Australian Government
Civil Aviation Safety Authority

SUMMARY OF CONSULTATION

Part 101 (Unmanned aircraft and rockets) Manual of Standards 2018

Part 101 Manual of Standards Instrument 2018

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Overview

CASA published the Consultation Document — Proposed Part 101 (Unmanned aircraft and rockets) Manual of Standards 2018 (CD 1807US) — on the CASA Consultation Hub from 24 September to 18 November 2018. This consultation survey invited industry and the public to comment on the proposed changes to the initial Part 101 Manual of Standards (MOS).

The proposed MOS was developed by CASA and reviewed by an industry Technical Working Group prior to its release for public consultation.

The discussion in this report is a summary of the main themes that emerged in a review of the responses.

Respondents

We received a total of 270 submissions, of which 72% of respondents consented to having their comments published on the CASA website.

Main respondent groups included RPA Operator Certificate holders (76), Remote Pilot Licence holders (63), recreational model flyers (49), Excluded RPA operators (24) and ten responses from conventional aviation industry participants.

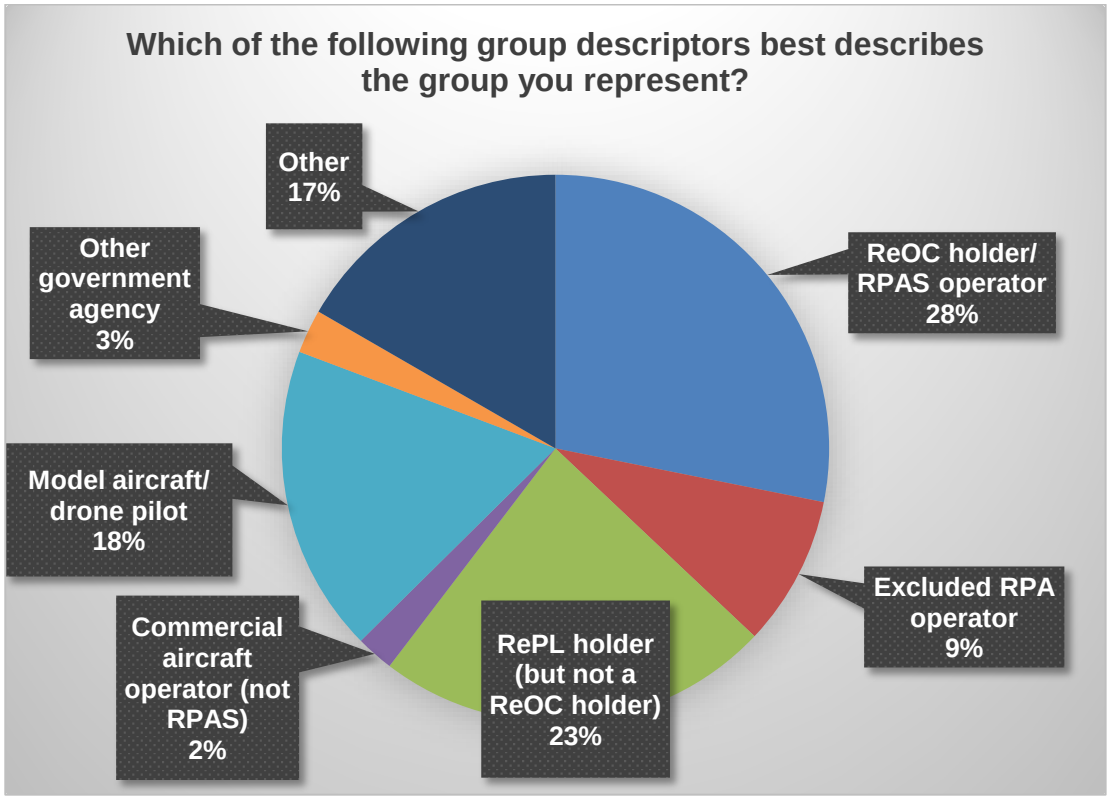

Figure 1: Pie chart showing breakdown of respondents

Key feedback

Quantitative data

A summary report of the quantitative responses to the survey is appended to this document. Overall, respondents were positive in supporting the direction CASA is taking with the training, airspace and recordkeeping provisions in the draft Manual of Standards (MOS); those in favour ranging from more than 10:1 of relevant responses, for well-supported proposals, to around 5:1 of relevant respondents for lesser-supported proposals. It should be noted that, typically, 30-40% of respondents either chose not to respond to a particular question or considered it to be beyond their area of expertise. This may be reflective of the fact that the proposed MOS covers a broad range of topics and not all respondents were themselves fully informed or had an interest in all topics.

Qualitative responses and CASA dispositions

In general, comments to MOS questions were from people who disagreed with the proposal or who 'agreed with changes'. The following summaries express some respondents' suggestions and concerns, and CASA's response to that feedback. It should be noted that all comments from respondents were considered in developing CASA's dispositions to the responses in respect of the various questions in the survey.

Aeronautical knowledge syllabus

Despite more than 85% of survey respondents[1] agreeing that CASA should limit new RePL holders to RPA with a maximum gross weight of 7 kg (unless they demonstrate the competencies on an aircraft above that weight) a number of people commented that the aeronautical knowledge syllabus was too detailed and lacked relevance in places, particularly for remote pilots who were planning to carry out relatively simple operations.

In developing the syllabus, CASA was particularly concerned with feedback from the industry consultative group, and its own inspectorate, that the present syllabus needed to be improved and updated to ensure it remains relevant to the current and future RPAS industry.

CASA is also aware that the increasing sophistication of RPAS at the entry-level end of the market means that many simple, low-risk operations can be carried out in the sub-2 kg Excluded RPA category. An accreditation scheme is being developed for Excluded RPA operations, likely to come into effect in the latter half of 2019. The option for a 'RePL lite' course would create a complex accreditation/licensing structure. Moreover, a review of the proposed syllabus found little that could be left out, so a 'lite' course would not differ much to the full course and the saving in course delivery time would be minimal. However, CASA has made some amendments to the draft syllabus based on comments on the detail of the aeronautical knowledge and practical competency syllabi.

With these considerations in mind, CASA has decided that it will proceed with the draft syllabi, with a limit on new remote pilot licence holders to RPA of 7 kg maximum gross weight rather than developing a separate, simpler course.

[1] Excluding those who either did not answer the question or responded 'not my area of expertise'.

CASA has made changes to the draft examination requirements based on comments from respondents, including:

- allowing for an open-book exam
- increasing the time available to complete the exam
- allowing a second re-sit of the exam before having to repeat the course
- increasing the pass mark to be more in line with other aviation exams and to reduce the Knowledge Deficiency Report (KDR) process
- reducing the time a person can claim credit for exam passes to 3 years
- sundry changes to the detail of aeronautical knowledge and practical units.

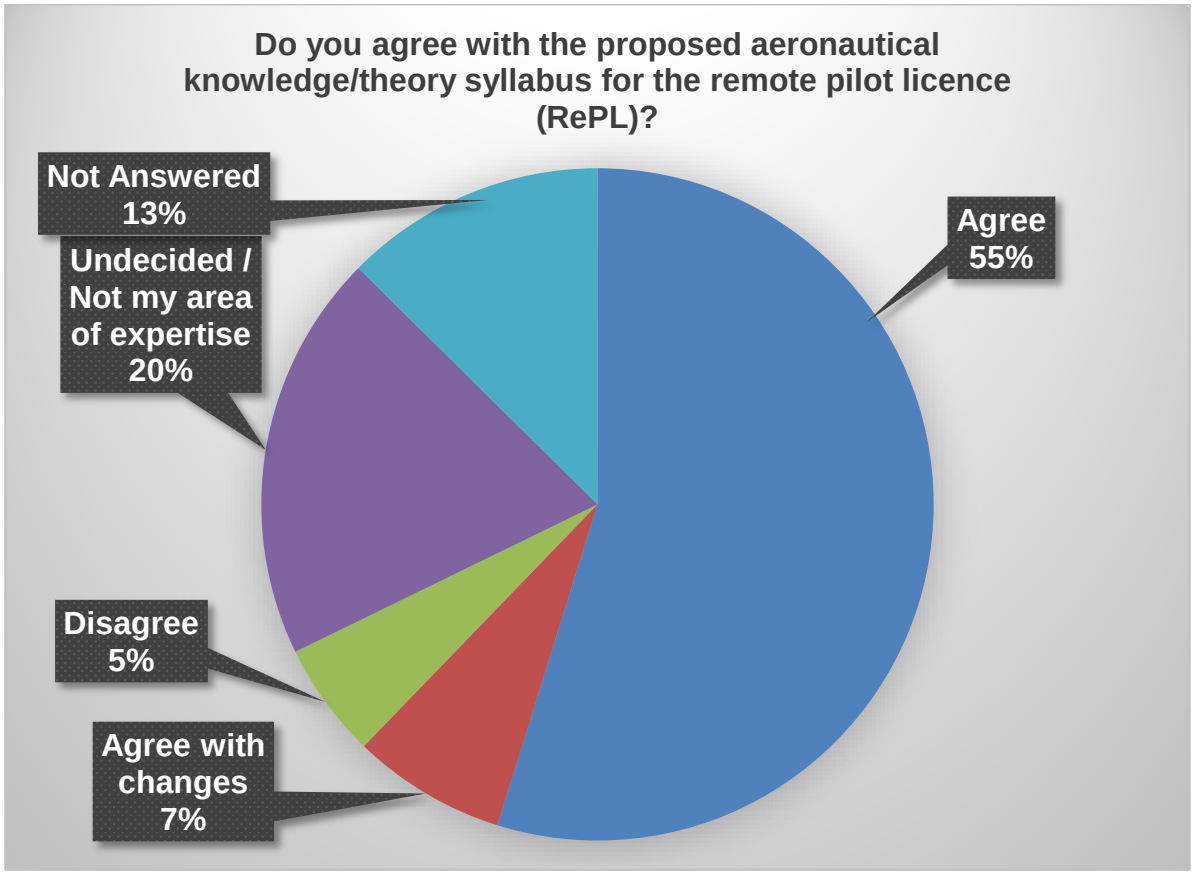

Figure 2: Pie chart showing breakdown of responses for proposed aeronautical knowledge/theory syllabus for RePL

Practical competency syllabus

A number of comments about the practicality and relevance of practical competency items have been considered and, where CASA agrees with the input the matters have been amended or deleted. In some cases, particularly for emergency manoeuvres, the option for simulations has been substituted for a full demonstration.

The syllabus now includes more of a focus on planning and practical considerations beyond simply controlling the aircraft in various phases of flight, including understanding degraded modes of automation.

The concepts of 'manual' and 'automated' modes have also been made clearer.

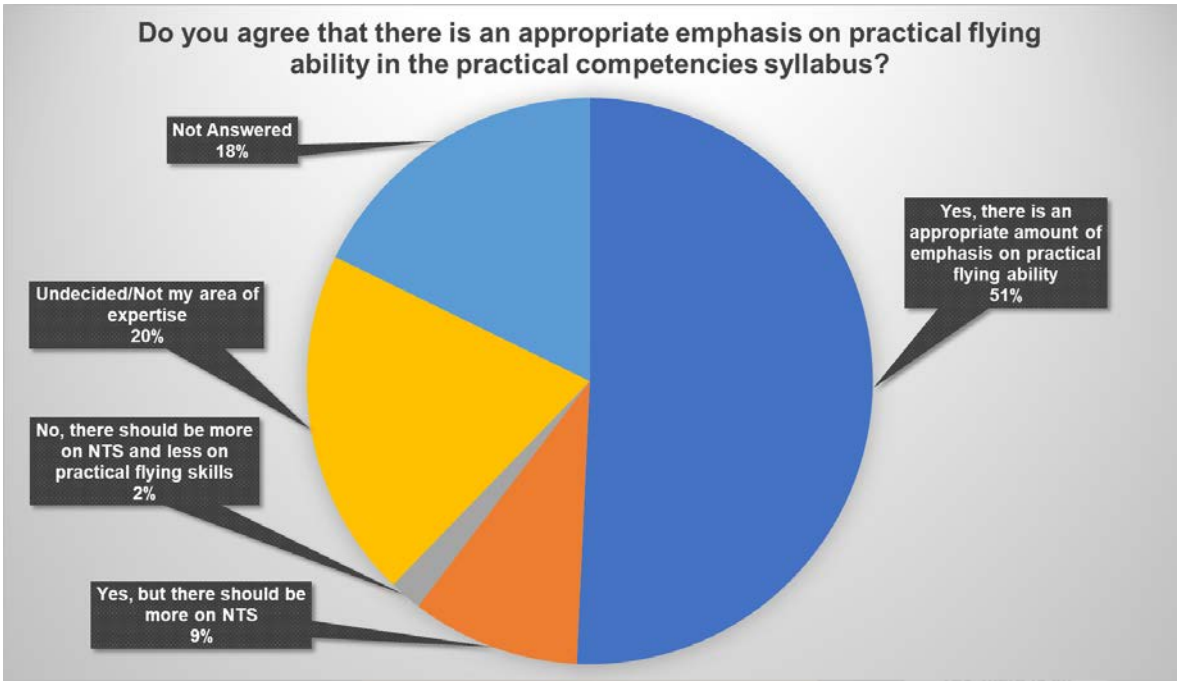

Figure 3: Pie chart showing breakdown of responses for emphasis on practical flying ability

Respondents were split on whether or not a trial introductory flight (TIF) in a conventionally piloted aircraft should form part of the syllabus. Some thought that it would provide some valuable experience with respect to conventionally piloted operations, but many also thought that it was not relevant, would be ineffective in achieving the goals and would be unnecessarily costly. It was also thought that simulations can provide better outcomes than a real TIF. CASA's disposition is to not include this as part of the syllabus of training for a remote pilot licence.

Some minor changes were made to the flight test schedules, including adding a planning and risk assessment requirement.

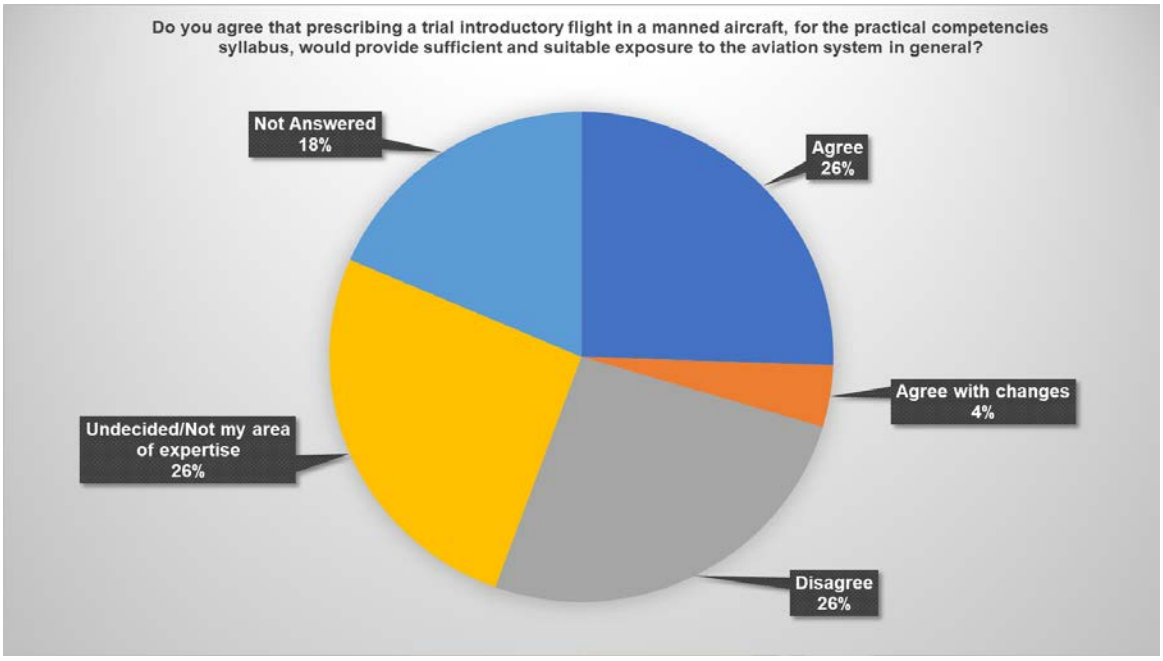

Figure 4: Pie chart showing breakdown of responses for TIF

Upgrading a RePL

Comments generally indicated that five years was too long for exam credits for applicants for an upgraded RePL, and this will be reduced to 3 years for those who cannot show ongoing industry involvement. The credit period for those who can show ongoing professional involvement will remain at 5 years.

RePL holders with a 7 kg limit on their licence will be able to get the condition removed by undergoing short practical training either with a RPAS training organisation or a regular ReOC holder who is approved for this purpose. Although there was support for regular ReOC holders to provide training in a new category of RPA (< 25 kg), comments supported, and CASA's disposition is, to retain the requirement for a training organisation to deliver this training. Manufacturers with specialised aircraft will continue to need approval as an RPAS training organisation or have an arrangement with an approved training organisation.

CASA is also of the view that gaining or upgrading a RePL to fly any medium or large RPA should be done by specialist trainers on the particular kind of RPA and will continue to require applicants to complete training with an approved RPAS training organisation.

Requirements for RPAS training schools

In general, respondents to the questions around requirements for training schools agreed that there should be some alleviation from the student ratio numbers for aeronautical knowledge courses where the organisation can show high quality instructor qualifications and experience and suitable structures and processes to support increased numbers.

There were various views about the standard for mandated contact time between instructors and students for the aeronautical knowledge syllabus. Some felt that there was not enough, while others thought it too much. CASA is disposed to leave it at 15 hours, with an additional 4 hours for each additional category of RPA.

CASA has removed the requirement for a flight test examiner to be separate to the training instructor for RePLs less than 25 kg gross weight. This will ensure that single-person operations and those schools offering remote courses can complete the training and testing without undue burdens on their businesses. As a safety mitigation, CASA's surveillance model will be adapted to audit training organisations to ensure that the quality of graduates from schools is at an acceptable level.

CASA will also remove the requirement for the aeronautical knowledge exam and KDR process to be completed prior to the flight test, to allow flexibility for schools in delivering their courses. Instead, the provision will be that schools will not be able to recommend a candidate for a RePL until all course requirements are completed.

As a result of feedback, CASA will reduce the number of unique aeronautical knowledge questions required to a more manageable level and permit exams to be randomly generated from a database of questions.

The ratio of instructors to students for practical training will be replaced with a requirement that the instructor may only instruct a maximum of three students actually flying, non-complex, aircraft at any one time. This does not mean that there cannot be more students on the course. Additional students above the three actually flying will need to watch or act as observers until the instructor is free to provide instruction to them. Instruction for aircraft designated as complex will be carried out with a maximum of two students at any one time.

Comments indicated that there was no suitable Certificate III course for teaching/instruction, so this has been removed. An option for formal teacher qualifications has been added, in line with conventionally piloted instructor standards.

Some respondents felt that CASA should not leave it to individual operators to determine the amount of experience needed to be an instructor. CASA will prescribe a minimum of 20 hours experience operating an RPA in the category being taught. The 20 hours will need to be gained operating RPA in the category in operations other than training.

Respondents indicated that, due to the size of the new syllabus and the requirement to have 480 'different' questions for the aeronautical knowledge examination, at least nine, and more likely, 12 months would be needed to transition to the new standards. Given that CASA has reduced examination burdens in the revised MOS, CASA proposes to commence the training aspects of the MOS nine months from the date of making (other parts of the MOS will commence six months after the MOS is registered as a Legislative Instrument).

Airspace and aerodromes

There were mixed views around the proposal to formalise the current CASA Direction 96/17 and guidance material relating to operations near controlled aerodromes. Some felt that more controls were needed, while others felt that there were too many restrictions, especially for certified operators.

CASA is satisfied that the proposed standards will provide sufficient protection for conventionally piloted aircraft operations and flexibility for certified RPAS operators, including the ability to receive ongoing approval for operations within 3 nm of a controlled aerodrome (subject to ATC clearance) when operating outside of the approach and departure paths. CASA will liaise with Airservices Australia to develop a process to more efficiently support this policy.

The standards will also make provision for 'shielded operations' near non-controlled aerodromes. This will operationalise very low-level flights in close proximity to buildings, trees and other structures outside the approach and departure paths of non-controlled aerodromes while conventionally piloted aircraft are in the area for approved, certificated operators.

Those RePL holders who have radio qualifications will be required to monitor the relevant aviation frequency and co-ordinate separation with conventionally piloted aircraft where necessary in non-controlled airspace.

A number of respondents indicated that they believe tethered RPAs to be less safe, with respect to ground risk, than untethered aircraft. Given that operators have the option of getting a 'free-flight' approval, and operating in accordance with the approval, it is reasonable to retain the option for tethering. CASA will add a requirement that the tethered RPA must not be less safe for people on the ground than a free-flying RPA.

CASA has not created a prescriptive standard for tethering. It is for operators to ensure that the tether is suitable to the task in all likely scenarios, taking into account variables relevant to the particular RPA and concept of operations.

With respect to restrictions in non-controlled airspace below controlled airspace, most comments were around CASA ensuring that the information is in an easily accessible form, such as the CASA app, and that the information be kept up-to-date.

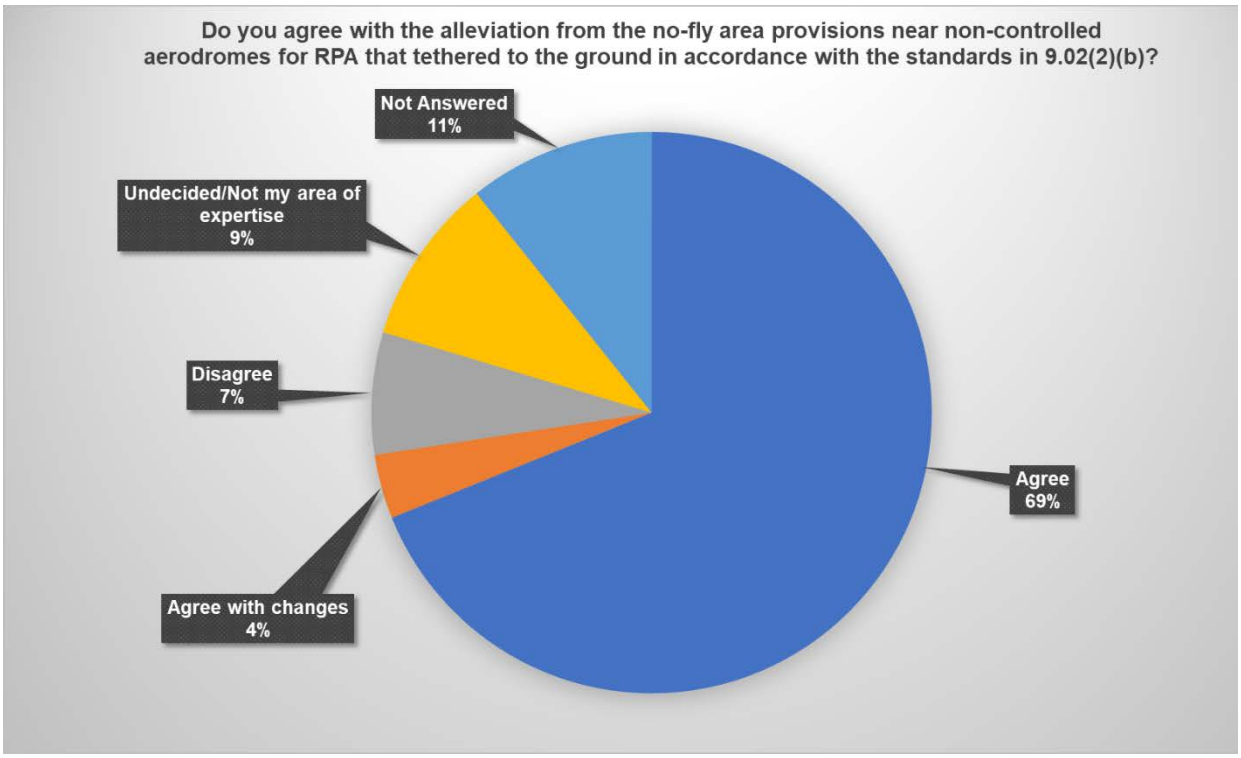

Figure 5: Pie chart showing breakdown of responses for no-fly provisions

Extended visual line of sight operations (EVLOS)

Feedback in relation to EVLOS remote pilots suggested that more flexibility be provided in terms of experience and recency standards. In response, CASA has removed the prescriptive requirement for operating the same kind of RPA in favour of operator-determined (still CASA-

approved) type of experience. EVLOS remote pilots will also have an extra 12 months of recency, provided that they have operated at least three flights in the prior 12 months.

In relation to the maximum distance that the RPA can be operated from the *remote pilot*, respondents were concerned that the data on which the draft standard was based would in many cases be unobtainable. CASA has amended this to be 80% of the manufacturer's published control link performance figure, taking into account environmental conditions and terrain in the area of operations. The option remains for the lesser of the above and another demonstrable distance, or the distance that a visual observer can oversight a safe landing or termination of the RPA.

Some respondents were concerned about the reliability of GNSS for EVLOS operations. Operators will now need to include provisions for the management of GNSS integrity for EVLOS flights in their documented procedures.

Some respondents indicated that 1,500 m from a *relevant observer* was too short a distance for EVLOS operations and suggested increasing it up go 3000 m. CASA is not disposed to increasing the distance, noting that with two observers the RPA may be up to 7.5 km from the *remote pilot* under the draft standard.

A few respondents suggested that first-person view (FPV) cameras should be allowed for single-person operations where the RPA flies behind obstacles, or as a substitute for observers. CASA does not believe that FPV provides sufficient situational awareness to be used in these situations. CASA notes that an exemption is currently in place for recreational operations (e.g. drone racing) under certain conditions, and that will remain after the MOS is published.

One or two respondents suggested that they continue to be able to fly 400 ft AGL, or above obstacles, in the vicinity of aerodromes. It should be noted that the height of conventionally piloted aircraft operations in the immediate vicinity of aerodromes is referenced to the aerodrome elevation. It is essential for RPA to be operated to the same reference to avoid potential conflicts. Where RPA height is displayed relative to the Remote Pilot Station, remote pilots must make an allowance for any difference between their position and the elevation of the aerodrome to ensure the RPA does not exceed a height of 400 ft above the aerodrome reference point.

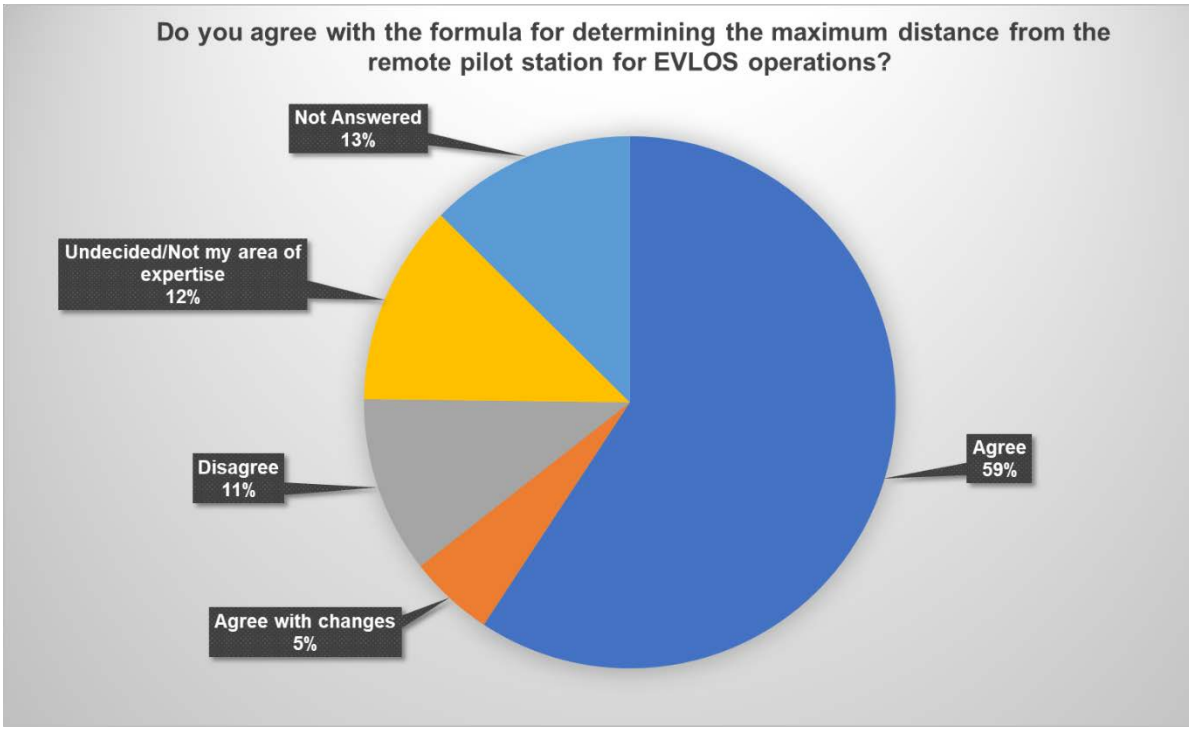

Figure 6: Pie chart showing breakdown of responses for maximum distance from remote pilot station for EVLOS

Recordkeeping and notification

CASA believes that good recordkeeping is essential for the safe operation of aircraft, no matter what size. Chief Remote Pilot (CRP) records are necessary to demonstrate that CRPs are meeting their obligations under the regulations.

However, a number of respondents contended that the proposed recordkeeping requirements for ReOC holders were excessive, particularly for simple and single-person operations. As a result, CASA has provided some alleviations to the draft proposal with respect to RPA with a gross weight less than 2 kg. Moreover, single-person operators will not have to complete the 'Operational release', since by definition they would be directing themselves. Requirements for the 'Technical log' will also be streamlined for smaller RPA. This brings the standards into closer alignment with Excluded RPA provisions while preserving some of the difference due to relative risks.

A number of respondents expressed agreement with the draft recordkeeping proposals, provided that suitable templates be provided by CASA to keep the process as simple as possible. With the exception of the alleviations mentioned above, CASA will retain the proposed standards, with some minor modifications, and provide to industry suitable templates that will provide an acceptable means of compliance if adopted by operators.

Some respondents queried the use of electronic records. The Electronic Transactions Act requires that CASA accept electronic records provided that they are shown to be immutable once completed.

A few Excluded RPA operator respondents also complained of excessive recordkeeping standards, and CASA has made some excisions, particularly for operators of very small Excluded RPA.

Some people objected to the notification requirements for Excluded RPA operators. CASA advises that the government has endorsed a recommendation flowing from the Senate Standing Committee on Rural and Regional Affairs and Transport's review of *Regulatory requirements that impact on the safe use of Remotely Piloted Aircraft Systems, Unmanned Aerial Systems and associated systems* relating to the registration of all RPA and model aircraft that exceed 250g gross weight. The future registration requirements it has proposed will be constructed to be inclusive of a requirement for notification. However, this policy will be consulted under a separate process.

A few respondents felt that the notification requirements for ReOC holders were acceptable, but that the costs for making the changes was too high. CASA advises that it does not charge for simple changes to operator details, but that in certain circumstances, such as a change for a new CRP, a fee would be charged to assess the person as suitable for the role.

Future MOS standards

The main responses focused on standards for operations within 3 nm of a controlled aerodrome and for operations above 400 ft. Suitable mitigations to allow operations with very small RPA in close proximity to people were also canvassed. CASA will review these proposals and develop standards for inclusion in a future iteration of the MOS where it is considered safe to do so.

Future direction

The draft MOS has been revised in line with the changes outlined above. CASA will commence an implementation process to ensure that industry and the recreational sector are prepared and able to comply when the standards commence. This will involve reviewing training organisations to ensure that they have adopted the relevant standards and developed courses which comply with the relevant syllabi. CASA will also develop support materials, such as documentation templates, and safety promotion products to inform sector participants of their obligations.

A new iteration of the MOS is proposed to accommodate forthcoming RPA registration, and accreditation provisions for Excluded RPA and model aircraft operators in 2019. CASA may take that opportunity to make minor changes to the current standards if required at the time.