorising RePL examiners.

¹⁵ Regulation 64.015 of CASR

7.7 Aeronautical Radio Operator Certificate (AROC)

7.7.1 Aeronautical radio operator course

A RePL training course can include training for an AROC, however, the approval to conduct AROC training is a separate application and assessment process to the approval of a RePL training course. If an operator wishes to conduct AROC training, they must submit the request in writing along with the complete AROC course to CASA for review.

The training units for AROC are the following:

- Aeronautical Knowledge Unit – RARO (CASR Part 61 MOS Volume 3, Appendix 1, Section 1.2, Unit 1.2.1).
- Practical Competency Unit – C3 Operate aeronautical radio (CASR Part 61 MOS Volume 2 of Section 2, C3).

An examination of the relevant knowledge items should be conducted as a written examination. An additional verbal assessment of the student's knowledge should be conducted during the practical test. The questions should focus on theoretical topics, such as radio wave propagation and antennas, as well as the practical use of a radio during aviation operations. A record should be kept of the questions and applicant responses.

For more information on the application process for AROC training, please contact applications@casa.gov.au.

7.7.2 Aeronautical radio operator approved examiner

In addition to the approval of the AROC course itself, the AROC examination and practical test must be conducted by a person approved to conduct training and assessment for an AROC course. Under regulation 64.015 of CASR, the examination may be conducted by¹⁶:

- CASA
- a flight examiner
- a pilot instructor who holds a training endorsement that authorises the instructor to conduct flight training for a pilot licence or rating
- the holder of an approval under regulation 64.012 of CASR for this paragraph.

To be approved under regulation 64.012 of CASR, the applicant must submit the following information to applications@casa.gov.au:

- The name(s) and ARN(s) of the nominated persons.
- A brief resume indicating the nominated person's qualifications and experience to present such a course.

¹⁶ Subregulation 64.015 (4) of CASR.

8 RePL syllabus of training

An operator providing RePL training must conduct a course which delivers the aeronautical knowledge units and practical competency standards prescribed in the Part 101 MOS. The purpose of the operator's syllabus is to indicate how the course divides up the required aeronautical knowledge units and practical competency standards into individual lessons or training periods. The specific aeronautical knowledge units and practical competency units required in the syllabus will be dependent on the specific RePL training courses being conducted by the operator.

Each operator may design their own individual syllabus representing the unique training they intend to provide, or they may use the sample syllabus provided by CASA (refer Appendix B and Appendix C of this Annex).

8.1 Developing the course

When designing a RePL training course, it is recommended that an operator plan the entire course structure and lesson content prior to developing individual lessons. When planning the course structure and lesson content, it is recommended to review the required RePL training unit items from the relevant RePL training units and divide these into logically deliverable lessons. Once this has been determined, it can then be documented, as described in section 8.2 of this Annex.

A planning matrix may be beneficial for mapping Part 101 MOS theoretical knowledge units (Schedule 4) and practical competency units (Schedule 5) into individual lessons when planning training and assessment to ensure that all competencies are captured. This may also assist during future syllabus updates, which may be necessary following an audit of training outcomes or an amendment to the Part 101 MOS. It may also be of use during the induction of new instructors by enabling an easier understanding of course design.

Consideration of a modular approach to allow for flexibility of instruction for initial and upgrade courses is beneficial during the early development of the training program.

8.2 Documenting the syllabus

A syllabus should be documented for each course to identify how the lessons incorporate the training unit items listed in the Part 101 MOS, as in the example below. This demonstrates to CASA that all relevant RePL training unit items are being covered in the proposed RePL training course. It will also assist the training organisation and the CRI in reviewing and conducting continuous improvement of the course content.

The syllabus may be inserted into a section of the company RPAS operations manual, or it may be kept as a separate appendix.

RePL training unit items may be spread across multiple lessons, or a single lesson may include multiple whole units. Irrespective of the course design, the structure must be represented in a clear manner.

A simple table listing each of the RePL lessons as illustrated in Figure 4 is recommended. Each lesson should have a row which indicates the lesson ID, lesson name, the included RePL training unit(s) and the specific RePL training unit(s) content which is covered in the lesson. RePL training units and associated items should be referenced using the unit codes and item numbers found in the Part 101 MOS. Do not use descriptions to reference the RePL training unit items as these can be misinterpreted and cannot be approved by CASA as evidence of regulatory compliance.

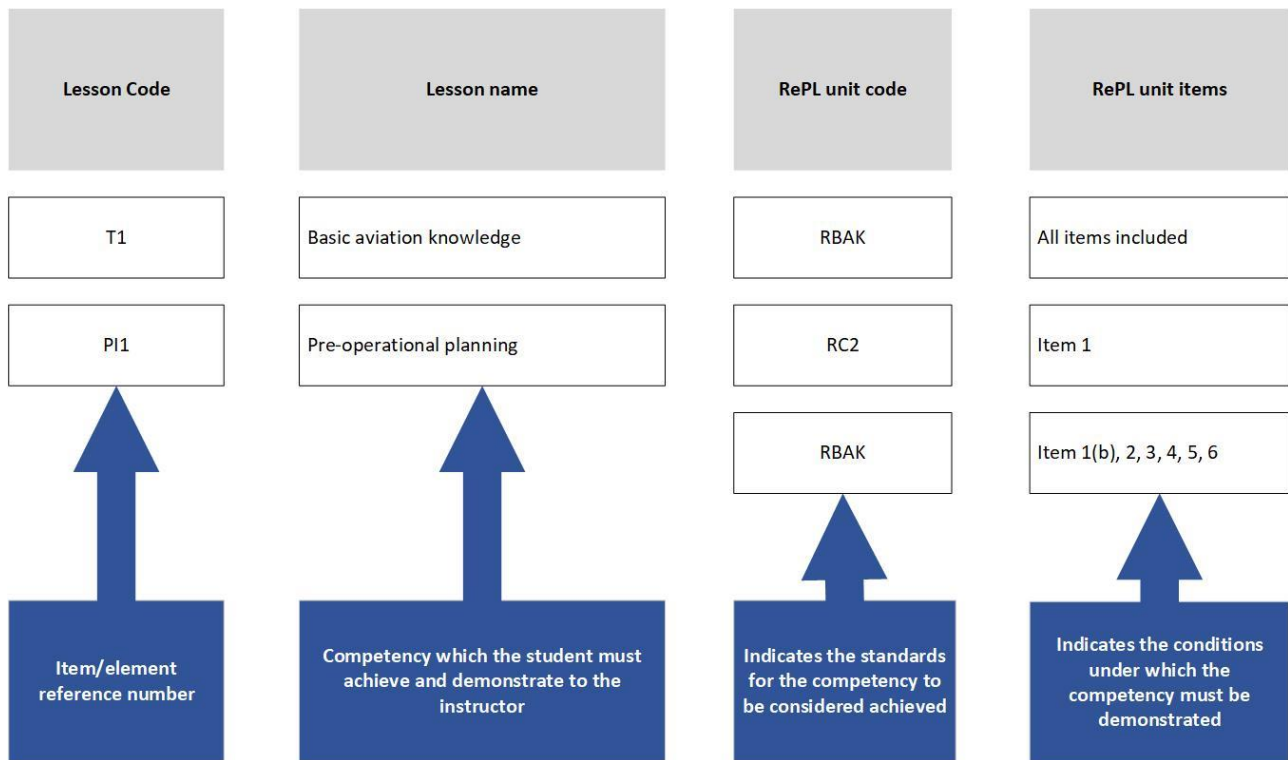


Figure 4. Example excerpt from a syllabus

As indicated in Figure 4, the syllabus indicates that the training organisation proposes to integrate theoretical knowledge with elements of the practical training that do not have to be conducted in the field. T1 (Theory 1) is a theory lesson which covers all the content from the Part 101 MOS training unit RBAK. PI1 (Practical Initial 1) is a practical lesson conducted in the classroom. It covers item 1 from the Part 101 MOS training unit RC2, (Plan energy requirements) and all the items from RC4 (Navigation and operation of RPAS), except unit item 1 (a).

As PI1 is a classroom lesson, students will not be operating an RPA but instead will be conducting training in operational planning, JSAs and RAs. As the requirement for the item 1 (a) is 'operate the RPA', it has been excluded from this classroom lesson and will be covered during other training periods in which the students are conducting hands-on live flight training. See Appendix F of this Annex for an example plan for this lesson.

It is quite possible for the same RePL training unit items to be covered in multiple lessons. As an example, RePL training unit items from unit RNT — Non-technical skills for operation of RPAS (Part 101 MOS Schedule 5, Appendix 1) could be conducted in multiple instances during live flight training. Methods for achieving the competencies include examples of instructor directions in Table 13.

Table 13. Example of instructor directions

Unit	Item	Requirements	Topic	Instructor direction for student action - examples
18 - RNT	1	All	Maintain effective lookout	Each student operating an RPA could be paired with another student whose responsibility is to maintain a lookout and situational awareness of the ground and airspace.
	2	All (a)(b)	Maintain situational awareness	

Unit	Item	Requirements	Topic	Instructor direction for student action - examples
	3	All (a)-(j)	Assess situations and make decisions	Demonstrated by the instructor asking the student to react to a simulated situation, "Someone is walking toward the flight area, a plane is flying towards us, the battery warning is beeping, the RPA has a GPS error", etc.
	4	All (a)-(d)	Set priorities and manage tasks	Demonstrated by the instructor asking a student to plan and provide a pre-flight brief for an RPA operation. The operation could include maneuvers required for MOS Unit RM2 — Normal operations.
	5	All (a)-(d)	Maintain effective communications and interpersonal relationships	
	6	All (a)-(e)	Recognise and manage threats	Demonstrated by the instructor asking a student to conduct a job safety assessment for a specified scenario.
	7	All (a)-(d)	Recognise and manage errors	

More information on how to structure a RePL syllabus of training can be provided in the pre-application meeting.

8.2.1 Course syllabus information

The following is a list of CASA expectations for the syllabus and the minimum information that should be included:

- The syllabus should be in the RPAS operations manual or an appendix.
- Lesson Code: the unique identifier (ID) created by the ReOC holder for a lesson:
- The same lesson code should be referenced on the lesson plan and lesson presentation.
- An example code might be TA1 (Theory Aeroplane Lesson 1) or PA1 (Practical Aeroplane Lesson 1).
- Lesson Name: the name created by the ReOC holder for a lesson:
- The same lesson name should be used for the lesson plan and lesson presentation.
- An example lesson name for TA1 might be Basic Aviation Knowledge or Pre-operational Planning for PI1.
- RePL Training Units: this is the RePL training unit code given in the Part 101 MOS for the unit covered in the lesson.
- RePL Training Unit Items: The individual items from the RePL training unit which are included in the lesson should be listed here.

- If the unit has been broken up into two or more separate lessons, list which items are included in this lesson. State where all items are included in the lesson.

Additional information depends on the structure of the specific course being conducted and the format of the course lessons. Examples might be to categorise the lessons as one, or a combination, of the following:

- Classroom face to face instruction – instructor physically present, instructing and responding in the classroom.
- Online ‘classroom’ e.g., a live online lecture or an interactive E-lesson – instructor virtually present, online in real time, instructing and responding visually and with sound.

Pre-recorded lectures may be used during a course (perhaps as pre-course knowledge development); however, any such time or periods of review/revision will not be an acceptable means of demonstrating the minimum of 15 hours’ contact time as directed by Part 101 MOS Chapter 2, Division 2.6 Section 2.26.

Refer to Appendix C for an example of a RePL syllabus to be included in the operations manual for the initial RePL course in the small aeroplane category.

8.3 Syllabus assessment

The syllabus of training is essentially a high-level documented representation of the RePL training an operator is seeking to conduct. As part of the CASA desktop assessment, the submitted course syllabus will be assessed to ensure it includes all the relevant RePL training unit items within Schedule 4 and 5 of the Part 101 MOS. CASA should be able to identify each required RePL training unit and each RePL training unit item within a lesson documented in the syllabus.

Where the submitted syllabus does not include required RePL training units or the syllabus is ambiguous in its design, CASA will return the application to the operator and pause the assessment until the deficiencies are amended.

Organisations offering RePL training on medium or large RPA, that have particular characteristics, are required to provide CASA with a detailed safety case analysis of all proposed alternative practical competency standards for approval.¹⁷

¹⁷ Section 2.06A of the Part 101 MOS.

9 RePL training course curriculum

Each course of RePL training that an operator proposes to conduct must be accepted by CASA.¹⁸

The simplest format for this acceptance is to include a course curriculum for each course being provided within the operator's accepted RPAS operations manual. A curriculum (as defined in Glossary) is a medium-level representation of an individual course of training. It is quite often presented as a timetabled approach.

The purpose of the curriculum is to indicate the individual lessons from the operator's syllabus which are conducted as part of a single course for the issue of a specific RePL. It also indicates the timeframe over which the course will be conducted. Once accepted by CASA the operator will be held to maintaining the training course duration and content as indicated in the curriculum.

Each operator may design their own individual course curriculum(s) representing the unique training they intend to provide, or they may use the sample curriculum format provided by CASA (see Appendix D of this Annex).

Key considerations are related to the total instruction time.¹⁹

- Initial issue RePL theoretical knowledge:
 - each student to have no less than 15 hours of contact time with a RePL training instructor with the focus on Priority A syllabus items for first category
 - (where relevant) 4 additional hours for each additional category (where a course includes more than 1 category of RPA).
- Initial issue RePL practical:
 - each student to have no less than 5 hours of live flight time under standard RPA operating conditions on the relevant category of RPA.

9.1 Course requirements

9.1.1 Mode of training

A RePL training course can be conducted for either:

- automated operation mode
- or
- automated operation mode and the manual mode.

The mode of operation used should be explicitly stated on the course curriculum and on the certificate issued to the student at the completion of the course. The Part 101 MOS definitions for automated operation and manual operation are presented in the glossary section of this document.

The category, type and mode(s) are noted on the RePL issued by CASA to successful students.

9.1.2 Relevant RePL training units

An individual RePL training course must consist of lessons covering the required RePL training units for the specific RePL being issued.²⁰ Determining which lessons are required for a specific RePL should be as

¹⁸ Regulations 101.270, 101.330 and 101.340 of CASR.

¹⁹ Section 2.26 of the Part 101 MOS.

²⁰ Regulation 101.335 of CASR

simple as drawing the relevant lessons from the operator's syllabus, where they should be listed along with their included RePL training units.

The certificate of course completion issued to successful students should include the Part 101 MOS units to clearly identify the RePL training course that they have completed.

As a rule, common RePL training units do not need to be included in the curriculum, but the course must include all category RePL training units.

9.1.3 Contact time requirement

Section 2.26 of the Part 101 MOS prescribes the contact requirements for the delivery of the aeronautical knowledge component of a RePL training course. For an initial RePL, each student must have a minimum of 15 hours of contact time during which relevant theory is delivered by a RePL training instructor. Theoretical knowledge instruction should include the presentation of information, confirmatory questioning of topics, and scenario-based discussions. Interaction with students that is not part of the formal theory delivery, such as reviews, formative assessments and summative assessments, does not contribute to the minimum contact time.

As previously noted, each item of aeronautical knowledge is prioritised A, B or C. This designation is used as a basis for determining the minimum number questions to be included in the summative examination as follows:

- 2 questions for every priority A item in the relevant unit
- 1 question for every priority B item in the relevant unit
- 1 question for every two priority C items in the relevant unit.

This information could be considered when determining the appropriate curriculum to ensure that the required teaching is effectively distributed across all relevant units. Table 14 summarises the total number of each priority item for each unit of knowledge.

Table 14. Total number of each priority item in the relevant units

Unit code	Unit of knowledge	Priority A	Priority B	Priority B
RBAK	Basic aviation knowledge for RPAS.	4	4	2
RACP	Airspace, charts and aeronautical publications for RPAS.	4	0	2
RBMO	Basic meteorology for RPAS operations.	0	3	0
REES	Electrical and electronic systems for RPAS.	6	3	0
RHPF	Human performance for RPAS.	0	2	4
RKOP	RPAS knowledge — operations and procedures.	8	2	0
RORA	Operational rules and air law for RPAS.	1	1	0
RAFM	Automated flight management systems for RPAS — knowledge.	1	0	0
RBKA	Aircraft knowledge and operation principles.	7	2	0
RBKM	Aeronautical knowledge and operation principles.	6	4	0

Unit code	Unit of knowledge	Priority A	Priority B	Priority B
RBKH	Aeronautical knowledge and operation principles.	7	3	0
RBKP	Aircraft knowledge and operation principles.	8	3	0
REFE	Medium or large RPA with liquid-fuel system.	1	0	0

Where a course does not include the common aeronautical knowledge RePL training units, such as in an upgrade RePL training course, there is no minimum contact time requirement for the theory component of the course.

9.1.4 Flight time requirement

An applicant for a RePL must have 5 or more hours of documented flight experience.²¹ The curriculum for an initial RePL training course must indicate how that flight experience will be achieved.

Demonstration of flight characteristics using computerised simulation is not included in the 5 hours which must be obtained in real/live flight conditions.²²

9.2 Documenting a curriculum

The following information should be included within the course curriculum:

- Number of days over which the course is conducted.
- Included lessons, referencing either the lesson code or lesson name from the syllabus.
- (If not covered in lessons plans) The duration of training periods, which shows that the RePL training course will:
 - meet the minimum instructional student contact time with a RePL training instructor for the aeronautical knowledge component of the course
 - provide the student a minimum of 5 hours experience in operating an RPA under the standard RPA operating conditions (if applicable).

Further consideration should also be given to the mode of operation in which the training for each course is conducted, being one of the following:

- automated operation mode only
- or
- both automated operation mode and the manual mode.

Refer to the example, *Initial RePL course curriculum - small aeroplane category RPAS* and Table 15 (extract of a timetable) for examples of a course curriculum that might be developed by ABC RPAS. It should be noted that in each instance the minimum of 15 hours theoretical instruction and 5 hours of logged flight time must be clearly articulated.

²¹ Paragraph 101.295 (2) (c) of CASR.

²² Paragraph 101.295 (2) (c) of CASR.

Initial RePL course curriculum - small aeroplane category RPAS

The course for the initial issue of a RePL for a small aeroplane category RPAS must comply with the following:

Include the following lessons:

P0; and
T1 - T8; and
PA9; and
PI1 - PI3; and
PIA4 - PI7.

Include the following aeronautical knowledge examination and flight test:

Aeroplane RePL Examination - Initial; and
RePL Aeroplane Flight Test – Small.

Be conducted over 5 days, achieving:

15 hours of contact time through theory instruction; and
5 hours of logged live flight experience in both automated operation mode and the manual mode.

Table 15. Example 2 - course curriculum for RePL training in the small aeroplane category (extract)

Time	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
0900-1000	P0 - Course intro and admin and T1	TBD	TBD	TBD	PI3 - Automated flight management systems advanced	Additional training as required
1010-1100	- Basic aviation knowledge					
1105-1200	T2 - Airspace, charts and aeronautical publications				Flight practice	
1200-1245	Lunch					
1245-1345	T2 – Continued	TBD	TBD	TBD	RePL flight test and Post flight test administration	Additional testing as required
1350-1445	T3 - Basic meteorology	=	=	=		
1450-1545	T4 - Electrical and electronic systems for RPAS				Closing course administration	
1550-1700	T5 - Human performance					

It is accepted that an operator may have to rearrange the order of lessons within the curriculum for a specific course due to operational conditions but the overall duration of the course, lessons included and the amount of contact time with the student must be consistent with what has been documented in the curriculum.

9.3 Curriculum assessment

Each course curriculum will be assessed by a CASA Inspector to ensure that it clearly achieves the following:

- a. all required information is included
- b. is feasible and ordered in a logical manner
- c. for an initial RePL training course:
 - i. includes 15 hours of contact time with the RePL instructor to complete the theory component of the training²³
 - ii. includes all the required aeronautical knowledge RePL training unit items²⁴
 - iii. includes all the required practical competency RePL training unit items²⁵
 - iv. includes at least 5 hours of logged live flight
- d. for an upgrade RePL training course:
 - i. includes all the required aeronautical knowledge and practical competency RePL training unit items as required by the relevant section in Division 2.5 of the Part 101 MOS
- e. includes an appropriate amount time for logged live flight with the relevant RPA.

Where a curriculum does not meet these requirements, CASA will return the application to the operator and pause the assessment until the deficiencies are amended.

²³ Subsection 2.26 (1) of the Part 101 MOS.

²⁴ Subsection 2.05 (4) of the Part 101 MOS.

²⁵ Subsection 2.06 (6) of the Part 101 MOS.

10 RePL training course material

RePL training should be delivered with the objective of constantly achieving the required learning outcomes and competencies to a high standard. To achieve this objective, CASA expects the training process to be documented through lesson plans, well designed presentations or slide shows, and comprehensive instructor notes and references. This material should be developed prior to any submission to CASA for an approve to conduct RePL training.

10.1 Training format

All lessons and training should attempt to cater to the three model learning styles to support visual, auditory, and kinaesthetic learners.

- Visual learning style:
 - Students who learn through sight understand information better when it is presented in a visual way.
- Auditory learning style:
 - Students who tend to learn better when the subject matter is reinforced by sound such as through lecture-based instruction.
- Kinaesthetic learning style:
 - Students who learn primarily through experience or actively doing things.

10.1.1 Lessons covering aeronautical knowledge standards

The level of detail that is contained in slides, presentations and student manuals will naturally vary between training organisations. However, a good rule of thumb is to include enough detail between the content itself and the instructor notes to allow an instructor who has less subject matter expertise in a particular topic to successfully convey the required information to students in a consistent and standardised way.

Consideration should be given to the priority of each of the unit elements as an indication of the importance of each as aligned with the total curriculum and minimum of 15 hours instruction time.

It is important to note that irrespective of the actual situation, CASA conducts all training organisation assessments based on the organisation having or potential to have:

- multiple RePL training instructors (RTIs)
- instructors with the minimum required experience and subject matter expertise.

Lessons with items from the common units of aeronautical knowledge standards and practical competency standards should be designed to cover the required subjects in a general manner and should not be RPA category or system specific (e.g., not exclusively relevant to a particular manufacturer or model). While the use of system specific examples is encouraged during training, the lessons should cover the information in a way that is relevant to the safe operation of all RPAS.

The structure of each lesson should include an introduction, body and conclusion as summarised in Table 16.

Table 16. Example theory lesson structure

Stage	Slide
Introduction	Conduct a revision of previously taught topics.
	Provide the course name, lesson code, lesson name.

Stage	Slide
	Describe the lesson scope/topics.
	Impart the importance of information covered in the lesson.
	Provide a list of references for information on the lesson topics.
Lesson body	Introduce the topic.
	Cover the topic instruction.
	Conduct a quick revision every 2-4 topics.
	Conduct confirmatory questioning every 2-4 topics.
	Repeat...
Conclusion	Begin the conclusion by answering all final questions on the topics covered.
	Conduct a final confirmatory questioning on all topics.
	Review the lesson scope/topics again.
	Provide any relevant final information.

Refer to Appendix E of this Annex for an example of the minimum amount of information included in the body of the lesson covering MOS unit RKOP item 2 (a) to ensure that each student receives the minimum level of instruction in this topic. In addition to providing this information to the student, the lesson should include examples and/or discussions regarding applications or the information. It is noted that this is a Priority A topic such that at least two questions will be included in the examination for this section.

Section 17 of this Annex lists appropriate sources of information to reference when developing lessons for the aeronautical knowledge component of a RePL training course.

Presentations or slideshows should be designed to be used in the classroom environment to both illustrate certain concepts to the student and to prompt discussion among the class members. There is no right or wrong way to develop the slide packs, provided there is sufficient material to ensure all the learning elements from each of the RePL unit item listed in the syllabus for the lesson, are covered. A good way to do this is to add the specific learning elements into the notes area of the slides, which will help the instructor ensure the elements are covered and CASA to assess the material.

If the lessons are to be conducted in a format other than presentation slides, CASA expect the operator to submit a more comprehensive lesson plan which further breaks down how the lesson will be presented.

10.1.2 Lessons covering practical competency standards

Achieving items from units containing Practical Competency Standards involves the student demonstrating that competency. However, before a person can be assessed as competent, they generally need to be trained on the competency item. Therefore, it is essential that training organisations develop techniques, material exercises and/or activities to develop the student's skills. Some of these activities can be conducted in a classroom environment, but others will require the student to be involved a live RPAS operation.

Please read the requirement, tolerances and range of variable listed in the Part 101 MOS carefully when developing training.

[AC 61-08 - Teaching and assessing non-technical skills for single-pilot operations](#) is a useful reference for developing training in non-technical skills for aviation operations.

Practical lessons conducted in the classroom

Some RePL training unit items/competencies can be achieved in the classroom. In such cases the students must still demonstrate their competency practically. This could be through a discussion where each student demonstrates good judgment or an exercise such as desktop operational planning and risk management, but in either case each student must demonstrate their own competence.

Live flight lessons

Due to the student to instructor ratio requirements²⁶, training course organisations will need to consider how they intend to deliver the live flight training component of their course. This methodology should be indicated within the documented lesson plans for the lesson.

One of the most important considerations is the layout of the students' training area. An example is illustrated in Figure 5 below.

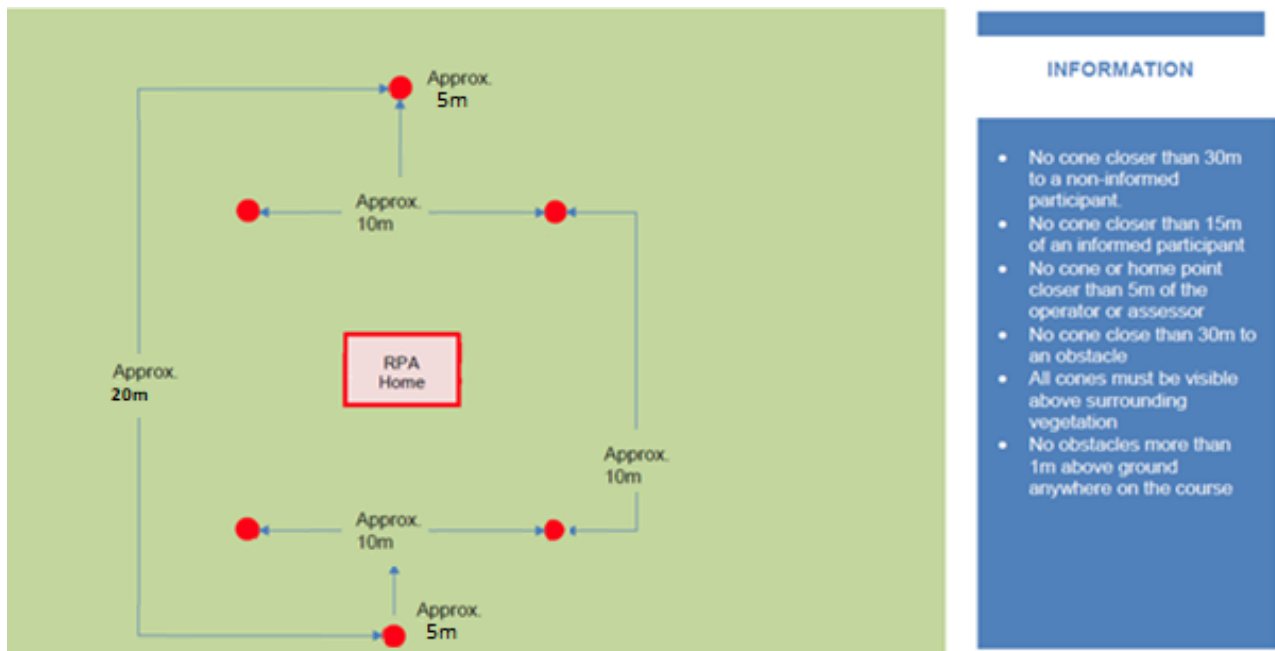


Figure 5. Example cone layout for a multirotor training area

10.2 Documenting lesson plans

A lesson plan should indicate, in a consistent and repeatable manner, the method to be used by the instructor to teach the aeronautical knowledge topics or develop the student's practical competency in the relevant area.

For lessons covering aeronautical knowledge units, referencing a slide show is an acceptable description of the instruction method. The presentation should be structured in a format which delivers the required teaching points using industry standard instructional methodology as outlined in Table 17.

Table 17. Practical lesson structure

Stage	Steps
Introduction	Provide the course name, lesson code, lesson name.

²⁶ Section 2.27 of the Part 101 MOS.

Stage	Steps
	Describe the lesson scope.
	Impart the importance of learning the exercises covered in the lesson.
	Conduct other relevant pre-flight procedures and briefing.
Lesson body (demonstration-performance method)	Explain and demonstrate the exercise describing common faults and providing solutions.
	Students to conduct the exercise under close instructor supervision.
	(If required) Students to perfect exercise with further practice under supervision.
	Conduct unassisted run through of the exercise to evaluate student competency.
	Repeat for all exercises...
Conclusion	Begin the conclusion by answering all final questions and providing any required remedial training.
	(If required) Conduct a final confirmatory run through of exercises.
	Review the lesson scope again and provide post-flight debrief of student performance.
	Provide any relevant final information.

For lessons covering practical competency units, the lesson plan should describe the lesson structure, the specific exercises to be conducted by the student and what variables/tolerances will apply.

10.2.1 Included information

While not prescriptive in terms of format or content, CASA expects that a lesson plan will be provided with the submission which describes the conduct of each lesson listed in the syllabus of training. Each lesson plan should describe how a single lesson will be presented.

Including the slide number for each topic can be invaluable when updating specific information in a lesson and will help with CASA's assessment.

Lesson plans should include the following information:

- lesson code and lesson name
- (if relevant) required prior learning outcomes and competencies
- (if relevant) instructor qualification and/or experience requirement
- lesson location
- lesson duration
- required physical and/or digital resources
- learning outcomes and/or competencies (derived from the required syllabus MOS unit items)
- (practical lessons only) methodology the RePL instructor is to use to train and assess each student to the point they can satisfy each competency requirement.

- (practical lessons only) tolerances and variables relevant to each competency
- other notes, graphics and guidance for conducting lesson.

CASA expects that the practical lesson plans are more descriptive than theory lesson plans which are commonly relying on a slideshow or similar training package to ensure a standardised delivery. Practical lesson plans should indicate the structure of the lesson and the method used to train and assess the student's competency. If pre-prepared exercises or example situations are used, they should be either described in the lesson plan or if they are described within a separate document, referenced in the lesson plan. Lessons including actual RPA operation will need a format which is suitable for use in that environment.

Refer to Appendix F of this Annex for examples of Lesson Plans.

10.3 RePL Instructor Handbook

CASA recommends that all lesson plans and documented training material are put in a separate document to the RPAS operations manual. It is expected that these documents will often be amended and refined as the operator conducts continuous improvement of their delivered training. Any changes to the operations manual will require resubmission and review by CASA.²⁷ After initial acceptance of the document CASA will only review the material during a surveillance event. CASA recommends using a RePL Instructor Handbook for this purpose.

10.4 Training course material assessment

To satisfy themselves that the operator's course material meets the minimum standard expected by CASA, the CASA Inspector reviews each of the submitted lesson plans and a random sample of lesson presentations against the criteria below:

- Lessons use a logical methodology for achieving the learning outcomes and/or competencies listed in the syllabus entry for the lesson.
- Lessons are accurate, detailed and include sufficient instructor notes.
- Lessons and content are in a logical order, building on established knowledge (learning outcomes) and skills (competencies).
- Lessons cover all flight modes relevant to the training type.

Where the lessons plans and/or lesson presentation do not meet these requirements, CASA will return the application to the operator and pause the assessment until the deficiencies are amended.

²⁷ Section 1.04 and 10.0 of the Part 101 MOS.

11 RePL aeronautical knowledge examination

The RePL aeronautical knowledge examination is the summative assessment for the aeronautical knowledge component of the RePL training course. Its purpose is to ensure that applicants for a RePL have a solid understanding of the foundation knowledge for subjects relevant to commercial aviation and RPAS operations.

Refer to section 13.2 for more information on DPP in relation to examinations.

11.1 Examination conduct

To pass the theoretical component of a RePL training course, an applicant must pass an examination. The examination must be a closed-book examination except for documents concerning the RPAS which are authored by CASA and published on its website; or authored by AA and published on its website.²⁸ The candidate must not have access to any RePL training course material, other than the examination pack during the conduct of the examination.

The use of an electronic flight bag (EFB) is not permitted as the applications generally contain descriptive information as well as the ability to decode weather and NOTAMs into plain English.

11.2 Examination requirements

Division 2.3 of the Part 101 MOS prescribes a number of requirements relating to the content and structure of RePL examinations, including:

- The questions must all be multiple choice. Questions requiring calculations or multiple steps to determine the answer can still be included, but they must be presented in a multiple-choice format.

Note: It is poor exam practice for more than 5% of the total number of questions in the examination to have less than three possible answers.

- Each question in an examination must be unique to the exam. Examination questions cannot also be quiz questions that a student has already encountered through the training course.
- A minimum of 4 unique sets of examinations are required for each initial and upgrade (add a category) course.
- Each examination will contain a minimum number of questions. The exact number of questions is determined by the aeronautical knowledge units included in the course.
- Examination question sets must be compiled in accordance with the required units for the relevant RePL course, taking into account the priority of each unit item. The tables below provide a breakdown of the priority requirements (Table 18) and the minimum number of questions required for each unit of the RePL course (Table 19).

Table 18. Priority requirements

Unit item priority	Required number of questions per exam
Each priority A item	2

²⁸ Section 2.08 of the Part 101 MOS.

Unit item priority	Required number of questions per exam
Each priority B item	1
Every 2 priority C items	1

Table 19. Required number of exam questions per RePL training unit based on item priority (subject to change)

Unit code	Unit of knowledge	Required number of questions
	Common Aeronautical Knowledge Units	
RBAK	Basic aviation knowledge for RPAS.	13
RACP	Airspace, charts and aeronautical publications for RPAS.	9
RBMO	Basic meteorology for RPAS operations.	3
REES	Electrical and electronic systems for RPAS.	15
RHPF	Human performance for RPAS.	4
RKOP	RPAS knowledge — operations and procedures.	18
RORA	Operational rules and air law for RPAS.	3
RAFM	Automated flight management systems for RPAS — knowledge.	2
	Category Specific Aeronautical Knowledge Units	
RBKA	RPA that is an aeroplane — aircraft knowledge and operation principles.	16
RBKM	RPA that is a multirotor — aeronautical knowledge and operation principles.	16
RBKH	RPA that is a helicopter — aeronautical knowledge and operation principles.	17
RBKP	RPA that is a powered-lift aircraft — aircraft knowledge and operation principles.	19
REFE	RPA with liquid-fuel system — knowledge.	2

- Each question must be valued at a single mark. When writing the examination, additional questions may be considered for subjects considered to be of high importance to confirm the student's knowledge.
- To avoid disadvantaging the student, questions may not be multi-part and no question may impact the outcome of another question.
- The RePL aeronautical knowledge examination must be sat as a single examination²⁹. The examination can be divided into units, but it must be conducted wholly in one sitting.

²⁹ Section 2.11 of the Part 101 MOS.

- The duration of the examination must be 15 minutes plus 1 minute per question in the exam.
- The examination must be one of at least four different versions in which no question appears in the same format or position in one exam as in any other.
- Each of the minimum four versions of the examinations must have a unique identifier³⁰ which will be used to reference the individual exam conducted by each student in the course records.

In the case of an electronic examination or an examination question pool, the system must be able to present the exam in a way that meets all the requirements listed in the above points.

11.2.1 Question construction

Multiple-choice items can be direct questions or incomplete statements. Direct questions are generally more effective at testing a student's understanding of a subject, however both types can be useful in assessing the student's memory and understanding.

Correct answers should be designed in a way that students who achieved the learning outcome of the theory lessons will be able to identify them; while all incorrect answers in a multiple-choice question should be plausible for students who did not achieve the learning outcome. Incorrect answers that are implausible will not serve to test the student's level of knowledge and, thus, should not be used.

Common student errors provide the best source of alternative incorrect answers. Possible answers must be written so as to be either correct or incorrect. It should not be possible to debate that an incorrect answer is also correct.

The following question demonstrates a student's requirement to recall principles, rules or facts in a real-life context:

- Which one of the following statements best illustrates Newton's Third Law of Motion?
 - Paul jumps into the air. His legs apply a force to the ground, and the ground applies an equal and opposite reaction force.
 - If Paul slides a hockey puck on ice, because of friction eventually the puck will stop. It will also stop if it hits something, like another player's stick or the goalpost.
 - If Paul uses the same amount of force to push an empty shopping trolley as he does a heavily laden trolley, the empty trolley will have more acceleration. This is because the empty trolley has less mass.

Further examples of questions are provided at Appendix G of this Annex.

11.3 Examination security

An operator's examinations are subject to secure handling and custody procedures set out in the organisation's documented practices and procedures. Chapter 2, Division 2.3 of the Part 101 MOS outlines in detail the handling requirements CASA expects of an operator when storing and conducting examinations.

When stored physically or digitally, the four unique sets of questions for examinations must not be accessible to anyone who hasn't agreed to comply with the examination security procedures. This policy applies in all cases, except when a request for a copy of the examination or any question is made in writing by CASA.

With the emergence of online Learning Management Systems (LMS) being utilised for exam conduct, there is a greater risk to exam security through the use of cameras, screen recording software or other applications that could enable an individual to retain the content of an exam before or after the exam conduct.

³⁰ Subsection 2.14 (2 of the Part 101 MOS.

11.4 Examination assessment

Each of the unique examination question sets will be assessed against the requirements in Chapter 2, Division 2.3 of the Part 101 MOS.

CASA recommends producing a document indicating which RePL training unit item each question is related to. This can be used for conducting the knowledge deficiency report process post examination, as the examiner must not refer to the exact question answered incorrectly, but instead to the knowledge unit item.³¹ When making the document submission, please provide this document as this information will make assessing each examination quicker and less costly for an applicant.

Where an operator's examination does not comply with these requirements, CASA will return the application to the operator and pause the assessment until the deficiencies are amended.

³¹ Subsection 2.16 (2) of the Part 101 MOS.

12 RePL flight test

The RePL flight test is the summative assessment for the practical competency component of the RePL training course. Its purpose is to ensure that applicants for RePLs can competently conduct an RPAS operation in accordance with documented practices and procedures and can safely operate an RPA under standard operating conditions.

12.1 Flight test requirements

The flight test is a single assessment of a student's overall competency which must be conducted separately from the regular training provided during the course. The flight test must meet the standards and competency requirements prescribed in Schedule 6 of the Part 101 MOS for the relevant category of RPAS.

12.1.1 Knowledge requirements

The flight test must either include defined questions or relevant topics for questioning which assess the student's knowledge of the listed subjects in section 2 of the relevant appendix within Schedule 6 of the Part 101 MOS.

These questions should be asked verbally during the flight test. The examiner may ask as many questions from the list of relevant subjects as they consider appropriate and necessary to determine whether the candidate has the required understanding of the subjects.

The examiner is not required to ask questions relating to every subject listed, provided the examiner is satisfied by the answers to previously asked questions that the candidate has a satisfactory knowledge of the subjects about which questions are not asked. The examiner can and should also consider the student's aeronautical knowledge examination results when determining which questions to ask.

However, the operator must keep a record, for no less than 7 years, of:³²

- the specific questions asked of the candidate to demonstrate his or her knowledge of the subjects listed
- whether or not the student answered each question correctly
- any subjects listed about which the examiner did not question the student
- an overall assessment of the candidate's level of knowledge.

It is highly recommended that operators construct their flight test forms in a way which reduces the note taking requirements of their examiners. This will ensure the record keeping requirements are met. CASA inspectors will request to see these records during a surveillance event.

12.1.2 Practical flight standards

The manoeuvres to be assessed in the flight test and the relevant standards are detailed in the applicable category Appendix in Schedule 6 of the Part 101 MOS.

Some medium and large RPA, that have particular characteristics, cannot safely conduct all of the flight test items detailed in Schedule 6 of the Part 101 MOS. CASA may approve an alternative flight test where it is satisfied that the assessment will appropriately assess the students ability to operate the RPA safely.³³

³² Section 10.03A of the Part 101 MOS.

³³ Division 2.4 Section 2.18 of the Part 101 MOS.

For a RePL training course with an RPAS in the medium or large weight ranges, the flight test must be conducted with the same RPAS that the student was deemed competent for the practical competency units.³⁴

12.2 Flight test form

It is highly recommended that all applications include a flight test run sheet or checklist which can serve to record a student's performance and achieve the recordkeeping requirements prescribed in the Part 101 MOS. See Appendix G for an example of a full multirotor flight test form.

When developing a flight test form, it is recommended to include the information described in the following sections.

12.2.1 A pre-test brief

The pre-test brief should describe the format, conduct and student expectations for the flight test. It can be helpful in standardising the flight test process so examiners as well as students understand the testing requirements.

12.2.2 Depiction of the flight test layout

The diagram below depicts an appropriate layout to use when conducting the multirotor RPA flight test. Applicants who are conducting a flight test for the aeroplane, helicopter or powered-lift categories, or have designed their own flight tests, should ensure that a diagram of the cone layout applicable to that test is provided as part of the application submission.

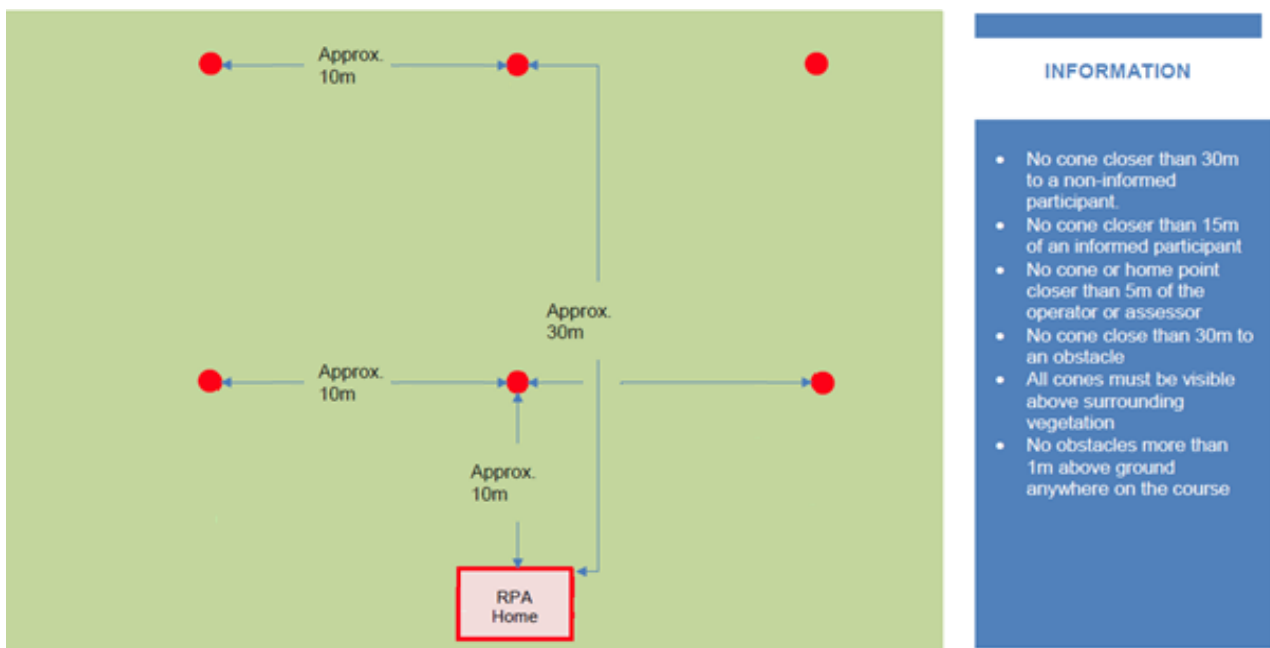


Figure 6. Layout for the multirotor RePL flight test

12.2.3 List of questions

The questions which the examiner plans to ask the student to meet the knowledge requirements for the flight test should be clearly listed on the flight test form.

³⁴ Division 2.3 Section 2.06 of the Part 101 MOS.

12.2.4 List of required manoeuvres

The competencies and manoeuvres which the student is required to achieve should be clearly identified on the flight test form.

12.2.5 Section for examiner notes

The additional training to be undertaken should the student fail the flight test must be specified in writing.³⁵ This must be recorded with the flight test, as such, a free text section is recommended.

³⁵ Subsection 2.31 (9) of the Part 101 MOS.

13 RePL training operational procedures

A person/organisation must have suitable documented practices and procedures³⁶ to be certified as an RPA operator. These written practices and procedures must be within their CASA accepted operational documents. These procedures must indicate how the operator will comply with the requirements for RePL training defined in Chapter 2 of the Part 101 MOS.

The purpose of documenting these policies and procedures is to ensure compliance with the training standards and standardise the delivery of training to achieve a consistently high level of quality.

An operator's personnel who do not act in accordance with the operator's documented practices and procedures are committing an offence of strict liability.³⁷

13.1 Suitable practices and procedures

The documented practices and procedures within an operator's manuals should describe how personnel are expected to conduct the various functions and duties associated with their role. When followed, these practices and procedures will ensure individual personnel and the operator as a whole are compliant with all regulatory requirements.

Where a section of the CASR or the Part 101 MOS requires a documented practice and/or procedure, the operator should mandate a practice in their documentation to meet the requirement. Suitable documented practices and procedures are written as instructions; thus, they should be prescriptive. While outcome-based procedures are not recommended, they may be accepted in some circumstances. However, rephrased, or simple direct cut and paste text from the Part 101 MOS or this document will not be accepted as a suitable documented practice or procedure. For acceptable example documented practices and procedures, please review the CASA's RPAS Sample Operations Manual.

13.2 Specific required practices and procedures

13.2.1 Organisation structure

An RPAS operator must have an organisation and structure appropriate for the safe operation of RPA, with suitably qualified and experienced personnel to ensure operations can be undertaken safely.³⁸ CASA expects that the operator's documented practices and procedures demonstrate its ability to meet these requirements. This will generally include clear details of key roles and responsibilities, including for the CRI and RePL training instructors.

CASA's RPAS Sample Operations Manual includes template documented procedures for RePL training organisations, however these sections will need to be reviewed by the operator to ensure they reflect the structure used by the operator.

Refer to the example below for an example of the accountabilities and responsibilities which could be included in an operation's manual for the Chief RePL Instructor (CRI) and RePL Training Instructor (RTI) roles. When developing documented practices and procedures, the operator should review the requirements detailed in the Part 101 MOS for the relevant position. However, an organisation may choose to expand further on these requirements.

³⁶ Paragraph 101.335 (1) (d) of CASR.

³⁷ Regulation 101.370 of CASR.

³⁸ Paragraph 101.335 (1) (a) of CASR.

13.2.2 Responsibilities of Chief RePL Instructor (CRI)

ABC RPAS Pty Ltd's CRI is responsible for all operational matters in relation to RePL training.

The roles and responsibilities of ABC RPAS's CRI are to:

- ensure that the RePL training organisation complies with the civil aviation legislation relating to the conduct of the RePL training course and report to the CEO and CRP regularly on this matter
- safely manage the conduct of each RePL training course
- ensure that each RePL training course is conducted in a professional and systematic manner
- assess and authorise the appointment of RePL instructors and examiners
- monitor and maintain RePL training standards and supervise RePL instructors and examiners who work under the authority of the ReOC
- maintain a record of ratings, qualifications, certificates and non-training operational experience held by each RePL instructor and examiner
- ensure that there are sufficient numbers of RePL training instructors and appropriate RPA for each course, and that these are deployed and allocated to allow for competent and effective training of each applicant
- maintain complete and up-to-date RePL training documents IAW 10.03 of the Part 101 MOS
- ensure an annual review of all RePL training documents is completed
- set, monitor and maintain the organisation's standards for its RePL training courses
- develop checklists and procedures relating to RePL training
- establish, implement and manage the organisation's procedures to identify and rectify deficiencies in RePL training course training outcomes.

13.2.3 Responsibilities of RePL Training Instructor (RTI)

ABC RPA's RePL Training Instructor is to:

- ensure that all training is conducted IAW this manual, the Part 101 MOS and Part 101 of CASRs
- adhere to any requirements set out by the CRI.

13.2.4 RePL aeronautical knowledge examination

The examination requirements for a RePL training course theory component are detailed in Division 2.3 of the Part 101 MOS. A RePL training organisation must clearly document its practices and procedures for the conduct of examinations.³⁹ CASA expects that the training organisation's documented practices and procedures will detail the following:

13.2.5 Conduct and closed-book examination policy⁴⁰

The operator should have documented practices and procedures ensuring the examination is a closed-book examination, except for any documents concerning the RPAS authored by:

- CASA and published on its website
- or

³⁹ Part 101 MOS Section 2.15.

⁴⁰ Subsections 2.08 (2) and 2.15 (5).of the Part 101 MOS.

- AA and published on its website.

The operator should also have documented practices and procedures for the conduct of examination which prevent an applicant (student) who is taking the examination from:

- using any means to answer a question that is not in accordance with the closed book requirement above
- being coached or prompted by any person during the examination.

Examination pass mark policy⁴¹

The operator should have documented practices and procedures ensuring the examination pass mark must be 85%.

Examination supervision policy⁴²

The operator should have documented practices and procedures ensuring the examination must be supervised by and approved RePL examiner.

Examination assessor policy⁴³

The operator should have documented practices and procedures ensuring the examination must be assessed by an approved RePL examiner.

Reporting examination results requirements can be found in Section 2.13 of the Part 101 MOS.

The operator should have documented practices and procedures ensuring that the RePL training organisation informs each applicant (student) in writing not later than 1 week after an examination of the applicant's examination mark and whether they have passed the examination.

Resit policy⁴⁴

The operator should have documented practices and procedures ensuring that if an applicant (student) does not pass the examination at the first, second or third attempt, the applicant must not make a fourth attempt to pass the examination unless:

- the applicant has repeated the aeronautical knowledge component of the RePL training course
- at least 14 days have elapsed since the third attempt.

Examination duration policy⁴⁵

The operator should have documented practices and procedures ensuring the examination is a continuous examination that is to be completed within a single period that is the sum of 15 minutes and the number of the set of questions as if that number were also minutes.

Examination rotation⁴⁶

The operator should have documented practices and procedures ensuring that examinations, each comprising one of the unique sets of questions, must be randomly rotated and cannot be administered more than once for a re-sit for each:

⁴¹ Subsection 2.09 (1) of the Part 101 MOS.

⁴² Subsection 2.09 (2).of the Part 101 MOS.

⁴³Subsection 2.09 (2).of the Part 101 MOS.

⁴⁴Subsection 2.09 (3) of the Part 101 MOS.

⁴⁵ Section 2.11 of the Part 101 MOS.

⁴⁶ Subsection 2.12 (4) of the Part 101 MOS.

- RePL training course
- examination which an applicant is resitting.

Question amendment/modification policy⁴⁷

The operator should have documented practices and procedures for the modification of the aeronautical knowledge examination questions. No more than 10% of the total number of multiple-choice questions can be amended in any unique question set in any 12-month period.

Knowledge deficiency report policy⁴⁸

The operator should have documented practices and procedures defining the post-examination knowledge deficiency reporting process. The process should:

- inform the candidate of the items of the aeronautical knowledge units, with respect to which the candidate answered examination questions incorrectly, with a view to the candidate remedying the knowledge deficiency
- prepare a written report (the Knowledge Deficiency Report - KDR) confirming the knowledge deficiency
- give a copy of the knowledge deficiency report to the candidate
- after an oral examination the student must satisfy either the examiner, that the knowledge that was the subject of the KDR has been remedied
- this satisfaction has been recorded in writing by the examiner.

The actual questions answered incorrectly must not be provided to the candidate. If the operator does not submit a matrix indicating which item every examination question relates to, the submitted documented practices and procedures should describe how they will meet this requirement.

Student recordkeeping policy⁴⁹

The operator should have documented practices and procedures ensuring the RePL training organisation retains, for not less than 12 months, the examination as completed by each applicant (student) and assessed by the RePL instructor or chief remote pilot.

The operator should also have documented practices and procedures ensuring the RePL training organisation make, and keep for at least 7 years, a record of the following for each examination that is attempted by an applicant and include:

- the applicant's name
- the date of the examination
- whether the examination was a resit
- the aeronautical knowledge examination as completed by the applicant and assessed by the examiner
- the applicant's mark in the examination and whether the applicant passed the examination
- the name and position of the person who assessed the examination.

⁴⁷ Subsection 2.12 (5) and (6) of the Part 101 MOS.

⁴⁸ Subsections 2.16 (1)-(3) of the Part 101 MOS.

⁴⁹ Subsection 2.14 (1) (2) of the Part 101 MOS.

Secure handling and custody policy⁵⁰

The operator should have documented practices and procedures ensuring each unique set of questions for the examination be subject to secure handling and custody procedures independent of whether they are presented to a student in electronic format or on paper.

The operator must ensure that the questions for examinations:

- are not disclosed to any applicant who is not sitting the examination
- are not accessed by any person (other than an applicant sitting the examination) who has not undertaken in writing to comply with the examination security procedures
- cannot be physically retained or electronically recorded by the applicant (student) sitting the examination
- cannot be obtained by any person who has not undertaken in writing to comply with the examination security procedures.

13.2.6 RePL flight test

An operator is expected to have a documented conduct policy for the RePL flight test. It is recommended that the flight test itself, including the list of tested elements, be documented in a separate document from the operations manual.

An appropriate location could be the RePL instructor handbook, which is recommended as the location to put all the RePL course lesson plans.

13.2.7 Certificate of course completion

The operator should have a policy ensuring each student who successfully completes the RePL training course is issued with evidence in the form of a certificate of course completion which includes the following identification information:

- RPA training organisation (name, ReOC number and ARN)
- student (legal name and ARN)
- RePL training course completed, including:
 - category and type
 - full names of the RePL training units included in the course
 - mode(s) of operation automated /or automated and manual
 - which MOS liquid fuel training units were included in the course (noting that there are currently no conditions or notes listed on the student's RePL indicating that this training has been covered).
- date the course was completed by the student
- CRI (name, ARN and signature).

13.2.8 Notifying CASA of a course completion

A RePL training organisation should have a documented procedure for informing CASA of the completion of a RePL training course. CASA recommends using the myCASA Portal to lodge all required training records.

⁵⁰ Subsection 2.15 (2) of the Part 101 MOS.

13.2.9 Student-owned RPA being used for RePL training

Where an operator wishes to provide the option for students to use personally owned RPA in a RePL training course, the following issues will need to be considered and documented practices and procedures will need to be added or expanded to cover the solutions.

13.2.10 Register of RPA used for training

All RPAS used for training operations under a ReOC should be listed, by serial number, in the RPAS operations manual.

Maintenance and operation

All RPAS being operated under a ReOC must be inspected, serviced, and repaired in accordance with the maintenance policies and the specific RPA operating procedures within the RPAS operations manual.⁵¹ This means each model of RPA being used by students on a RePL training course will need to have documented maintenance procedures listed within the operator's operations manual.

Recordkeeping

Chapter 10 of the Part 101 MOS prescribes recording keeping requirements in relation to RPA operated under a ReOC. Student RPA are not exempt from the record keeping requirements if they are operated under the ReOC of the training organisation.

RPA Registration - commercial

All RPAS being operated commercially must be registered with CASA. This process is outlined at <https://www.casa.gov.au/drones/register>.⁵² A fine of up to 50 penalty units⁵³ may be imposed for commercially operating an unregistered RPA. This includes any student-owned RPA being used for RePL training.

13.2.11 Other procedures

Other documented practices and procedures which should be included are:

- a policy for the authorisation of operational training areas
- a policy for approving RPAS for use in RePL training
- a record keeping policy

Policies and procedures for online training delivery – see section 14 of this Annex for more information.

Policies and procedures for synthetic trainer use for RePL training – see section 16 of this Annex for more information.

13.3 Documented practices and procedures assessment

The CASA Inspector will assess all submitted documented practices and procedures against those required by Chapter 2 of the Part 101 MOS. Each documented practice and procedure will be reviewed and assessed for suitability.

⁵¹ Paragraphs 101.335 (1) (d) and 101.340 (1) (e) of CASR and Paragraph 10.04 (1) (j) of the Part 101 MOS.

⁵² Regulation 47.096A of CASR.

⁵³ At the time of publication, a penalty unit has the value of \$313 meaning a maximum fine of \$15,650.

Where an operator's documented practices and procedures do not comply with these requirements, CASA will return the application to the operator and pause the assessment until the deficiencies are amended.

14 Online RePL training

Section 2.26 of the Part 101 MOS permits the aeronautical knowledge component of a RePL training course to be presented via virtual presence, with the instructor providing instruction and responding online in real time, visually and with sound.

CASA will not approve an organisation to conduct virtually present RePL training unless the organisation has appropriate documented practices and procedures for the conduct of the virtually present instruction. The following sections provide guidance on CASA's expectations for the delivery of RePL training through virtual presence.

14.1 Instructing and responding to students in real time

To meet the requirement of instructing and responding to students in real time, CASA expects that the virtually present RePL instructor actively drives the lesson and is not merely a passive participant. To be considered instructing and responding in real time, the instructor should:

- deliver information to the students in real time
- interact with the class to determine and vary instructional pace to match student learning
- conduct confirmation/evaluation of learning to ensure all learning outcomes have been met.

The IT system nominated by the operator to conduct virtually present instruction needs to be conducive to achieving these instructor requirements. The most accepted means for conducting virtually present instruction is through an IT System capable of conducting webinars, or web-based seminars.

A webinar is an online meeting or presentation held via the internet in real-time. The main feature of webinars is interactivity, or the ability to discuss, send and receive information in real-time.

As a minimum, and in order to achieving quality training, the nominated IT System should be able to meet the following requirements:

- Enable the visual delivery of training using displayed text, pictures, pre-recorded video and a real time video and audio link with the instructor
- Be of an appropriate quality to deliver the training
- Enable the students and the instructor to be able to communicate to ask and answer questions to confirm knowledge
- Have the capability to facilitate the monitoring of student presence and involvement.

Important considerations for the IT System:

- How will the IT System enable the instructor to monitor individual student progress?
- How will the IT System enable students to ask questions and pause the lesson to clarify information?
- How will the IT System enable the instructor to manage class discussions between students?
- How will the IT System enable the instructor to expand on existing training material to further explain teaching points using teaching aids, drawings and verbal and/or visual explanations?
- How will the end user experience be gauged and or monitored considering the many variables of a student's connection and device/s?
- How will the IT System and the instructor manage system issues or student dropouts?

IT System featuring the following are unlikely to meet CASA's expectations for a virtual presence RePL training:

- chat or text box functionality as the only means for the student to communicate with the instructor
- pre-recorded lessons with no or limited instructor involvement
- no capability for real-time instructor responses to a student's questions.
- no real-time video and audio link
- a real-time video link that does not capture activities and body language of the instructor or has a very narrow view (e.g., only the instructors face visible).

14.2 Documented practices and procedures for the conduct of virtually present instruction

A RePL training organisation should submit to CASA an operations manual containing their planned RePL training course curriculums. The curriculums are required to identify the specific lessons or training periods which will comprise the specific course of training and the duration over which the course will be conducted.

A training organisation planning to conduct any portion the theory component of a RePL training course with virtually present instructors should include a curriculum which indicates which lessons will be presented virtually. The included curriculums should contain sufficient detail of the course to show that the required 15 hours contact time with an instructor will be achieved.

The other documented policies which should be included in the operator's operations manual are:

- a policy stipulating the specific IT System/s which will be utilised to conduct the virtually present instruction
- a policy defining the training which is required by the operator and perhaps the IT System developer, for a RePL instructor to proficiently conduct instruction using the system
- a policy defining the time frame available for students to complete the training.

14.3 Ratio of students to instructors

The ratio of students to instructors must be compliant with Paragraph 2.27 (1) (a) of the Part 101 MOS, being 10:1. This remains the case whether the RePL instructor is physically present or virtually present.

14.4 CASA assessment

An initial applicant or existing RePL training organisation may include or submit procedures for the delivery of online RePL training. An initial applicant should make it clear in their submission that components of the course will be delivered online and include appropriate documented practices and procedures in the submission. This will be assessed as part of the overall desktop and on-site assessment.

An existing RePL training organisation should re-submit all relevant and amended documents and training material for the delivery of the online training to rpas.pac@casa.gov.au. Depending on the size of the submission, an estimate may need to be paid prior to the commencement of the review.

Training to meet the requirements of Subsection 2.26 (1) and (2) of the Part 101 MOS must comply with the conditions defined in Subsection 2.26 (3). Where an operator's IT systems or documented practices and procedures for the delivery of online training do not comply with these requirements, CASA will not recognise the training as RePL training and will return the submission.

15 Increased student instructor ratios

15.1 Background

RePL training organisations must ensure the ratio of students to RePL training instructors is not greater than 10 students to 1 instructor for the theoretical component (aeronautical knowledge component) of a RePL training course unless CASA approves otherwise in writing⁵⁴. CASA may approve otherwise only if CASA is satisfied, on application, that the:

- relevant instructor has the qualifications and experience to ensure the effective delivery of the theoretical component to a larger number of students
- RePL training organisation's structure and management is appropriate to support the instructor's delivery of the component to the larger number of students⁵⁵.

15.2 Overview of RePL course

The RePL course is designed for an applicant to gain a base understanding of the Australian aviation environment, which must include a specific RPAS category within the standard RePL course. Considering these aspects, the average RPAS course generally runs over a 5-day period with a class size of fewer than 10 students. The RePL course can be viewed as an intensive ab-initio RPAS licencing course. It is vitally important that the appropriate level of training is given to students for them to understand how best to operate safely in the Australian airspace.

The MOS states the student has not less than 15 hours contact time with a RePL training instructor during delivery of the aeronautical knowledge component of the RePL course. The maximum ratio of ten students to one instructor is used as criteria to ensure a minimum standard for teaching exposure to the instructor and use of classroom aids and student participation during interactive activities. Noting the RePL course is substantially interactive in nature (not only in-the-field, but also in the classroom), this ratio allows the instructor to teach all the relevant knowledge and confirm the students' knowledge retention. This time also allows for the instructors to identify students who may be deficient with certain parts of the curriculum.

15.3 Increasing the student to instructor ratio considerations

There are multiple factors to consider if a RePL training organisation intends to conduct training with a ratio larger than that specified in the MOS. A major factor when increasing the ratio is to ensure that adequate time has been provided; firstly, for all students to have the required information taught to them and retained; secondly, all students should have the same opportunity to access the instructor and resources used; lastly, adequate time for the instructor to effectively teach to the larger class and confirm the content of the lesson with each individual student.

Other considerations may include the accessibility to classroom resources and aeronautical information publications, the teaching methods used when teaching to an increased class size, the qualifications and experience of the instructors, and the design of the curriculum. These items are by no means an exhaustive list and other instructional factors will need to be considered when instructing to a larger class size.

⁵⁴ Section 2.27 of the Part 101 MOS.

⁵⁵ Subsection 2.27 (2) of the Part 101 MOS .

15.4 Minimum requirements for increasing student to instructor ratios

CASA considers the following to be the minimum requirements when applying to increase the student to instructor ratio up to a maximum of 30:1 students to a RePL instructor.

15.4.1 Instructor qualifications

All instructors involved in a RePL course with an increased ratio of students should hold one or more of the qualifications identified in Paragraph 2.30 (2) (c) of the Part 101 MOS.

Note: CASA expects that an instructor will possess this qualification at the time of commencing a course that has a ratio of more than 10:1, whether or not Paragraph 2.30 (2) (c) of the Part 101 MOS is in effect.

15.4.2 Contact time

All RePL courses where the student to instructor ratio has been increased will require an additional 30 minutes, per each additional student over the current ratio of 10:1, e.g., a class size of 20 will require a total of 20 hours of contact time (0.5h x 10 students = 5 hours additional time required).

It is of CASA's view that the RePL course was not designed to be taught to a large class of students and a detailed curriculum and course structure needs to be presented to CASA that identifies and addresses the risks of teaching to larger classes.

15.5 Guidance on additional contact time requirement

The following examples are ways in which a course may be tailored to a larger class size:

- a. Increasing the length of all lessons proportionate to the type and difficulty of the lesson content.
- b. Additional time allocated to classroom practical activities such as reading maps and charts, planning example scenario operations, reviewing aviation incidents and accidents for human factor elements, developing suitable emergency procedures for specific RPA, developing risk assessments.
- c. Additional time allocated to active learning topics such as reading and interpreting weather and NOTAMs, understanding technical airworthiness and serviceability
- d. Revision and/or practice exam periods to identify any shortfalls with each individual student.

16 Simulators and synthetic trainers

Operators may elect to utilise simulators to achieve lesson objectives which are unable to be practically conducted and assessed due to unsafe flight conditions, variables required not being present, or being deemed not reasonable for reasons related to safety. The type of simulator to be used should be identified in the documented practices and procedures. It should be noted that the use of a simulator to gain RPA flying experience does not account towards the required minimum 5 hours required under RPA standard operating conditions⁵⁶.

⁵⁶ CASR Paragraph 101.295 (2) (c).

17 Aeronautical knowledge references

Basic aviation knowledge:

- [Civil Aviation Safety Authority | Visual Flight Rules Guide \(casa.gov.au\)](https://casa.gov.au/civil-aviation-safety-authority-visual-flight-rules-guide)
- [Remote Pilot - Small Unmanned Aircraft Systems Study Guide \(faa.gov\)](https://faa.gov/remote-pilot-small-unmanned-aircraft-systems-study-guide)
- [Pilot's Handbook of Aeronautical Knowledge \(faa.gov\)](https://faa.gov/pilot-handbook-of-aeronautical-knowledge)

Airspace, charts and aeronautical publications:

- [Aeronautical Information Package - Airservices \(airservicesaustralia.com\)](https://airservicesaustralia.com/aeronautical-information-package-airservices)
- [NOTAM-Data-Quality-Requirements-for-UAV-Operators \(airservicesaustralia.com\)](https://airservicesaustralia.com/notam-data-quality-requirements-for-uav-operators)
- [Data service providers | Civil Aviation Safety Authority \(casa.gov.au\)](https://casa.gov.au/data-service-providers)

Basic meteorology:

- [Knowledge Centre \(bom.gov.au\)](https://bom.gov.au/knowledge-centre)
- [Aviation Weather Packages \(bom.gov.au\)](https://bom.gov.au/aviation-weather-packages)

Human performance:

- [Safety behaviours: human factors for pilots 2nd edition | Civil Aviation Safety Authority \(casa.gov.au\)](https://casa.gov.au/safety-behaviours-human-factors-for-pilots-2nd-edition)
- [eLearning catalogue | Civil Aviation Safety Authority \(casa.gov.au\)](https://casa.gov.au/elearning-catalogue)
- [Aviation Non-Technical Skills Handbook \(defence.gov.au\)](https://defence.gov.au/aviation-non-technical-skills-handbook)

Operations and procedures:

- [Risk Management Handbook \(faa.gov\)](https://faa.gov/risk-management-handbook)

Operational rules and air law for RPAS:

- [RPAS Sample Operations Manual \(casa.gov.au\)](https://casa.gov.au/rpas-sample-operations-manual)
- [Volume 3 Civil Aviation Safety Regulations 1998 \(legislation.gov.au\)](https://legislation.gov.au/volume-3-civil-aviation-safety-regulations-1998)

Automated flight management systems knowledge:

- [Advanced Avionics Handbook \(faa.gov\) - Automated flight management systems](https://faa.gov/advanced-avionics-handbook)

Aeroplane:

- [Airplane Flying Handbook \(faa.gov\)](https://faa.gov/airplane-flying-handbook)

Helicopter:

- [Helicopter Flying Handbook \(faa.gov\)](https://faa.gov/helicopter-flying-handbook)

18 RePL training – submission checklist

This checklist will assist in constructing the application for the RePL training course. Please submit the checklist with your application Form 101-02.

Table 20. Application summary

RePL training - submission checklist	
2. Applicant details	
Organisation Name:	ARN:
Chief Remote Pilot:	ARN:
Chief RePL Instructor:	ARN:
3. Application type	
<input type="checkbox"/> Initial ReOC application including RePL training approval; or <input type="checkbox"/> Variation to existing ReOC application for: <ul style="list-style-type: none"> <input type="checkbox"/> Initial application for RePL training approval <input type="checkbox"/> Application to vary existing RePL training approval (Upgrade) 	
4. Proposed RPA type/s	
<input type="checkbox"/> Small – Up to 7 kg <input type="checkbox"/> Small – Up to 25 kg <input type="checkbox"/> Medium <input type="checkbox"/> Large	
5. Proposed RPA category option/s	
<input type="checkbox"/> Aeroplane – manual mode <input type="checkbox"/> Aeroplane – automated mode <input type="checkbox"/> Helicopter – manual mode <input type="checkbox"/> Helicopter – automated mode <input type="checkbox"/> Multirotor – manual mode <input type="checkbox"/> Multirotor – automated mode <input type="checkbox"/> Powered-lift – manual mode <input type="checkbox"/> Powered-lift – automated mode	
7. Proposed training locations	
8. Proposed training RPAS	
9. Additional details	

Appendix A

Key sub-referenced legislation

Table 21. Key sub-referenced legislation

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
Regulation 11.030 of CASR - When application taken to be complete	all	An application for an authorisation is not considered to have been made unless it is made in the manner approved by CASA, including any payment of fees, all information and every required document.	4.2 Application submission requirements 4.3 Fee estimate
Regulation 11.055 of CASR - Grant of authorisation	(1A)	Subject to other subregulations, CASA may grant the authorisation if a person has applied for an authorisation in accordance with these Regulations and meets the specified criteria and requirements.	4.45 RePL training organisation assessment
Regulation 64.012 of CASR - Approvals by CASA for Part 64	(1)	A person may apply to CASA for an approval if a provision of this Part refers to this regulation.	7.7.2 Aeronautical radio operator approved examiner
Regulation 64.015 of CASR - Eligibility for aeronautical radio operator certificate	(4)	An AROC examination may be conducted by CASA, a flight examiner, a pilot instructor with flight licence or flight crew rating training endorsement or the holder of approval under CASR 64.012.	7.7.2 Aeronautical radio operator approved examiner
Regulation 101.270 of CASR - Certain RPA-- requirement for RPA operator's certificate	all	Any person or legal entity wanting to conduct RPAS operations for hire or reward must hold an RPA certificate under Division 101.F.4. This includes conducting training for the purpose of meeting the eligibility requirements in regulation 101.295	3 CASA's expectations of RePL training organisations
Regulation 101.029 of CASR - Approvals for Part 101	(2)(a)	Subject to CASR 11.055, CASA must grant the approval if the course covers the relevant units of competency and the course meets the relevant standards prescribed by the Part 101 MOS for the course.	5 RePL training organisation assessment

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
Regulation 101.295 of CASR - Eligibility for remote pilot licence	all	Subject to regulation CASR 11.055, CASA must grant a RePL to an applicant who has passed the aeronautical knowledge component of a flight crew licence (FCL), the theory component of a RePL training course (Australian or CASA-accepted equivalent international course) and has completed operational training/assessment with at least 5 hours logged RPA flight time. Holders of an FLC/military equivalent or ATC/ military equivalent satisfy the theory component for a RePL	7.4 RePL training unit requirements for standard courses 7.4.2 Initial training courses - Exceptions
Regulation 101.330 of CASR - Application for certification as RPA operator	all	An application must be in the approved format, include all the information required and be accompanied by copies of the relevant manuals.	4.2 Application submission requirements
Regulation 101.335 of CASR - Eligibility for certification as RPA operator	(1)	A person (or legal entity) is eligible to be certified as an RPA operator if the organisation, structure, personnel (including Chief Remote Pilot and Maintenance Controller), facilities, equipment, and documented practices and procedures are appropriate for safe operation.	13 RePL training operational procedures
Regulation 101.370 of CASR - Compliance with RPA operator's practices and procedures	all	A person who is subject to the RPA operator's documented practices and procedure as a member of their crew, commits an offence of strict liability if the person does not comply with the requirement.	13 RePL training operational procedures
Part 61 MOS	Volume 2 Section 1	This unit includes a description of general English language proficiency standards.	7.6 General English Language Proficiency
Part 101 MOS Chapter 1	1.04	While words and phrases used in the Part 101 MOS have the same meaning as in CASR, further definitions are included in this preliminary chapter.	7.6 General English Language Proficiency
Part 101 MOS Chapter 2 Division 2.1	2.03 (1)(3)	A RePL training course may include training and assessment in GELP as part of the practical competency component.	7.6 General English Language Proficiency

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
		Assessment must be conducted by an examiner.	
Part 101 MOS Chapter 2 Division 2.1	2.05 (4)	Students attending a RePL training course must complete all matters in all of the items in the relevant units of knowledge for each relevant category of RPA.	9.3 Curriculum assessment
Part 101 MOS Chapter 2 Division 2.2	2.06 (6)	A RePL training course for a category of RPA must require the applicant to complete the relevant units of practical competency.	9.3 Curriculum assessment
Part 101 MOS Chapter 2 Division 2.2	2.06A	A practical training course for a particular medium RPA or large RPA may be comprised of some or all of the relevant practical competency units and standards.	7.4.1 Initial RePL training courses 7.5 Modified licensing standards for advanced RPA (medium/large) technology
Part 101 MOS Chapter 2 Division 2.3	all	Students must pass an examination to achieve the necessary competency standard for the theoretical knowledge component of a RePL training course.	11 RePL aeronautical knowledge examination
Part 101 MOS Chapter 2 Division 2.3	2.08	Students must pass a closed-book examination to pass the theoretical component of a RePL training course.	11.1 Examination conduct 13.2.6 Conduct and closed-book examination policy
Part 101 MOS Chapter 2 Division 2.3	2.09	The pass mark for the RePL examination is 85%. The RePL training instructor or the CRI must assess the examination. Students are allowed 3 attempts after which they must repeat the theory component of the course. There must be at least 14 days between the 3rd and 4th attempts	13.2.411 RePL aeronautical knowledge examination
Part 101 MOS Chapter 2 Division 2.3	2.10	Unique multiple choice examination questions must be compiled for the relevant category based on the priority status for each item in the relevant unit(s).	11.2 Examination requirements
Part 101 MOS Chapter 2 Division 2.3	2.11	The examination is to be completed in a single session for a period of 15 minutes plus 1 minute for each question.	13.2.4 Examination duration policy

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
Part 101 MOS Chapter 2 Division 2.3	2.12 (1)	The examination must be one of a set of at least 4 unique examinations.	11.2 Examination requirements
Part 101 MOS Chapter 2 Division 2.3	2.12 (5) (6)	Training organisations may modify no more than 10% of the total number of questions in a 12-month period	13.2.4 Question amendment/modification policy
Part 101 MOS Chapter 2 Division 2.3	2.14 (1)(2)	Each completed examination must be kept by the training organisation for at least 12 months and details including the student's name and examination details must be kept for 7 years.	13.2.4 Student recordkeeping policy
Part 101 MOS Chapter 2 Division 2.3	2.15	A RePL training organisation must comply with the examination security criteria including the organisation's documented practices and procedures.	11.3 Examination security 13.2.2 Conduct and closed-book examination policy 13.2.4 Secure handling and custody policy
Part 101 MOS Chapter 2 Division 2.3	2.16	The training organisation must inform the student of their knowledge deficiency as soon as practical.	11.4 Examination assessment 13.2.4 Knowledge deficiency report policy
Part 101 MOS Chapter 2 Division 2.3	2.17	The training organisation is required to document practices and procedures to ensure compliance with Division 2.3.	13.2.4 RePL aeronautical knowledge examination
Part 101 MOS Chapter 2 Division 2.4	2.18	To complete the RePL training course component for the operation of a category of RPA (the practical competencies), the student must be assessed as competent in each of the relevant units in Schedule 5.	10.1.2 Lessons covering practical competency standards
Part 101 MOS Chapter 2 Division 2.4	2.18A	The student must be assessed as competent in the relevant practical competency units and standards as approved by CASA in writing should any particular item be impossible or impracticable to demonstrate due the innovative RPAS design.	7.4.1 Initial RePL training courses
Part 101 MOS Chapter 2 Division 2.5	2.20	Upgrade a RePL for a small RPA weighing less than 7kg to include another	7.4.4 Upgrade RePL training courses – same category, additional type

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
		<p>small RPA of the same category up to 25kg.</p> <p>Students must complete the flying training IAW relevant units of practical competency (other than the common units) of Schedule 5 and be assessed by the same person who supervised the training.</p>	
Part 101 MOS Chapter 2 Division 2.5	2.21	<p>Upgrade a RePL for a small RPA to include a different category of small RPA.</p> <p>Students must complete training and successfully pass the relevant aeronautical knowledge component of the RePL training course unless they meet the recognised prior learning components.</p> <p>Holders of an FLC/military equivalent or ATC/military equivalent satisfy the theory component for a RePL.</p>	<p>7.4.3 Upgrade RePL training courses – add different category</p> <p>7.4.2 Initial RePL training courses - Exceptions</p>
Part 101 MOS Chapter 2 Division 2.5	2.22 – 2.25	<p>Upgrade a RePL for a RPA to include a medium or large RPA of the same/different category.</p> <p>Students need to comply with the relevant standards and requirements which may include recognition of prior learning and/or modified practical competency components.</p>	7.5 Modified licensing standards for advanced RPA (medium/large) technology
Part 101 MOS Chapter 2 Division 2.6	2.26	Students must receive a minimum of 15 hours of instruction time from an instructor who is physically present in a classroom or instructing and responding online in real time for a single category initial RePL course. An additional 4 hours is to be scheduled for each additional category included in the same course.	<p>9 RePL training course curriculum</p> <p>9.3 Curriculum assessment</p> <p>14.4 CASA assessment</p>
Part 101 MOS Chapter 2 Division 2.6	2.27	The ratio of students to and instructor is generally 10:1 for theory and for practical (with only 3 airborne at any one time).	<p>10.2 Documenting lesson plans</p> <p>14.3 Ratio of students to instructors</p> <p>15.1 Increased student: instructor ratios – Background</p>

Legislation Reference	Subregulation	Summary* Refer to legislation for complete text and do not rely on this summary for decision making	Annex A Section Reference
			15.4 Minimum requirements for increasing student to instructor ratios
Part 101 MOS Chapter 2 Division 2.6	2.29	The training organisation must issue each successful student with a certificate of course completion which identifies the student and course and is signed and dated by the CRI.	13.2.7 Certificate of course completion
Part 101 MOS Chapter 2 Division 2.7	2.30	A RePL training course for a type of RPA may only be conducted by a RePL training instructor who satisfies the requirements of this section.	4.3.3.1 RePL training instructor
Part 101 MOS Chapter 2 Division 2.8	2.31 (9)	If an applicant fails a flight test mentioned in this Chapter, the applicant may repeat the flight test but only after completing such additional training as is specified in writing by the examiner.	12.2.5 Section for examiner notes

Appendix B

Sample RePL syllabus of training

B.1 Sample syllabus training

The following syllabus of RePL training is an example of how a RePL training course can be structured, and that structure documented. The example syllabus includes all the relevant RePL training unit items required for an initial issue and/or upgrade RePL training course, appropriately divided into individual lessons.

*[ABC RPAS]*s RePL training course complies with the required units of aeronautical knowledge (the aeronautical knowledge component) and units of practical competency (the practical competency component) as per the standards and requirements prescribed by chapter 2 of the Part 101 Manual of Standards (MOS).

Table 22. RePL Syllabus illustrating mapping of lesson codes to MOS units

Lesson Code Legend: T – Theory Lesson; P – Practical lesson; I – Initial course; U – Upgrade course; A – Aeroplane; M – Multirotor; H – Helicopter; L – Powered-lift

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
	General Aeronautical Theory Lessons		
T1	Basic aviation knowledge	RBAK	All Items included
T2	Airspace, charts, and aeronautical publications	RACP	All Items included
T3	Basic meteorology	RBMO	All Items included
T4	Electrical and electronic systems for RPAS	REES	All Items included
T5	Human performance	RHPF	All Items included
T6	Operational rules and air law for RPAS	RORA	All Items included
T7	Operations and procedures basics	RKOP	All Items included
T8	Automated flight management systems basics	RAFM	All Items included
	Category Specific Aeronautical Theory Lessons		
TA9	Aeroplane knowledge and operation principles	RBKA	All Items included
TM10	Multirotor knowledge and operation principles	RBKM	All Items included
TH11	Helicopter knowledge and operation principles	RBKH	All Items included
TL12	Powered-lift aircraft knowledge and operation principles	RBKP	All Items included
	General Practical Competency Lessons		
0	Course introduction and administration	GEL	All Items included

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PI1	Pre-operational planning	RC4	Item 1(b) Item 2, 3, 4, 5, 6
		RC2	Item 1
PI2	Pre- and post-operation actions and procedures	RC1	All Items included
		RC2	Item 3, (5 if liquid fuel)
PI3	Automated flight management systems advanced	RAF	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
	Aeroplane Practical Competency Lessons		
PIA4	Initial aeroplane - ground operation, launch, land and recover	RA1	All Items included
		RA3	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIA5	Initial aeroplane - normal operations	RA2	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIA6	Initial aeroplane - advanced manoeuvres	RA4	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PIA7	Initial aeroplane - abnormal and emergency operations	RA5	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	All Items included
PUA1	Upgrade aeroplane - ground operation, launch, land and recover	RA1 RA3	All Items included
PUA2	Upgrade aeroplane - normal operations	RA2	All Items included
PUA3	Upgrade aeroplane - advanced manoeuvres	RA4	All Items included
PUA4	Upgrade aeroplane - abnormal and emergency operations	RA5	All Items included
	Multicopter Practical Competency Lessons		
PIM4	Initial multicopter - control on ground, launch, hover, and landing	RM1	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIM5	Initial multicopter - normal operations	RM2	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIM6	Initial multicopter - advanced manoeuvres	RM3	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PIM7	Initial multirotor - abnormal situations and emergencies	RM4	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	All Items included
PUM1	Upgrade multirotor - control on ground, launch, hover and landing	RM1	All Items included
PUM2	Upgrade multirotor - normal operations	RM2	All Items included
PUM3	Upgrade multirotor - advanced manoeuvres	RM3	All Items included
PUM4	Upgrade multirotor - abnormal situations and emergencies	RM4	All Items included
	Aeroplane Practical Competency Lessons		
PIA4	Initial aeroplane - ground operation, launch, land and recover	RA1	All Items included
		RA3	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIA5	Initial aeroplane - normal operations	RA2	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIA6	Initial aeroplane - advanced manoeuvres	RA4	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
		RNT	Item 1, 2, 5
PIA7	Initial aeroplane - abnormal and emergency operations	RA5	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	All Items included
PUA1	Upgrade aeroplane - ground operation, launch, land and recover	RA1 RA3	All Items included
PUA2	Upgrade aeroplane - normal operations	RA2	All Items included
PUA3	Upgrade aeroplane - advanced manoeuvres	RA4	All Items included
PUA4	Upgrade aeroplane - abnormal and emergency operations	RA5	All Items included
	Helicopter Practical Competency Lessons		
PIH4	Initial helicopter - control on ground	RH1	All Items included
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIH5	Initial helicopter - launch, hover and landing	RH2	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIH6	Initial helicopter - normal operation	RH3	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PIH7	Initial helicopter - advanced manoeuvres	RH4	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIH8	Initial helicopter - abnormal situations and emergencies	RH5	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	All Items included
PUH1	Upgrade helicopter - control on ground	RH1	All Items included
PUH2	Upgrade helicopter - launch, hover, and landing	RH2	All Items included
PUH3	Upgrade helicopter - normal operation	RH3	All Items included
PUH4	Upgrade helicopter - advanced manoeuvres	RH4	All Items included
PUH5	Upgrade helicopter - abnormal situations and emergencies	RH5	All Items included
	Powered-lift Practical Competency Lessons		
PIL4	Initial powered-lift - control on ground, launch, hover and landing	RP1	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIL5	Initial powered-lift - transition to and from vertical flight	RP2	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
		RNT	Item 1, 2, 5
PIL6	Initial powered-lift - climb, cruise and descent	RP3	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIL7	Initial powered-lift - advanced manoeuvres	RP4	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	Item 1, 2, 5
PIL8	Initial powered-lift - manage abnormal situations at altitude and near the ground	RP5	All Items included
		RC4	Item 1(a)
		RC2	Item 2, (4 if liquid fuel)
		RC3	All Items included
		RNT	All Items included
PUL1	Upgrade powered-lift - control on ground, launch, hover and landing	RP1	All Items included
PUL2	Upgrade powered-lift - transition to and from vertical flight	RP2	All Items included
PUL3	Upgrade powered-lift - climb, cruise and descent	RP3	All Items included
PUL4	Upgrade powered-lift - advanced manoeuvres	RP4	All Items included
PUL5	Upgrade powered-lift - manage abnormal situations at altitude and near the ground	RP5	All Items included

Appendix C

Sample RePL syllabus of training for Aeroplane (small)

Table 23. RePL Syllabus (aeroplane) illustrating mapping of lesson codes to MOS units

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
	General Aeronautical Theory Lessons		
T1	Basic aviation knowledge	RBAK	All
T2	Airspace, charts and aeronautical publications	RACP	All
T3	Basic meteorology	RBMO	All
T4	Electrical and electronic systems for RPAS	REES	All
T5	Human performance	RHPF	All
T6	Operations and procedures basics	RKOP	All
T7	Operational rules and air law for RPAS	RORA	All
T8	Automated flight management systems basics	RAFM	All
	Category Specific Aeronautical Theory Lessons		
TA9	Aeroplane knowledge and operation principles	RBKA	All
	General Practical Competency Lessons		
0	Course introduction and administration	GEL	All
PI1	Pre-operational planning	RC4	Items 1(b), 2 - 6
		RC2	Item 1
PI2	Pre- and post-operation actions and procedures	RC1	All
		RC2	Item 3, 5 (if liquid fuel)
PI3	Automated flight management systems advanced	RAF	All
		RC4	Item 1(a)
		RC2	Item 2, 4 (if liquid fuel)
		RC3	All

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
		RNT	Items 1 - 7
	Aeroplane Practical Competency Lessons		
PIA4	Initial aeroplane - ground operation, launch, land and recover	RA1	All
		RA3	All
		RC4	Item 1(a)
		RC2	Item 2, 4 (if liquid fuel)
		RC3	All
		RNT	Items 1 - 7
PIA5	Initial aeroplane - normal operations	RA2	All
		RC4	Item 1(a)
		RC2	Item 2, 4 (if liquid fuel)
		RC3	All
		RNT	Items 1 - 7
PIA6	Initial aeroplane - advanced manoeuvres	RA4	All
		RC4	Item 1(a)
		RC2	Item 2, 4 (if liquid fuel)
		RC3	All
		RNT	Item 8
PIA7	Initial aeroplane - abnormal and emergency operations	RA5	All
		RC4	Item 1(a)
		RC2	Item 2, 4 (if liquid fuel)
		RC3	All
		RNT	Items 1 - 7
PUA1	Upgrade aeroplane - ground operation, launch, land and recover	RA1 RA3	All Items included

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PUA2	Upgrade aeroplane - normal operations	RA2	All Items included
PUA3	Upgrade aeroplane - advanced manoeuvres	RA4	All Items included
PUA4	Upgrade aeroplane - abnormal and emergency operations	RA5	All Items included

Note: The syllabus above includes two sets of aeroplane practical lessons, initial (PI) and upgrade (PU). The initial lessons include the common RePL training units which will be needed to complete an initial RePL training course. The upgrade lessons do not include the common RePL training units as they do not need to be re-covered in an upgrade RePL training course. This means the upgrade lessons will be quicker to deliver as they cover less content overall.

Appendix D

CASA sample course curriculums

D.1 Initial multirotor [<7kg / <25kg] RePL training course

[ABC RPAS]'s initial RePL training course is conducted over 5 days with one backup day. The course lessons, training periods, aeronautical exam and flight test are conducted over 5 days with 1 additional day for actioning any required additional training or testing.

<The following curriculum is an example of how a specific RePL training course can be represented in the training organisations documentation. This is an initial Multirotor training course.>

Table 24. RePL (initial multirotor) Curriculum

Day	0900-1000	1010-1100	1105-1200	1200-1245	1245-1345	1350-1445	1450-1545	1550-1700	
1	P0 - Course introduction and administration and T1 - Basic aviation knowledge		T2 - Airspace, charts, and aeronautical publications	Lunch	T2 - Continued	T3 - Basic meteorology	T4 - Electrical and electronic systems for RPAS	T5 - Human performance	
2	TM10 - Multirotor knowledge and operation principles		T8 - Automated flight management systems basics		PC1 - Pre-operational planning		PC2 - Pre- and post-operation actions and procedures	PMC4 - Initial multirotor - control on ground, launch, <u>hover</u> and landing	
3	PMC4 - Continued	PMC5 - Initial multirotor - normal operations			PMC6 - Initial multirotor - advanced manoeuvres		PMC7 - Initial multirotor - abnormal situations and emergencies		
4	T6 - Operations and procedures basics		T7 - Operational rules and air law for RPAS		Additional theory study	RePL aeronautical knowledge exam		Post exam KDR and admin	
5	PC3 - Automated flight management systems advanced	Flight practice			RePL flight test and Post flight test administration				Closing course administration
6	Additional training as required				Additional testing as required				

D.2 Upgrade multirotor <25kg RePL training course (same category)

[ABC RPAS]'s upgrade RePL training course (same category) is conducted over 2 days. The course lessons, training periods are conducted on the first day with the flight test and additional training conducted on the second day.

<The following curriculum is an example of how a specific RePL training course can be represented in the training organisations documentation. This is an upgrade Multirotor training course for students who already hold a multirotor RePL rating.>

Table 25. RePL (upgrade same category - multirotor) Curriculum

Day	0900-1000	1010-1100	1105-1200	1200-1230	1230-1345	1350-1445	1450-1545	1550-1700
1	Course introduction administration and RPAS introduction and safety briefings	PUM4 - Upgrade multirotor - control on ground, launch, <u>hover</u> and landing		Lunch	PUM5 - Upgrade aeroplane - normal operations	PUM6 - advanced manoeuvres		PUM7 - Upgrade multirotor - abnormal situations and emergencies
2	Additional practical training				<u>RePL</u> flight test and Post flight test administration			Closing course administration

D.3 Upgrade multirotor [<7kg / <25kg] RePL training course (different category)

[ABC RPAS]'s upgrade RePL training course (different category) is conducted over 2 days. The course starts at 0800 to fit the additional theory content and exam into a 2-day course.

<The following curriculum is an example of how a specific RePL training course can be represented in the training organisations documentation. This is an upgrade multirotor training course for students who do not hold a multirotor RePL rating.>

Table 26. RePL (upgrade add a category - multirotor) Curriculum

Day	0800-9000	0900-1000	1010-1100	1105-1200	1200-1230	1230-1345	1350-1445	1450-1545	1550-1700
1	Course introduction administration and TM10 - Multirotor knowledge and operation principles		RePL aeronautical knowledge exam	Post exam KDR and admin	Lunch	RPAS introduction and safety briefings and PUM4 - Upgrade multirotor - control on ground, launch, hover and landing		PUM5 - Upgrade aeroplane - normal operations	PUM6 - advanced manoeuvres
2	PUM6 - continued	PUM7 - Upgrade multirotor - abnormal situations and emergencies	Additional practical training			RePL flight test and Post flight test administration		Closing course administration	

D.4 Initial aeroplane [<7kg / <25kg] RePL training course

[ABC RPAS]'s initial RePL training course is conducted over 5 days with one backup day. The course lessons, training periods, aeronautical exam and flight test are conducted over 5 days with 1 additional day for actioning any required additional training or testing.

<The following curriculum is an example of how a specific RePL training course can be represented in the training organisations documentation. This is an initial Multirotor training course. >

Table 27. RePL (initial aeroplane) Curriculum

Time	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
0900-1000	P0 - Course intro and admin and T1 - Basic aviation knowledge	TA9 - Aeroplane knowledge and operation principles	PC1- Continued	PIA6 - Continued	PC3 - Automated flight management systems advanced	Additional training as required
1010-1100			PC2 - Pre- and post-operation actions and procedures	PIA7 - Initial aeroplane - abnormal and emergency operations	Flight practice	
1105-1200			T2 - Airspace, charts and aeronautical publications			
1200-1245	Lunch					
1245-1345	T2 - Continued	T6 - Operations and procedures basics	PIA4 - Continued	Additional theory study	RePL flight test and Post flight test administration	Additional testing as required
1350-1445	T3 - Basic meteorology		PIA5 - Initial aeroplane - normal operations	RePL aeronautical knowledge exam		
1450-1545	T4 - Electrical and electronic systems for RPAS	T7 - Operational rules and air law for RPAS				
1550-1700	T5 - Human performance	PC1 - Pre-operational planning	PIA6 - Initial aeroplane - advanced manoeuvres	Post exam KDR and admin	Closing course administration	

Appendix E

Example lesson - RKOP

E.1 RKOP item 2 (a) - The strategic risk assessment process relevant to RPAS operations

'Risk management, a formalised way of dealing with hazards, is the logical process of weighing the potential costs of risks against the possible benefits of allowing those risks to stand uncontrolled.'

Source: Risk Management Handbook - FAA

The objective of the RPAS risk assessment matrix is to methodically determine what might cause an identified hazard to eventuate and identify its likelihood and consequence, being the risk level. The matrix allows different hazards to be prioritised in order of their level of risk. Current control measures in place are factored in to determine an initial risk level, and then additional control measures can be considered.

Source: Edited from text in CASA's 2020 RPAS Sample Operations Manual

This process requires us to understand a number of concepts.

E.1.1 Hazards and how to identify them

By definition, *a hazard is a present condition, event, object, or circumstance that could lead to or contribute to an unplanned or undesired event such as an accident. It is a source of danger.*

Source: Risk Management Handbook - FAA

Hazards can be identified through the following tools and processes:

- audits or physical inspections
- accident / incident reports
- brainstorming
- history /experience
- pre-operation / post-operation discussions
- scenario analysis / decision trees

Source: Edited from text in CASA's 2020 RPAS Sample Operations Manual

Example – Pilot fatigue is a hazard because the pilot may not realize they are too tired to fly until serious errors are made. Humans are very poor monitors of their own mental condition and level of fatigue. Fatigue can be as debilitating as drug usage, according to some studies.

Source: Risk Management Handbook - FAA

E.1.2 Risks and how to identify them

Risk is the future impact of a hazard that is not controlled or eliminated. It can be viewed as future uncertainty created by the hazard. The same hazard may yield multiple different risks.

Source: Edited from text in the Risk Management Handbook - FAA

Example – Failure to conduct a complex checklist correctly due to crew fatigue from extended hours on-site could result in the loss of an aircraft and have a negative impact on organisational reputation to the extent that clients cancel future contracts.

E.1.3 Controls and mitigations

A control is a specific action aimed at reducing the probability of a Risk occurring. A mitigation is an action which is aimed at reducing the impact of a Risk. A single action can rarely be considered both a control and a mitigation simultaneously.

Controls and mitigations should be determined and measured based on the hierarchy of controls where elimination of the hazard is the most effective and PPE is the least effective control:

- *Elimination* of the hazard is the most effective as it completely removes it, however, is not always practical.
- *Substitution* of the hazard includes replacing the hazard with something else. To be effective, the new activity should not produce another hazard.
- *Engineering controls* do not remove the hazard, but they isolate people or the equipment which may be damaged from it.
- *Administrative controls* change the way people work, for example through procedures, training or warning signs.
- *PPE* is the least effective control but sometimes the only one available. An example is the use of hearing protection when working near large RPAs.

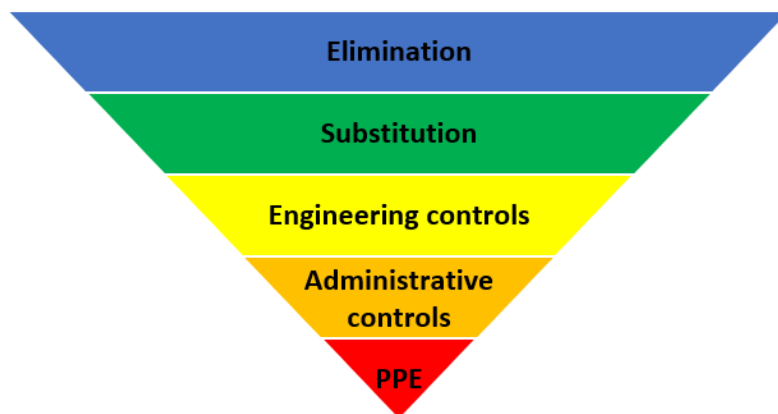


Figure 7. A graphical representation of this hierarchy of hazard controls

E.1.4 Existing controls and mitigations

These are the controls and mitigations which are already being applied to the risk. They will be the actions found in the documented practices and procedures of the RPAS organisation and the RPAS manufacturer. They may also be actions required by regulation.

An example of an existing control would be a requirement for an RPA to fly under 400 FT AGL to lower the risk of having a conflict with a manned aircraft. This is an existing legal requirement and thus is an existing control.

E.1.5 Additional controls and mitigations

These are the controls and mitigations which are applied in addition to existing controls and mitigations. They will not be documented in an operator or RPAS manufacturer's practices and procedures, nor can they be actions already required by regulation. However, they could be conditions on an issued instrument of approval.

An example of an additional control would be a requirement for the RPA to fly under the height of the nearby high-tension powerlines to further lower the risk of having a conflict with a manned aircraft. This requirement is over and above the existing legal requirement to fly under 400 FT AGL.

E.1.6 Level of risk level, quantifying likelihood and severity into a risk rating

The risk level is the assessed combination of two items: the likelihood of an event occurring and the consequence of that event.

E.1.7 Likelihood

Likelihood is nothing more than taking a situation and determining the probability of its occurrence. The probability is quantified into a value based on a likelihood matrix like the one below.

Table 28. Likelihood

Value	Likelihood	Meaning
5	Frequent	Likely to occur many times (has occurred frequently).
4	Occasional	Likely to occur sometimes (has occurred infrequently).

Value	Likelihood	Meaning
3	Remote	Unlikely to occur, but possible (has occurred rarely).
2	Improbable	Very unlikely to occur (not known to have occurred).
1	Extremely Improbable	Almost inconceivable that this event will occur.

E.1.8 Severity or consequence

The other item determining the level of risk is the severity or consequence. It can relate to cost (both monetary and reputational), injury and/or damage. The severity of consequence is quantified into a value based on a consequence matrix like the one below.

Table 29. Consequence values

Value	Consequence	Meaning
A	Catastrophic	<ul style="list-style-type: none"> Catastrophic incident. Fatality. Equipment destroyed. More than \$100,000 impact. Threatens the ongoing existence of the organisation.
B	Hazardous	<ul style="list-style-type: none"> Major incident. Serious injury. Major equipment damage. \$50,000 - \$100,000 impact. Major impact to the organisation's ability to provide services. A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely.
C	Moderate	<ul style="list-style-type: none"> Serious incident. Injury to persons. \$10,000 - \$50,000 impact. A significant reduction in safety margins, a reduction in the ability of the ReOC holder to cope with adverse operating conditions as a result of an increase in workload or as a result of conditions impairing their efficiency.
D	Minor	<ul style="list-style-type: none"> Nuisance. Minor injury. \$2,000 - \$10,000 impact. Operating limitations required. Use of emergency procedures to manage.
E	Negligible	<ul style="list-style-type: none"> Less than \$2,000 impact. Few consequences, managed through normal procedures.

The likelihood value and the consequence value are then combined in a matrix such as the one below to determine the risk rating which also provide the level of risk. This level of risk can then be reviewed to determine whether the risk will be accepted or whether additional controls and mitigation are required.

Table 30. Risk Rating

	Consequence				
	A	B	C	D	E
Likelihood	Catastrophic	Hazardous	Moderate	Minor	Negligible
5 Frequent	5A	5B	5C	5D	5E
4 Occasional	4A	4B	4C	4D	4E
3 Remote	3A	3B	3C	3D	3E
2 Improbable	2A	2B	2C	2D	2E
1 Extremely improbable	1A	1B	1C	1D	1E

Table 31. Risk level acceptance

Risk level	Acceptance level	Actions
High	CEO	Activity must be suspended. Risk considered unacceptable and requires new concept of operation.
Medium	Chief remote pilot	Risk should be mitigated to ALARP. Activity can continue only after acceptance from chief remote pilot or senior manager.
Low	Chief remote pilot	Risk is acceptable and activity may continue providing due consideration has been given to the activity.

The entire process must be documented in a risk assessment worksheet such as in the example below. Both the risks identified below are reduced to medium, but they might still be accepted by the CRP as they could be determined to have been reduced to ALARP (as low as reasonably practicable).

Table 32. Risk assessment worksheet

Hazard	Risk description	Existing controls	Initial risk			Additional controls	Residual risk		
			Likelihood	Consequence	Risk rating		Likelihood	Consequence	Risk rating
Manned aircraft	Conflict due to proximity of operation to hospital HLS - causing catastrophic incident	Operations manual documented practices and procedures for non-controlled ALA and HLS. Stakeholder management plan Radio	2 – Improbable	A – Catastrophic	2A – Medium	RPA to fly under the height of the nearby high-tension powerlines (35m / 114ft AGL)	1 – Extremely improbable	A – Catastrophic	1A – Medium
Fatigue	Failure to conduct a checklist correctly due to fatigue from temporary extended flight duty times-causing the loss of aircraft, <u>reputation</u> and job.	Operations manual documented practices and procedures for fatigue management Current RPAS checklists Current pre-flight briefing process	4 – Occasional	B – Hazardous	4B – High	Observer to confirm all checklists steps completed by RP. Add a fatigue check into the pre-flight brief. All RPs to have conducted re-training in all checklists prior to operation.	2 – Improbable	B – Hazardous	2B – Medium

Appendix F

Example lesson plans

F.1 Example 1

When practical lesson plans are being developed, note that it is not enough to simply cite the RePL training unit item behaviour and variables to be achieved. A detailed lesson plan is required which will ensure the training is consistent and standardised by documenting a suitable methodology for achieving the required competencies.

In this example, PI1 (Practical Initial 1) is a practical lesson conducted in the classroom. It covers unit items from RePL training unit RC2 - Energy reserves management for RPAS and RC4 - Navigation and operation, except unit item 1 (a). This is due to the requirement for item 1 (a) being to operate the RPA in compliance with the requirements relating to operating the RPA mentioned in Part 101 of the CASR and the MOS.

This is a classroom lesson where the students will be conducting operational planning, JSAs and RAs but will not be operating an RPA. As the requirement for the item 1 (a) is 'operate the RPA', it has been excluded from this lesson and will be covered during every training period in which a student conduct hands-on flight training.

The lesson would be reflected in a syllabus as represented in Table 1 below.

Table 33. Extract representing a single practical lesson or period of instruction from a RePL syllabus of training

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PI1	Pre-operational planning	RC4	Item 1 (b)
		RC2	Item 2, 3, 4, 5, 6 Item 1

Refer below for an example lesson plan for lesson PI1 - Practical Initial 1.

Example lesson plan for a practical lesson

ABC RPAS – RPAS Small Aeroplane Category - RePL Upgrade Course

Lesson Code: PI1 Lesson Name: Pre-operational planning

Location: Classroom 1 Duration: 120 minutes

Required Prior Knowledge: Lesson T1, T2, T3, T4, T5, T6, T7

Who can Teach:

- Chief RePL Instructor
- RePL Training Instructor

Lesson Activity:

- Exercise 1.2, 1.4, 1.5 and 1.6
- Summative Test: RPAS Flight Test

Formative Test: Exercise 1.6

Resources:

- Power Point lesson PI1
- Exercise 1.2, 1.4, 1.5 and 1.6
- JSA and RA template forms
- ABC RPAS' Operations Manual
- VNC, NAIPS, CASR, JSA Forms, BOM Website, ERSA
- Example CASA 3 NM approval instrument.

Files and File Locations:

- D:\Documents (Shared)\ReOC Share Files\5-RePL Course Documents\Lessons\PA1
- D:\Documents (Shared)\ReOC Share Files\5-RePL Course Documents\Exercises and Example Documents\PA1.

Associated Risk Assessment: General RePL Classroom Training Risk Assessment

Lesson Objectives:

- Aviation operational basics
- Acting in accordance with an RPA operator's documented practices and procedures
- Operations preparation and planning, including:
 - Flight navigation considerations and planning
 - Use of aeronautical charts
 - Fuel/energy planning
 - Use of ERSA
 - Conducting a JSA and a risk assessment.

Table 34. Example lesson body

Time	Instructor Activity	Student Activity	Resource
10	<p>Explain paragraph 101.370 of CASR relating to the operation of the RPA.</p> <p>Then, identify some of the relevant parts of ABC RPAS' documented practices and procedures relevant to 101.370.</p> <p>0.2 Distribution Control</p> <p>(RC4 Item 1 (b))</p>	As a class, read the RPAS Sample Operations Manual to find relevant passages to 101.370.	CASA RPAS Sample Operations Manual
10	<p>Assist the students in explaining the features of a visual navigation chart.</p> <p>(RC4 Item 4)</p>	<p>On a visual navigation chart, students must identify, without reference to the chart legend:</p> <ul style="list-style-type: none"> major features, including roads, rivers, lakes: <ul style="list-style-type: none"> obstacles, spot 	VNC

Time	Instructor Activity	Student Activity	Resource
		<p>heights, including elevation or height above terrain</p> <ul style="list-style-type: none"> ○ CTA, CTR, PRDs and aerodrome information ○ secondary controlled aerodromes ○ identify airspace boundaries and symbols ○ interpret other symbols with reference to the chart legend. 	
20	<p>Describe and explain the following points and then guide the students through exercise 1.2</p> <p>Point out the approach and departure paths and movement areas on:</p> <ul style="list-style-type: none"> • Single RWY AD • Multi RWY AD • HLS. <p>6. Ask students to explain the significance of track and ground speed in relation to an operation of the RPA.</p> <p>Ask students to explain the relevance of height, altitude and elevation in relation to different circumstances in which the RPA is operated.</p> <p>(RC4 Item 3)</p>	<p>Students must interpret a map or chart in relation to a proposed RPA operation and work out its implications for the operation. The following must be identified:</p> <ul style="list-style-type: none"> • AD movement areas • AD approach and departure paths • Operating altitude AGL, time for climb and descent • Operating altitude AMSL and airspace • The required flight distance from launch area and estimated time of travel • Obstacles within the area of operations. 	<p>Exercise 1.2</p> <p>(A scenario for an RPAS op near an aerodrome with several planning questions. Includes charts, images)</p>
15	<p>Describe and explain the following points and guide the students through exercise 1.4:</p> <ul style="list-style-type: none"> • Describe different traffic patterns of manned aircraft at aerodromes: • Uncontrolled AD • Controlled AD • Describe suitable vertical and horizontal separation distances between the RPA and other aircraft. • Describe responses and preventative actions to maintain the safety of the 	<p>Students must describe suitable vertical and horizontal separation distances for an example scenario.</p> <p>Students must describe how they would respond when given an example scenario of an interaction with manned aircraft near an aerodrome.</p> <p>Students must describe the correct preventative actions to maintain safety during the scenario.</p>	<p>Exercise 1.4</p> <p>(A scenario discussion for the same RPAS op near an aerodrome from exercise 1.2. Includes charts, images and a completed JSA for the operation).</p>

Time	Instructor Activity	Student Activity	Resource
	<p>operation during interactions with manned aircraft near aerodromes.</p> <ul style="list-style-type: none"> Explain when an incident or accident report must be submitted in relation to an operation of the RPA: <ul style="list-style-type: none"> Incident Serious incident Accident. <p>(RC4 Item 2)</p>	<p>Students must identify whether an example event is an Incident, Serious incident or Accident.</p>	
10	<p>Describe the ERSA and guide the students through exercise 1.5.</p> <p>(RC4 Item 5).</p>	<p>Students will use the ERSA to extract information to complete exercise 1.5.</p> <p>They must extract:</p> <ul style="list-style-type: none"> information for a particular aerodrome and airspace information and data about PRD areas. 	<p>Exercise P1.5</p> <p>(Several questions regarding an aerodrome. Uses the ERSA and a VNC).</p>
5	<p>Describe the “fly neighbourly” areas.</p> <p>“An FNA is a voluntary agreement under which aircraft operators agree to operate in an agreed manner which might include limits on operating heights, the frequency of operations and areas of operation. The nature, scope and terms of an agreement are matters for the parties to the agreement to determine. Arrangements for monitoring of and compliance with the agreement are also matters for the parties involved.”</p> <p>(RC4 Item 6(d))</p>		
5	<p>Describe environmental protection considerations.</p> <p>“RPA operators wanting to fly over conservation land and national parks have to get an approval from the relevant authority, because it has been recognised drones cause a disturbance to wildlife. If such an approval is requested, the operator will need to plan the operation in such a way as to not cause a disturbance to wildlife.”</p>		

Time	Instructor Activity	Student Activity	Resource
	<p>Considerations for such an approval could include:</p> <ul style="list-style-type: none"> • Birds • Marine mammals • People • Protected animals.” <p>“Other considerations:</p> <ul style="list-style-type: none"> • Fire due to battery issues or RPAS failure • Damage of vegetation from crew or equipment.” <p>(RC4 Item 6 (d))</p>		
50	<p>Guide the students through exercise 1.6</p> <p>(RC2 Item 1) (RC4 Item 6)</p>	<p>Students must:</p> <ul style="list-style-type: none"> • identify the operational documentation required for a planned operation: <ul style="list-style-type: none"> ○ JSA, RA and Authorisation Form ○ visual navigation chart ○ NOTAM ○ ERSA <p>Weather forecast:</p> <ul style="list-style-type: none"> • plan an RPA operation using the JSA form • work out the duration of the flight taking into account operational environment and relevant abnormal or emergency conditions, contingencies • calculate or identify the endurance for the RPA with designated reserve • decide whether to carry out the operation or not • read and interpret a local weather forecast, and then an aeronautical weather forecast to determine whether it would still be suitable to operate the RPA for the operation given the forecast • as per the example 	<p>Exercise P1.6 (A scenario for an RPAS op near an aerodrome. Includes:</p> <ul style="list-style-type: none"> • Blank JSA form • Blank RA form • Blank Authorisation Form • CASA 3 NM approval instrument • Images of the AD • Uses: <ul style="list-style-type: none"> ○ VNC ○ NAIPS (NOTAM) ○ NAIPS (aeronautical weather forecast) ○ Weather forecast ○ ERSA ○ NOTAM application form and guide).

Time	Instructor Activity	Student Activity	Resource
		CASA 3 NM approval instrument, simulate obtaining and complying with ATC clearances.	

APPROVED BY CHIEF RePL INSTRUCTOR

Name: Joe Bloggs

Signature: 

Date: 01/01/2023

NEXT REVIEW BY CHIEF REPL INSTRUCTOR

Due: 01/01/2024

F.2 Example 2

A theory lesson plan describes how the learning outcomes will be achieved. This is similar to a lesson covering practical competencies which must indicate how an instructor will conduct the lesson to achieve those competencies. However, most theory lessons are conducted using a presentation which provides a clear delivery structure and the lesson content. This means if the lesson presentation is well made, the lesson plan will require less detailed instructions for the instructor. If other documents or teaching aids are used within the lesson, they need only be referenced in the lesson plan with a description of how they are to be used.

In this example, the airspace, charts and aeronautical publications lesson is delivered by an instructor in a classroom using a power point presentation. A training manual, reference charts and publications are used as additional references and training aids. This lesson would be documented in the syllabus as seen here:

Table 35. Extract representing a single theory lesson or period of instruction from a RePL syllabus of training

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
T2	Airspace, charts and aeronautical publications	RACP	All Items included

See below for an example lesson plan for lesson T2 using an alternate template.

Prior Lesson Preparation

- Review PowerPoint slide show:
 - D:\Documents (Shared)\ReOC Share Files\5-RePL Course Documents\Lessons\T2
- Prepare classroom and training aids:
 - Course RePL training manual
 - reference charts and publications
- Prepare revision questions

Table 36. Example lesson delivery

Training Structure and Aids	Face to Face	Online (Reserved)
Structure	The instructor is to conduct the lesson as per the PowerPoint presentation, referencing further information from the RePL Training Manual, VTCs, VNCs, ERC Lows and NOTAMs.	
Other resources	Student RePL training manual, White board, AIP, CASR, Part 101 MOS, CASA RPAS Sample Operations Manual.	

Lesson stages

Introduction:

- Attendance and safety brief
- Lesson aim:

The aim of this lesson is for all remote pilots to have an understanding of Airspace, charts and aeronautical publications. Understanding charts, maps and the airspace and terrain represented there will be necessary for planning and identifying the risks relevant to an RPAS operation.

Objectives:

By the end of this lesson you will be able to:

1. Identify and understand the differences in airspace
2. Understand how to obtain aeronautical information or an approval
3. Access, read and submit NOTAMs
4. Read and understand aeronautical charts and maps

Conclusion:

- Clear up final questions
- Conduct confirmatory questioning (see PowerPoint slideshow T1)
- Summarise key points (lesson aim)

F.3 Example 3

Below is an example lesson plan for a PM1 (Practical Multirotor 1) Multirotor - control on ground, launch, hover and landing. This lesson covers the first flight undertaken by a student on the course. The lesson covers RePL training unit RC1 in addition to RM1 item 1, 2, 3 (a) and RM2 item 1 (a-b). This lesson would be documented in a syllabus as seen here:

Table 37. PM1 syllabus extract

Lesson Code	Lesson Name	RePL Unit Code	RePL Unit Items
PM1	Multirotor - control on ground, launch, hover and landing	RC1	All items included
		RM1	Item 1, 2, 3(a)
		RM2	Item 1(a-b)

The lesson gives the student a chance to operate the RPA for the first time (during the course) under the close supervision of the instructor and it gives the instructor a chance to assess the student's skill level. Further practice of the manoeuvres described could be directed by the instructor as required.

See below for an example lesson plan for lesson PM1.

Table 38. PM1 multirotor - control on ground, launch, hover and landing lesson plan

Plan Section	Description
Lesson Type	Practical Flight Area
Instructor Requirement	RePL Instructor
Required Prior knowledge	T1 - Basic aviation knowledge T2 - Airspace, charts and aeronautical publications T3 - Basic meteorology T6 - Operations and procedures basics T10 - Multirotor knowledge and operation principles
Subjects Covered	Pre-operation actions and procedures Control the RPA on ground, launch, hover and landing Control the RPA using basic manoeuvres Post-operation actions and procedures
Prior Lesson Preparation	Review lesson Flight Auth, JSA and RA D:\Documents (Shared)\ReOC Share Files\5-RePL Course Documents\Lessons\PM1 Prepare RPAS and batteries 4xPhantom 3 and maintenance records 8xPhantom 3 smart batteries 4xPhantom 3 controller Prepare other equipment

Plan Section	Description
	<p>30xHigh vis cones</p> <p>One high vis vest per student</p> <p>2xRPAS in operation signs</p> <p>Medical kit</p> <p>Aeronautical maps and charts</p> <p>Radio</p>
Lesson layout	<p>Face to face: 3 10x10m training squares, See training diagram.</p> <p>Online (reserved): N/A</p>
Resources	<p>Face to face: Phantom 3 operational checklist, Flight auth, JSA, RA, NOTAM, Weather forecast, TAF, METAR, Sample Area Approval.</p> <p>Online (reserved): N/A</p>
Lesson stages	<p>1. Introduction:</p> <p>Attendance and safety brief</p> <p>Lesson aim: The aim of this lesson is for all remote pilots to gain the skills to launch and recover the RPA, as well as conduct basic manoeuvres. These skills will be the bedrock on which you will further develop your proficiency operating RPA.</p> <p>2. Objectives:</p> <p>By the end of this lesson the student will be able to:</p> <ul style="list-style-type: none"> • Validate pre-operational planning documents • Conduct pre-flight • Conduct engines start and launch the RPA • Conduct basic RPA manoeuvres • Land the RPA and conduct engines stop • Conduct post-flight
Delivery	<p>To be run concurrently with 3 students flying under supervision. Stages 2, 4 and 5 are to be conducted using a demonstration, talk-through practice, and confirmation practice technique.</p> <p>Instructor to use one of the students RPA for the demonstration phase and conduct proper handover takeover when handing back or taking control. Up to 2 other students can observe.</p> <p>1. Pre-operation actions</p> <p>Get the students to discuss and explain LandR site considerations. (RC1-Item 1)</p>

Plan Section	Description
	<p>Get the students to review and validate the instructors Flight Auth, JSA, RA, sample area approval and identify possible issues preventing the operation. (RC1-Item2(a-b))</p> <p>Get students to review RPAS maintenance documentation and confirm the RPA is serviceable. (RC1-Item2(c-d))</p> <p>2. Set up RPA in flight area and conduct pre-flight inspection.</p> <p>Set up the RPA IAW the manufactures checklist and complete pre-op inspection. (RC1-Item3(a-d), Item4)</p> <p>3. Instructor to give pre-flight brief.</p> <p>4. Perform RPAS manoeuvres:</p> <p>Engine start (RC1-Item3(e))</p> <p>Demonstrate control of the RPA on the ground. (RM1-Item1)</p> <p>Launch 2 m vertically and hover.</p> <p>Conduct post-launch checks. (RM1-Item2(a))</p> <p>With GPS hold active:</p> <ul style="list-style-type: none"> • Pirouette – 360° clockwise, 360o counter-clockwise. (RM1-Item2(b)) • Pirouette – 90o right, 180o left, 90o right. <p>Maintaining nose out, Fly 20 m forward, hover over cone. Return tail first. (RM2-Item1(a))</p> <p>Fly a vertical rectangle, 5 m high and 20 m wide, with clockwise and counter-clockwise 360-degree pirouettes at each alternate corner. (RM2-Item1(b))</p> <p>Return to launch point.</p> <p>With GPS hold off:</p> <ul style="list-style-type: none"> • Demonstrate how the RPA performs without GPS hold including wind drift. • Students to hold position over the cone. • Turn GPS hold back on. • Landing. • Recover the RPA manually from a height of 10m. (RM1-Item3(a)) • Conduct engine shut down. (RC1-Item5(a)) <p>5. Post-flight</p> <p>Conduct post-flight, post operation and disassembly actions IAW with checklists. (RC1-Item5(b-d))</p> <p>6. Instructor to debrief students.</p> <p>7. If any students are not yet competent, retrain the student individually.</p>

Plan Section	Description
Student to demonstrate	<p>Ability to understand and follow directions.</p> <p>Stable hover over the cone and post-launch checks completed in accordance with checklist.</p> <p>Complete full circles and stop within 20o of required point.</p> <p>Stop and hover within 1.5 m of the cone.</p> <p>GPS hold on and off.</p> <p>Stable landing on designated spot with no bouncing or damage.</p> <p>All activities are performed in accordance with checklists.</p>
Conclusion	<p>Clear up final questions</p> <p>Conduct debrief on lesson objectives</p> <p>Summarise key points</p>

Appendix G

Theoretical knowledge sample examination questions

G.1 Theoretical knowledge sample examination questions

Question 1

The authority and their contact details for a specific danger area or restricted area can be found listed in which document?

- a. The En Route Supplement Australia (ERSA)
- b. In the VTC/VNC chart Legend
- c. The Designated Airspace Handbook (DAH)
- d. The AIP Supplements (SUP) or Aeronautical Information Circulars (AIC).

Question 2

Define parasitic drag?

- a. It is drag which is comprised of all the forces that work to slow an aircraft's movement with the increase of airspeed and is not associated with the production of lift.
- d. It is drag which is inherent whenever an airfoil is producing lift and, in fact, this type of drag is inseparable from the production of lift.
- e. It is drag which is created by the downwash and vortices which form around a wing tip or rotor blade.
- f. It is drag caused by formation of shock waves which can result in extreme drag on the body of an aircraft. Although these shock waves are typically associated with supersonic flow, they can form at subsonic aircraft speeds on areas of the body where local airflow accelerates to supersonic speed.

Question 3

Latitude is a geographic coordinate that specifies what?

- a. The North–South position of a point on the Earth's surface.
- b. The North–West position of a point on the Earth's surface.
- c. The East–South position of a point on the Earth's surface.
- d. The East–West position of a point on the Earth's surface.



Figure 8. Melbourne VNC – 1

Question 4

What is the height of the wind turbines North-East of Lake Buninjon?

Draw the required information to answer the question from Melbourne VNC – 1:

- a. 493 ft AGL
- b. 1713 ft AMSL
- c. 1724 ft AGL
- d. 493 ft AMSL

Question 5

Paul is operating an RPA at a height of 300 ft over the highest point of Mount Welton which has an elevation of 600 ft. When Paul hears a manned aircraft reporting its position and altitude over the radio in close vicinity to Paul at 1200 ft, he reports back with his RPA's position and altitude. What is the altitude of Paul's RPA?

- a. 300 ft AGL
- b. 600 ft AMSL
- c. 900 ft AMSL
- d. 1200 ft AMSL

Table 39. Sample flight test form

ABC RPAS RePL multirotor flight test	
Student Name	Student ARN
Course No.	Assessment Date:

ABC RPAS RePL multirotor flight test

RPAS - Category, Type (MTOW), Model

This cover sheet is to be completed by the student and assessor and filed as a record of the assessment for a minimum of 7 years.

You will be asked to conduct a series of tasks and specific manoeuvres with the RPA. These are to be conducted within set tolerances, and by remaining in safe positive control of the RPA at all times. Direction on how a manoeuvre is to be performed will be in respect of the direction you are facing, not the current RPA heading. The flight assessment will be conducted in all flight modes available to the RPAS. The instructor will state what mode is required for each manoeuvre.

Grading: Assessed as competent / not yet competent via a scoring system

3 - Ability to perform manoeuvre with skill and precision and without error

2 - Competent to complete the exercise requested with minor error/s

1 - Completes exercise with difficulty, but within tolerance for that manoeuvre

0 - Not competent to perform the requested manoeuvre within tolerance /did not maintain positive safe control of the RPA or moved into a specified no fly zone.

If a zero (0) results from any manoeuvre, the flight assessment will continue unless the zero (0) score is due to loss of positive control of the RPA and the assessor identifies an undesirable state will occur should the assessment continue.

Should you feel you have made an error during the assessment or have had to correct the RPA to prevent an event from occurring, inform the assessor of the error and re-perform the requested manoeuvre.

You will be the RPIC and you are to be responsible for compliance with all applicable rules and laws, e.g. - 30m people. During the RPAS flight assessment, should you feel that a requested manoeuvre is not safe to conduct, inform your assessor, this won't constitute a failure.

At the completion of the assessment, you will be provided with a de-brief of the assessment and result.

Assessment Results

Satisfactory or Not Yet Satisfactory

(Please circle the assessment result for this task)

Feedback to Student - General feedback on the student's knowledge and performance

ABC RPAS RePL multirotor flight test**Field Setup and Examiner Instructions**

Set up the exercise markers as per **FIG 1**.

Set up the operation zone markers as per **FIG 1** (may use more than 4 cones).

The examiner and applicant should aim to stay inside the Pilot Box during exercises.

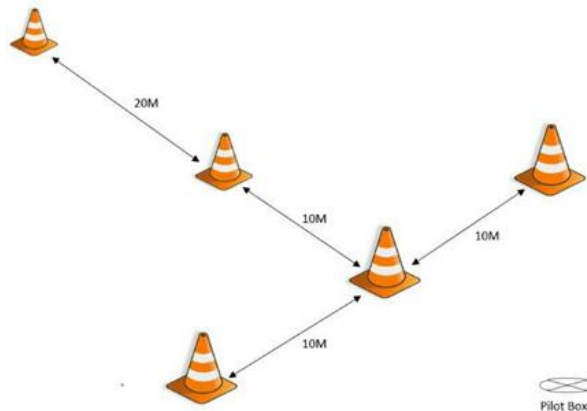
Adequate separation is required to ensure the safety of the remote pilot and examiner.

The distance between the Pilot Box and the operating zone should increase with increasing RPA mass, speed and prevailing weather, and it is at the examiner's discretion to set this distance. The minimum separations are as follows (where A = the distance from the middle of the Pilot Box to the edge of the operating zone – see **FIG 2**).

<7KG	A= 15 m
7 - 25 KG	A= 20 m
25 - 80 KG	A= 30 m
> 80 KG	A= 30 m + Shielding Available

Take the following factors into consideration and plan the setup of markers accordingly:

- The sun is not in the examiner/remote pilot's eyes
- The operating zone is downwind of the Pilot Box
- The examiner can stand to the side and slightly behind the pilot so as not to impede the remote pilot's view of the RPA

**FIG 1**

ABC RPAS RePL multirotor flight test

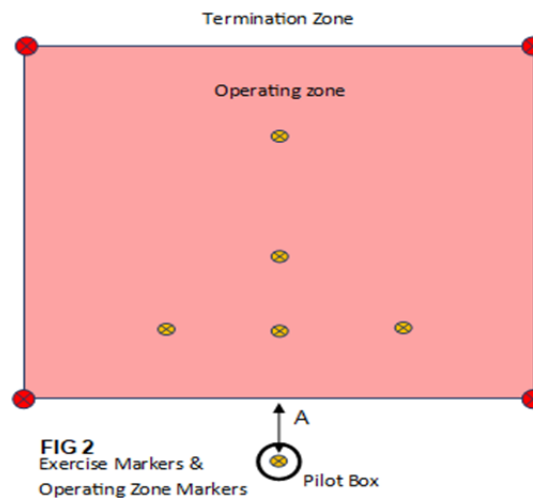


FIG 2

Table 40. Grading checklist

Note: If the RPA is not capable of performing a particular exercise, the examiner shall not request it be performed and will mark N/A in the competency column.

Task	Grading	N/A
1. Prior to Setup		
Planning and JSA: <ul style="list-style-type: none"> The Remote Pilot must flight plan and complete a JSA for a theoretical operation, relevant to the type of operations that the candidate will undertake when licensed, in accordance with an operational scenario provided by the examiner. 		
<ul style="list-style-type: none"> The JSA addresses the safety of the operation; identifies safety risks arising from the operation; and has formulated risk mitigation measures for the operation, including a risk management plan. 		
<ul style="list-style-type: none"> The flight plan identifies the amount of energy required and available for each flight stage, including reserves. 		
<ul style="list-style-type: none"> Autoflight systems (If applicable) 		
<ul style="list-style-type: none"> The Remote Pilot must program and load into the RPAS, a flight plan to be conducted in the automated flight mode. 		
<ul style="list-style-type: none"> The examiner should look for, familiarisation with the flight planning software and flight mode. 		

Task	Grading	N/A
2. Theoretical knowledge Note: The examiner must ask the Remote Pilot the following questions. These questions can be asked throughout the flight test.		
Give me an overview of the RPA and ground station (the RPAS) functions and features: <ul style="list-style-type: none"> Different types of flight modes 		
What are the RPA's operating limitations? <ul style="list-style-type: none"> Weight and balance limitations Weather limitations Performance limitations 		
Show me on the RPA where the following are (if applicable): <ul style="list-style-type: none"> Rotors/engines Control surfaces Antenna/transmitter Atmospheric Pressure Sensor Status lights 		
On the controller, show me (as applicable): <ul style="list-style-type: none"> On / Off switch Return to home button Switch between flight modes How to shut the motor(s) down in flight. Location of in-flight data 		
How do you know you have a GPS fix / home position yet?		
Where can the normal, abnormal and emergency flight procedures be found for this RPAS?		
When would you calibrate the compass and how?		
What is the energy source for this RPA and what are some of the considerations for its use?		
Give me an overview of the limitations of a RePL: <ul style="list-style-type: none"> Ratings – Categories and Types Conditions 		
How do drug and alcohol rules apply to Remote Pilots?		
3. Pre-flight		

Task	Grading	N/A
Assembly: <ul style="list-style-type: none"> The Remote Pilot must assemble and prepare the RPA and ground station for flight, then conduct the first flight of day inspection: <ul style="list-style-type: none"> The examiner should verify the Remote Pilot checks that payloads are correctly attached and suitable for the RPA The examiner should verify the Remote Pilot is following a checklist or manual specific to this process. The examiner should look for, familiarisation with equipment to successfully assemble the system - dexterity with equipment / tooling. 		
Pre-flight brief: <ul style="list-style-type: none"> The Remote Pilot must conduct a pre-flight brief: Assume a full crew/team will be available and assume the examiner is an informed participant requiring briefing. The examiner should verify that the Remote Pilot communicates effectively with simulated crew and bystanders informing them of their roles and responsibilities in the operation. 		
4. Operation		
Lift off and hover: <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to conduct a controlled ascent and decent with minimal drift, maintain a stable hover with and without GPS hold and then land the RPA. <ul style="list-style-type: none"> The Remote Pilot must start engines/motors and ready aircraft for lift-off. The Remote Pilot must lift off to 2M altitude and hover for 10 seconds. The Remote Pilot must switch off GPS and continue to hover for 10 seconds while holding the aircraft stationary. The Remote Pilot must land with GPS off or on while demonstrating a cross- or tail-wind landing technique. 		
Half and quarter pirouette: <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to conduct a three-point pirouette while simultaneously climbing and descending. <ul style="list-style-type: none"> The Remote Pilot must lift off and climb to a height of 5 m, then descend and land the RPA. While climbing and descending the Remote Pilot must simultaneously turn (yaw) the RPA 90 degrees left or right, then turn the opposite direction 180 degrees, then turn back 90 degrees to the original orientation. 		
Fly out and back: <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to fly straight out for 10 m, establish a hover and then return. <ul style="list-style-type: none"> The Remote Pilot must lift-off to height of 2 m and establish stable hover. The Remote Pilot must fly straight out for 10 m (over cone) and establish a stable hover. The Remote Pilot must return tail first, re-establish a hover and the land on the lift-off spot. The Remote Pilot must repeat above with GPS hold off. 		

Task	Grading	N/A
<p>Figure 8:</p> <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to conduct a figure of 8 maneuverer. The Remote Pilot should conduct 2-3 figure 8s before landing to demonstrate competency. <ul style="list-style-type: none"> The Remote Pilot must lift-off to height of 5 m, establish stable hover, turn left or right 90 degrees fly 10 m at a constant height. without stopping, turn outward 180 degrees and fly back over the launch point and then on for a further 10 m. without stopping, turn outward 180 degrees again and then fly back to launch point. turn outwards (tail towards pilot) hover and land. 		
<p>Vertical rectangle:</p> <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to conduct a 10 m-by-10m vertical rectangle <ul style="list-style-type: none"> The Remote Pilot must lift-off to height of 2 m and move to establish a hover over the left or right exercise cone. Maintaining nose out orientation, climb to a height of 10 m and then move horizontally 10 m to the left or right cone. Maintaining smooth movement, descend to a 2 m height over the cone and then move horizontally back to the original cone and establish a hover and land. 		
<p>Changes batteries:</p> <ul style="list-style-type: none"> The Remote Pilot must demonstrate the process to replace the RPA's battery. <ul style="list-style-type: none"> The Remote Pilot must change the batteries before they reach the reserve limits. 		
<p>Autoflight systems:</p> <ul style="list-style-type: none"> As directed by the examiner, and with concise and correct inputs the Remote Pilots is to command the RPA to conduct an automated flight profile. <ul style="list-style-type: none"> The Remote Pilot is to enter into and exit an automated flight mode. The Remote Pilot is to demonstrate an understanding of the actions to be followed in the case of degraded flight or an emergency while in an automated flight mode. 		
<p>Typical complex task:</p> <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to conduct a maneuverer chosen by the examiner. <ul style="list-style-type: none"> The examiner should choose a maneuverer which is relevant to what the Remote Pilot will be doing when qualified, using all available control method/s, radio procedures where applicable. 		
<p>Retain control and orientation at distance.</p> <ul style="list-style-type: none"> With concise and correct control inputs the Remote Pilots is to command the RPA to move a certain distance away from themselves and then return. <ul style="list-style-type: none"> The Remote Pilot must lift-off to height of 2 m and move to establish a hover at a point and distance nominated by the examiner (approximately 50 m away). From this position and without GPS hold, the Remote Pilot must fly the RPA back to the take-off position facing in the direction of movement. and land. 		

Task	Grading	N/A
<p>Safe termination of flight</p> <ul style="list-style-type: none"> The Remote Pilot is to demonstrate the RPA's various emergency and degraded flight modes including the return to home mode (where applicable). <ul style="list-style-type: none"> The Remote Pilot should demonstrate how to activate the various emergency and degraded flight modes. The Remote Pilot should enter the return to home flight mode, exiting the mode prior to landing and when safe to do so and then land the RPA. 		
5. Post flight		
<p>Disassembly and Post flight</p> <ul style="list-style-type: none"> The Remote Pilot must disassemble the RPA and ground station, then conduct all post flight inspections and procedures. <ul style="list-style-type: none"> The examiner should verify the Remote Pilot checks that payloads are correctly handled during post flight (where appropriate). The examiner should verify the Remote Pilot is following a checklist or manual specific to this process. The examiner should look for, familiarisation with equipment to successfully assemble the system - dexterity with equipment / tooling. 		

Assessor comments: