<OperatorLegalName>

Trading As

**<OperatorTradingName>**

CASR PART 101

RPAS Operations Manual

**Version:** <RevNumber> – <IssueDate>

**Approved by:** <CP\_Name>

**Next Review Date:** <NextReviewDate>

Contents

[Applicability 5](#_Toc172969349)

[Amendment record 6](#_Toc172969350)

[Glossary 7](#_Toc172969351)

[1 Policy and procedures 9](#_Toc172969352)

[1.1 Operator information 9](#_Toc172969353)

[1.1.1 Organisation details 9](#_Toc172969354)

[1.1.2 Organisational overview 9](#_Toc172969355)

[1.1.3 Organisational diagram 10](#_Toc172969356)

[1.2 Personnel 10](#_Toc172969357)

[1.2.1 List of key personnel 10](#_Toc172969358)

[1.2.2 Key positions and responsibilities 11](#_Toc172969359)

[1.2.3 Other positions and responsibilities 12](#_Toc172969360)

[1.2.4 Changing key personnel 13](#_Toc172969361)

[1.2.5 Delegation of duties 13](#_Toc172969362)

[1.3 Operations manual administration 13](#_Toc172969363)

[1.3.1 Access and distribution 13](#_Toc172969364)

[1.3.2 Continuous improvement 14](#_Toc172969365)

[1.3.3 Amendment procedure 14](#_Toc172969366)

[1.4 Record keeping and management. 15](#_Toc172969367)

[1.4.1 Responsibility for record keeping. 15](#_Toc172969368)

[1.4.2 Required records and retention. 15](#_Toc172969369)

[1.4.3 Content of records 16](#_Toc172969370)

[1.4.4 Format of records 16](#_Toc172969371)

[1.4.5 Production of records 17](#_Toc172969372)

[1.5 Internal training 17](#_Toc172969373)

[1.5.1 Persons allowed to conduct training. 17](#_Toc172969374)

[1.5.2 Initial training 17](#_Toc172969375)

[1.5.3 Type and complex operations training 17](#_Toc172969376)

[1.5.4 Senior remote pilot training 17](#_Toc172969377)

[1.6 Internal audit process 17](#_Toc172969378)

[1.6.1 Operations manual and regulatory compliance 17](#_Toc172969379)

[1.6.2 Monitoring operational standards 18](#_Toc172969380)

[1.7 Fitness for duty 18](#_Toc172969381)

[1.7.1 Reporting unfit for duty 18](#_Toc172969382)

[1.7.2 Alcohol consumption 18](#_Toc172969383)

[1.8 Minimum experience requirements 18](#_Toc172969384)

[1.9 Recency requirements 18](#_Toc172969385)

[1.10 Safety occurrence reporting 19](#_Toc172969386)

[2 RPA operations 21](#_Toc172969387)

[2.1 Risk assessment 21](#_Toc172969388)

[2.1.1 Risk criteria 21](#_Toc172969389)

[2.1.2 Risk register 21](#_Toc172969390)

[2.2 Planning 21](#_Toc172969391)

[2.2.1 Documentation 21](#_Toc172969392)

[2.2.2 Operations requiring an official authorisation 22](#_Toc172969393)

[2.2.3 Flight authorisation 22](#_Toc172969394)

[2.3 Before flight 22](#_Toc172969395)

[2.3.1 Validation of operational documentation 22](#_Toc172969396)

[2.3.2 Pre-operational briefing 23](#_Toc172969397)

[2.3.3 Pre-operational serviceability 23](#_Toc172969398)

[2.4 Flight operations 23](#_Toc172969399)

[2.4.1 RPAS documentation and instructions 23](#_Toc172969400)

[2.4.2 Ensuring operations do not pose a hazard 23](#_Toc172969401)

[2.4.3 Aeronautical radio usage 24](#_Toc172969402)

[2.4.4 Use of transponder 24](#_Toc172969403)

[2.4.5 Transportation of dangerous goods 24](#_Toc172969404)

[2.4.6 Operations near people 25](#_Toc172969405)

[2.4.7 Operations over populous areas 25](#_Toc172969406)

[2.4.8 Operations near aerodromes 26](#_Toc172969407)

[2.4.9 Operations in Special Use Airspace (SUA) 26](#_Toc172969408)

[2.4.10 Operations at night 27](#_Toc172969409)

[2.4.11 Operations above 400 ft AGL 27](#_Toc172969410)

[2.4.12 Operations outside of VLOS 28](#_Toc172969411)

[2.4.13 Indoor (contained) operations 28](#_Toc172969412)

[2.4.14 Tethered operations 28](#_Toc172969413)

[2.4.15 Environmental and weather limitations 28](#_Toc172969414)

[2.5 Post-flight administration 28](#_Toc172969415)

[2.6 Emergency procedures 29](#_Toc172969416)

[2.6.1 General 29](#_Toc172969417)

[2.6.2 Flight termination 29](#_Toc172969418)

[2.6.3 Loss of control link 30](#_Toc172969419)

[2.6.4 Loss of orientation 30](#_Toc172969420)

[2.6.5 RPA crash site management 30](#_Toc172969421)

[2.6.6 Lost RPA / Loss of VLOS 30](#_Toc172969422)

[2.6.7 Battery Fires 30](#_Toc172969423)

[2.6.8 Equipment 31](#_Toc172969424)

[2.6.9 Intrusions 31](#_Toc172969425)

[2.6.10 Night operations 32](#_Toc172969426)

[2.6.11 Environmental 32](#_Toc172969427)

[2.6.12 Crew 32](#_Toc172969428)

[2.6.13 Tethering 32](#_Toc172969429)

[3 Maintenance 34](#_Toc172969430)

[3.1 Maintenance schedules 34](#_Toc172969431)

[3.1.1 Periodic inspection schedule 34](#_Toc172969432)

[3.1.2 Daily inspection schedule 34](#_Toc172969433)

[3.2 Maintenance authorisation 34](#_Toc172969434)

[3.2.1 Maintenance personnel 34](#_Toc172969435)

[3.3 Recording of defects and maintenance 35](#_Toc172969436)

[3.4 Post-maintenance test flights 35](#_Toc172969437)

[3.5 Component maintenance and records 35](#_Toc172969438)

[Appendix A. Copy of RPA operator’s certificate 36](#_Toc172969439)

[Appendix B. List of RPAS types operated 37](#_Toc172969440)

[Appendix C. RPAS type-specific procedures 38](#_Toc172969441)

[Appendix D. Specialised procedures 39](#_Toc172969442)

[Appendix E. Risk rating criteria and risk register template 45](#_Toc172969443)

[Appendix F. Forms and templates 48](#_Toc172969444)

[Section 1: Operations overview and preliminary assessment 48](#_Toc172969445)

[Section 2: Job safety assessment 49](#_Toc172969446)

[Section 3 Approval 50](#_Toc172969447)

[Section 4: Flight log 51](#_Toc172969448)

[Appendix G. Training syllabus and checking matrix 65](#_Toc172969449)

[Appendix H. Permissions, Exemptions, and Approvals 71](#_Toc172969450)

Applicability

This operations manual is not just a set of procedures, instructions, and guidance. It is a vital tool for ’s personnel to ensure the safe execution of their duties and aviation operations. It is the backbone of our control and supervision of RPA flight operations. Every member of our team plays a crucial role in this, and it is imperative that all personnel strictly adhere to the relevant instructions and procedures contained in this manual.

Amendment record

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version no.** | **Date** | **Effective date** | **Parts / sections** | **Details** |
| {Insert Version No. and update doc property} | {insert date change is made to each section or page} | Immediate | All | Initial issue based on CASA 2023 template with inclusion of FlyFreely software |

Glossary

****Acronyms and abbreviations****

|  |  |
| --- | --- |
| Acronym / abbreviation | Description |
| AGL | Above ground level |
| ALARP | As low as reasonably practicable |
| ATSB | Australian Transport Safety Bureau |
| ATC | Air traffic control |
| BVLOS | Beyond visual line of sight |
| CAA | Civil Aviation Act 1988 (the Act) |
| CASA | Civil Aviation Safety Authority |
| CASR | Civil Aviation Safety Regulations 1998 |
| CRP | Chief remote pilot |
| EVLOS | Extended visual line of sight |
| HLS | Helicopter landing site |
| IAW | In accordance with |
| JSA | Job safety assessment |
| MOS | Manual of Standards |
| MC | Maintenance controller |
| NM | Nautical miles |
| NOTAM | Notice to airmen |
| NVLOS | Night Visual Line of Sight |
| OC | Operational crew member |
| RePL | Remote pilot licence |
| ReOC | Remotely piloted aircraft operator’s certificate |
| RP | Remote pilot (or UAV controller) |
| RPA | Remotely piloted aircraft (same meaning as UAV) |
| RPAS | Remotely piloted aircraft system (same meaning as UAS) |
| SMS | Safety management system |
| SOC | Standard operating conditions – reference reg 101.238 CASR (1998) |
| SOP | Standard operating procedures |
| UOC | Unmanned aerial vehicle operator’s certificate |
| VLOS | Visual line of sight |
| VMC | Visual meteorological conditions |

****Definitions****

For the definition of terms used in this manual, refer to the Part 1 Dictionary at the end of Volume 5 of the Civil Aviation Safety Regulations (1998) (CASR), the Part 101 MOS, or the CASA-produced Flight Operations Regulations Consolidated Dictionary ([downloadable from CASA’s website](https://www.casa.gov.au/flight-operations-regulations-consolidated-dictionary)). Operator-specific terms are defined here:

|  |  |
| --- | --- |
| Term | Definition |
| Official authorisation | An authorisation, however termed, from CASA, Airservices Australia, or any other authority responsible for providing an aviation authorisation, including the controlling authority of a prohibited or restricted area. |
| Defect | Any confirmed abnormal condition of an item, irrespective of whether the condition could eventually result in a failure. In addition to imperfections that may impair the structure, composition or function of the RPAS, the scope of this definition encompasses any intermittent failure, spurious warning or fault in the operation of a RPAS that may cause it to deviate from the manufacturer’s specifications. |
| Major defect | A defect, the magnitude of which may affect the safety of the aircraft or cause the aircraft to become a danger to persons or property. |
| Minor defect | A defect that is not a major defect. |
| Operational crew member | All <OperatorName> personnel (except for the RP) who have a duty that is essential to the control or navigation of an RPA operation. |
| Personnel | All <OperatorName> personnel (including employees, contractors and volunteers) who have a duty relating to the safety of RPA operations. |
| Safety occurrence | Any event that affects, or could affect, the safety of an RPA operation. |
| Visual meteorological conditions | For <OperatorName>’s RPA operations, this refers to a horizontal visibility greater than 5000 metres and clear of cloud. |

# Policy and procedures

## Operator information

### Organisation details

Table : Organisation details

|  |  |
| --- | --- |
| Item | Details |
| Name of legal entity | <OperatorLegalName> |
| Trading name | <OperatorTradingName> |
| Registered office address | <RegOfficeAddress> |
| ARN | <OperatorARN> |
| ABN | <OperatorABN> |
| Operational headquarters address | <OperationalAddress> |
| Operational headquarters phone | <OperationalPhone> |
| Operational headquarters email | <OperationalEmail> |

### Organisational overview

<OperatorLegalName> holds a remotely piloted aircraft operator’s certificate (ReOC) to conduct aerial work activities using remotely piloted aircraft systems (RPAS). The operator uses RPA to conduct <TypeOfOperations> operations using the RPA listed in Appendix B.

Remote pilots and ground crew are employed full-time, part-time, or casually, depending on demand and level of activity. Maintenance is performed in-house and subcontracted to various external organisations as needed.

### Organisational diagram

Figure 1: Organisational diagram.

## Personnel

The key personnel positions of CEO, Chief Remote Pilot, and Maintenance Controller must be filled by an individual appointed by the operator. CASA must assess and approve the Chief Remote Pilot, and the CEO and Maintenance Controller must be acceptable to CASA.

Operations may not be conducted when a key position is vacant unless approved by CASA.

### List of key personnel

Table 2: Key personnel

|  |  |  |  |
| --- | --- | --- | --- |
| Nominated position | Name | ARN | Date approved |
| Chief Remote Pilot | <CP\_Name> |  | <IssueDate> |
| Maintenance Controller | <MC\_Name> |  | N/A |
| CEO | <CEO\_Name> |  | N/A |

### Key positions and responsibilities

#### Chief Executive Officer (CEO)

The CEO is responsible for the safety and corporate compliance of RPA operations.

The CEO must ensure:

* the safe conduct of RPAS operations IAW the conditions of the ReOC and the civil aviation legislation
* there are sufficient suitably experienced, qualified, and competent personnel.
* there is a suitable management structure.
* the operation is adequately financed and resourced
* safety performance indicators and targets are set up and regularly reviewed
* the approved documented practices and procedures are checked and managed for continuous improvement
* that key personnel satisfactorily fulfill the responsibilities of their positions IAW this manual and the relevant civil aviation legislation
* CASA is notified of any changes to the:
  + operator’s name, address, or contact details
  + nominated personnel
  + financial status of the operator, which may affect the safety of RPA operations

#### Chief Remote Pilot (CRP)

The CRP is responsible for safely managing the RPA operations.

The CRP must:

* ensure that RPA operations are conducted IAW the conditions of the ReOC and relevant civil aviation legislation
* ensure that pilots and crew are suitably qualified and have experience and skills to enable them to fulfil the duties of their position satisfactorily
* maintain a record of qualifications held by the RP and OC
* monitor the operational standards and ability of the RP and OC
* review compliance and facilities by:
  + conducting internal audits
  + reviewing audit findings
  + taking any necessary corrective action to rectify deficiencies as soon as possible
* review scheduling and rostering of crew to ensure that fatigue does not adversely affect the safety of operations
* provide the RP and OC with ready access to all documents and manuals necessary to ensure the safety of all flights
* inform the CEO of any matter connected to RPA operations that is relevant to the CEO’s duties

#### Maintenance Controller (MC)

The MC is responsible for ensuring that RPAS are correctly maintained.

The MC must:

* control all RPAS maintenance, either scheduled or unscheduled
* keep records of all personnel allowed to perform maintenance on RPA, including details of their training and qualifications
* develop, enforce, and monitor RPAS maintenance standards
* maintain a record of RPAS defects and unserviceability issues
* ensure that each item of equipment essential to the operation of each RPA is serviceable before being released to service
* maintain a thorough technical knowledge of each RPAS being used
* ensure that all maintenance activities are conducted IAW the procedures detailed in Section 2 of this manual
* investigate all significant defects in the RPAS
* monitor the failure rates of RPAS components and impose extra maintenance requirements as necessary to ensure the safety of operations

### Other positions and responsibilities

#### Senior Remote Pilot (SRP)

Senior Remote Pilots (SRP) are responsible for operational matters as authorised by the CRP.

SRP are responsible for the following:

* approving standard operations (e.g., excluding those that need an extra CASA, Airservices Australia, or military approval) on behalf of the CRP
* ensuring all RPs are following the correct procedures and checklists for their authorised tasks
* immediately reporting any compliance or safety issues to the CRP
* acting in the role of the CRP when delegated
* abiding by any conditions/restrictions placed on them by the CRP

#### Type Specialist (TS)

A TS is an RP with a superior Remote Pilot Licence (RePL) rating than the CRP for which the operator intends to operate. The TS will advise the CRP on aspects of flight operations that relate to type specialist requirements.

A TS is responsible for:

* providing advice and guidance to the CRP for specialised type operations
* ensuring specialist operations are planned within type restrictions and countersigning flight authorisations for specified types only
* consulting with MC and providing any technical information for cause analysis, symptomatic problems, etc. related to the specific type
* instructing RPs internally to use the specific RPA type IAW the induction requirements

As this manual requires, all other aspects of flight operations are still governed and overseen by the CRP.

#### Remote Pilot (RP)

RPs are responsible for the following:

* conducting flight IAW these procedures
* the safe operation of the RPA from the commencement of operations until the RPA is shut down after an operation
* acting IAW the procedures contained in this manual
* acting IAW any conditions imposed on their RePL
* following applicable regulatory requirements and supporting documents, such as the AIP

RP includes a holder of a CASA 'RePL' or 'UAV Controllers Certificate.'

#### Camera operators, spotters, and other employees

All camera operators, spotters, and other persons involved in the operation of RPAS controlled under the authority of the ReOC must follow the procedures set out in this manual and any lawful direction given to them by a Remote Pilot.

### Changing key personnel

A change of key personnel is significant and requires prior approval from CASA. Wherever possible, the CEO will ensure the vacating personnel change is approved by CASA before the holder of a key position vacates their position.

### Delegation of duties

The CRP may delegate responsibilities to an approved SRP. The CRP must provide a briefing of all critical information and conditions of the delegation before putting it in place.

The CRP can revoke the delegation at any time.

The CRP must record any delegated duties with the SRP’s personnel records. Appendix F11 shows the details the CRP must register.

## Operations manual administration

### Access and distribution

This manual is kept electronically in the *FlyFreely Office App*. Copies of this manual that are not accessed directly from the system are uncontrolled. Uncontrolled copies of the manual are not to be used unless the copy is verified to be identical to the current manual edition stored in the system.

All personnel must provide a written acknowledgment (an electronic acknowledgment via the *FlyFreely Office App* or email is allowed) to the CRP saying that they have accessed, read, and understood this manual before performing any duty essential to the control or navigation of an RPA.

The CRP is to retain the acknowledgements in the *FlyFreely Office App*.

### Continuous improvement

This manual describes the current practices and procedures. It must be amended to reflect any changes. Staff are encouraged to suggest improvements in practices and procedures. Suggestions should be made to the CRP. All errors in the manual must be reported to the CRP as soon as practical.

The CRP must incorporate planned changes to operational practices and procedures into this manual before the change is implemented (see Section 1.3.3 of this manual).

The CRP must review the operations suite of documents at least annually to ensure the relevance and currency of all procedures. This review is also needed to achieve full compliance with legislative requirements.

### Amendment procedure

Before making a significant change[[1]](#footnote-2) to the operation, including significant changes to this manual, the CRP must send a draft copy incorporating proposed changes to CASA for approval. Only after CASA has approved the amendment may the CRP distribute it for operational use.

The CRP can make non-significant changes to this manual without approval from CASA.

The CRP must provide a copy of the updated manual to CASA within 21 days of any change.

Amended versions of this manual must include the date and have an updated version number assigned. The CRP must summarise the changes in the amendment record table.

The CRP must ensure the manual is copied to the records management system once it is approved for operational use.

The CRP must ensure that all personnel are notified of changes. The notification should include background on why the changes were made, the effective date, the reasons for the changes, and any implications for staff.

All personnel must provide a written or electronic acknowledgment of having read and understood the amendment before performing any duty essential to the control or navigation of an RPA after the amendment's effective date.

The CRP is to retain the acknowledgements in the *FlyFreely Office App*.

## Record keeping and management.

### Responsibility for record keeping.

All records are stored electronically in the *FlyFreely Office App.* Records fall into four categories:

* Personnel records
* Flight-related records
* RPA-related records
* Administrative records.

RP’s must keep their logbook. The CRP manages all other personnel, flight-related, and administrative records. The MC handles RPA-related records.

### Required records and retention.

Table 3: Personnel records

|  |  |
| --- | --- |
| Type of record | Minimum retention period |
| Training event | 7 years after date on which the record was made |
| Checking event | 7 years after date on which the record was made |
| Attainment of RP qualification (including relevant qualifications held before commencement of employment) | 7 years after date of the RP’s last operation of an RPA for the Operator |
| Attainment of qualification of competency in relation to the safety of RPA operations (other than RP duties) | 7 years after date on which the person ceases to be employed by the Operator |
| RP logbook\* | 7 years after date of the RP’s last operation of an RPA for the Operator |

\* Accumulated flight experience (including experience held before commencement of employment) to be maintained by the RP – see Section 10.06 of Chapter 10 Division 2 of the Part 101 MOS for minimum requirements.

Table 4: Flight-related records

|  |  |
| --- | --- |
| Type of record | Minimum retention period |
| Flight Record (Form F1) | 7 years after date on which the record was made |
| Written consent to operate at a distance of less than 30 metres from a person | 7 years after date on which the consent was provided |

Note: The Flight Record includes and combines the job safety assessment (JSA), authorised RPAS operational release and RPAS operational log.

Table 5: RPA-related records

|  |  |
| --- | --- |
| Type of record | Minimum retention period |
| RPAS Technical Log (Form F2) | 7 years after the last time the RPA is operated by the operator |
| Register of RPA operated by the Operator including manufacturer, model, maximum gross weight and serial number | 7 years after date on which the record was made |

Table 6: Administrative records

|  |  |
| --- | --- |
| Type of record | Minimum retention period |
| Acknowledgement of access to and understanding of the Operators RPAS operations manual version | 7 years after the acknowledgement is made |
| Register of persons (other than the CRP) permitted to conduct training and checking (if applicable) | 7 years after the last time training or checking is provided by the trainer |
| Compliance audit record (see Section 1.6.1 of this manual) | 7 years from the date of the audit |
| Risk register | For each version of the register, 12 months after a new version is issued |
| Safety occurrence register | For each safety occurrence entry in the register, 7 years from date of occurrence |

### Content of records

As a minimum, all records must have the details required by the Part 101 MOS.

### Format of records

Records may be in any format determined to be acceptable by the CRP.

The *FlyFreely Office App* or *FlyFreely Field App* must be used to enter all data. In the event that the FlyFreely app/s are unavailable, the templates in Appendix F must be used and later uploaded to the *FlyFreely Office App*.

### Production of records

All records required by the Part 101 MOS must be available to CASA within seven days of a written request.

## Internal training

### Persons allowed to conduct training.

Only the CRP and persons nominated in writing by the CRP may provide internal training. Before authorising a person to conduct training, the CRP must ensure that competency tests are in place to guarantee the effectiveness and comprehensiveness of all training delivered.

### Initial training

All personnel must thoroughly complete induction training and assessment to understand their roles, task requirements, and responsibilities. The training syllabuses are in Appendix G1.

### Type and complex operations training

Personnel need extra training and skills assessment before:

* undertaking a new complex operation – that is, an operation outside of the standard operating conditions (SOC) or
* operating a new RPA type.

Appendix G2 and Appendix G3 hold the training syllabuses.

### Senior remote pilot training

The CRP is to conduct the training and evaluation of the SRP as per Appendix G4.

An SRP evaluation is to be conducted annually to ensure proficiency and competency.

The CRP must record SRP training and evaluation in the RP training records.

The CRP will maintain a list of approved SRPs in the *FlyFreely Office App*.

## Internal audit process

### Operations manual and regulatory compliance

At 12-month intervals, the CRP will conduct a compliance audit on a representative sample of processes and procedures. At a minimum, the audit must assess the:

* accessibility and awareness of the current operations manual by all personnel
* accuracy and completeness of flight records and aircraft logs
* records of pilot training, skill checks, and qualifications
* completeness and accuracy of RP logbooks.

### Monitoring operational standards

At 12-month intervals, the CRP will conduct a checking event with each RP and OC in a representative sample of operations to assess their operational competence and compliance with the operations manual and relevant aviation legislation.

The CRP must report to the CEO confirming that the operational standards are being kept and that corrective action (if needed) is being taken.

## Fitness for duty

### Reporting unfit for duty

No personnel may perform a task related to the safety or navigation of an RPA when unfit to undertake that activity. A person is taken to be unfit to perform a duty if their ability to perform the duty safely is impaired or likely to be impaired because they:

* are unwell or tired and/or
* have an illness or injury and/or
* have consumed, used, or absorbed a psychoactive substance (including alcohol) and/or
* have consumed prescription or over-the-counter medication (such as codeine and antihistamine) that can cause adverse side effects such as drowsiness.

Personnelmust immediately report any potential or actual unfitness for duty to the CRP. The CRP will remedy the situation.

### Alcohol consumption

Remote Pilots and others involved in the operation of RPAS must not perform their duties while under the influence of alcohol. Alcohol must not be consumed within 8 hours of commencing RPAS operations or at any time during an operation.

As a ‘safety-sensitive aviation activity,’ operational person(s) working under the authority of this ReOC may be randomly tested for alcohol and other drugs and must conform with any drug and alcohol testing requirements made by CASA or any contracting organisation.

## Minimum experience requirements

RP must hold a RePL or UAV Controller Certificate, which authorises them to operate the RPA.

## Recency requirements

RESERVED.

## Safety occurrence reporting

All personnel must report safety occurrences, including near misses, to the CRP as soon as practical.

The CRP must ensure that the following occurrences are reported to the ATSB.[[2]](#footnote-3)

Table : Safety occurrence reporting

|  |  |  |
| --- | --- | --- |
| RPA and Operational Characteristics | Immediately Reportable Matters (IRM) | Routinely Reportable Matters (RRM) |
| RPA over 25kg MTOW operating under a ReOC and all certified RPA operations | * fatal aircraft-related injury * serious aircraft-related injury * aircraft structural damage or failure that affects its structural integrity or will require a major repair * aircraft is missing or completely inaccessible * loss of separation standard between aircraft * serious third-party property damage (repair or replacement cost of at least $25,000) * collision with an animal, including a bird. | * a reportable serious aircraft incident * declaration of an emergency about the aircraft * an external aircraft incident associated with the operation of the RPA or an incident which could affect the safety of the operation |
| RPA over 250g and under 25kg operated under a ReOC | * fatal aircraft-related injuries * serious aircraft-related injuries * serious third-party property damage (repair or replacement cost of at least $25,000) | * the aircraft is missing * the aircraft has suffered serious damage * aircraft inaccessible and the existence of reasonable grounds for believing it is seriously damaged * loss of separation standard between aircraft |
| RPA under 250g and all RPA operated under the Excluded RPA | * No report needed | * No report needed |

The CRP must report per the following schedule.

Table : Reporting Schedule

|  |  |
| --- | --- |
| Immediately Reportable Matters (IRM) | Routinely Reportable Matters (RRM) |
| * Report as soon as is reasonably practicable by phoning 1800 011 034 * Follow up with a written report within 72 hours to [Occurrence Notification - Aviation | ATSB](https://www.atsb.gov.au/form/occurrence-notification-aviation) | * Submit a written report within 72 hours to [Occurrence Notification - Aviation | ATSB](https://www.atsb.gov.au/form/occurrence-notification-aviation) |

All personnel must take reasonable steps to preserve any flight planning and operational data, telemetry logs, and RPAS components that may help determine the cause of an occurrence.

# RPA operations

## Risk assessment

### Risk criteria

Operations may only be conducted if they can be done without an unacceptable safety risk to the RPA or any person or other property and when they do not impose a hazard on the safety of air navigation.

### Risk register

The CRP must keep a risk register covering all operational profiles conducted under the ReOC. The risk rating criteria and a template risk register are stored in The *FlyFreely Office App*.

All current controls in the risk register must be linked to a procedure in this manual or a legislative requirement. Where an added control is implemented, the control should be considered in the subsequent amendment of the operations manual.

To ensure the accuracy of risk identification and adequacy of controls, the risk register must be reviewed and updated:

* before starting a new operational profile (for example, an operation requiring a different type of official authorisation)
* after any ATSB reportable safety occurrence
* at least annually.

Note: This operation uses the risk assessment and mitigation method in the CASA safety management system (SMS) kit at http://casa.gov.au/sms.

## Planning

### Documentation

A Flight Record must be created for all operations in either the *FlyFreely Office App* or *FlyFreely Field App*. The procedure for this can be found at <https://knowledge.flyfreely.io/planning-your-first-mission>

If either the *FlyFreely Office App* or *FlyFreely Field App* are unavailable the Flight Record form in Appendix F1 is to be used.

Section 2 of the Flight Record has a JSA which must be completed for any operation:

* in RPA above 2 kg
* outside the SOC
* where an official authorisation is needed.

For operations using RPA weighing 2 kg or less and operating IAW the SOC, the RP must consider the items listed in Section 2 of the Flight Record before commencement of operations.

### Operations requiring an official authorisation

Where an operation requires official authorisation, the JSA must include details of any added risk control. The CRP must make applications for official authorisation.

Where an official authorisation is provided, the RP must ensure they have read and understood it before commencing operations. The RP must follow any condition detailed in the authorisation unless doing so would harm aviation safety, in which case they must immediately cease the operation and advise the CRP of the issue as soon as practical.

Copies of all current official authorisation are available in the *FlyFreely Office App*. The procedure to store and use official authorisation in the *FlyFreely Office App* are described in the following <https://knowledge.flyfreely.io/casa-instrument-procedure>.

### Flight authorisation

All operations require authorisation by the CRP. Before authorising an operation, the CRP must review the planning section of the Flight Record to ensure the operation will follow legislation and meet an acceptable risk profile.

Operations can be approved via the *FlyFreely Office App* or *FlyFreely Field App* using the following procedure <https://knowledge.flyfreely.io/how-to-approve-a-mission>.

If either the *FlyFreely Office App* or *FlyFreely Field App* are unavailable the Flight Record form in Appendix F1 is to be used.

A RPAS Operational Release/Flight Authorisation expires on any changes to:

* the type of RPA
* the crew
* the location
* authorised dates and times.

## Before flight

### Validation of operational documentation

Before commencement of operations, the RP must conduct an onsite validation of the operational planning documentation, and local environmental considerations.

For operations that have been planned in the *FlyFreely Office App* or *FlyFreely Field App* The onsite validation can be performed using one of the methods described in this procedure <https://knowledge.flyfreely.io/jsa-procedure>.

For operations that have been planned using the Flight Record form in Appendix F1, Section 4 must be completed prior to commencement of operations.

Any variables noted outside of the flight authorisation or manufacturer limitations requires an updated flight authorisation before operating.

### Pre-operational briefing

When an operation involves more than one person, the RPIC must conduct a pre-operational briefing covering details of:

* the operation
* emergency procedures
* hazards
* crew responsibilities

All personnel relevant to the operation must attend the briefing.

### Pre-operational serviceability

Before the commencement of the day's first flight, a serviceability inspection must be completed IAW Section 3.1.2 of this manual. A checklist should be used to ensure all inspection items are covered. The person conducting the inspection must record details of the inspection, including any identified defects, in the RPAS Technical Log before the commencement of operations.

The RP must complete a pre-flight inspection before each take-off.

Any defects identified during operations are to be entered into the *FlyFreely Office App*, or *Field App* as soon as practicable, and reported to the MC.

RPs must ensure that all required maintenance actions detailed in the RPAS Technical Log have been completed before a flight. RPs must not attempt to operate RPAS with unresolved major defects. Operations may proceed with minor defects, provided they are assessed and will not affect the safety of operations.

Note: A minor defect is one that will not affect the safety of the aircraft or cause it to become a danger to persons or property.

## Flight operations

### RPAS documentation and instructions

All RPAs must be operated according to the manufacturer’s instructions and checklists, or an alternative procedure approved by the CRP.

Where an alternative RPA operating procedure has been approved, the procedure will be detailed in Appendix B. Before approving an alternative procedure, the CRP must conduct a risk assessment to assess the impact of the changed procedure on the safety of flight operations.

### Ensuring operations do not pose a hazard

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

To reduce the potential for conflict with other aircraft, the RP should not operate the RPA within 500 ft vertically or 1500 m horizontally of any airborne crewed aircraft unless approved by the CRP.

The RP must ensure that the prevailing meteorological conditions allow for visual separation from obstacles and other airspace users unless otherwise approved by CASA.

### Aeronautical radio usage

Only qualified personnel under Part 61 or Part 64 of CASR may use an aeronautical radio.

An aeronautical radio is needed for all operations using RPA with a gross weight > 2 kg within controlled airspace or outside of the SOC.

Radio broadcasts must be made:

* **in controlled airspace:** only when directed by ATC or CASA or where necessary to resolve a potential conflict with a crewed aircraft.
* **in uncontrolled airspace: only** where necessary to resolve a potential conflict with a crewed aircraft.

Where carriage of an aeronautical radio is not mandatory, the RP should consider the benefits of situational awareness and use an aeronautical radio where appropriate.

#### Format of radio broadcasts

Radio broadcasts should be in the format <who am I talking to>, <location>, <who am I>, < what am I doing or what do I want>, <location>.

For example, TRAFFIC

BAIRNSDALE

UNCREWED RPA

OPERATING 2NM SOUTH-EAST OF BAIRNSDALE AERODROME, NOT ABOVE 400 FEET A.G.L FOR THE NEXT 20 MINUTES

BAIRNSDALE

AIP GEN 3.4 has more detailed instructions on radio procedures.

### Use of transponder

The RP must ensure that a transponder / ADS-B (out) capability fitted to the RPA is not activated unless requested explicitly by air traffic control or required by an official authorisation.

### Transportation of dangerous goods

RPAS are subject to the requirements of the dangerous goods legislation.[[3]](#footnote-4) The RP must ensure that RPA do not carry dangerous goods.

Note: When travelling to the site, limitations apply to the carriage of dangerous goods, including batteries, on commercial aircraft. Crew are reminded of their obligations to follow the carrier’s dangerous goods policy.

### Operations near people

Subject to 2.4.6.1 below, RP must ensure that an RPA is not flown within 30 m laterally of any person. This is measured from the point on the ground directly below the RPA to the position of any person not directly involved in the control or navigation of the RPA.

Note: Persons being filmed or photographed – such as actors, athletes, or members of the public – are not considered essential to the control and navigation of the RPA.

#### Operations 30m to 15m of a person

Operations within 30 m but not less than 15 m of a person are allowed if the following criteria are satisfied:

* A risk assessment must be completed, with mitigators implemented for the level and type of risk identified.
* The person must be advised of any identified risks and given details of the implemented mitigation strategies.
* The person must be advised of the requirement to obtain their consent to fly within 30m of them.
* The person consents to the RPA flying within 30 m of them.

Any consent to fly within 30 m of a person must be provided in writing.

Note: A body corporate or any other entity cannot give such consent on behalf of any individual.

#### Use of signage and barriers

When planning tasks, the RP should consider the placement of signage and barriers to restrict entry to the RPA operating area. Signage or barriers should be placed at all points of likely public access and noted on the JSA.

### Operations over populous areas

The RP must also ensure an RPA (other than a micro-RPA) that is not certificated is not operated over a populous area at a height less than the height from which, if any of its components fail, it would be able to clear the area.

The RP may fly a certificated RPA over a populous area at a height less than the height from which, if any of its components fail, it can clear the area, with a CASA approval.

#### Populous area definition

An area is a populous area in relation to the operation of an uncrewed aircraft if the area has a sufficient density of population for some aspect of the operation, or some event that might happen during the operation (in particular, a fault in, or failure of, the aircraft) to pose an unreasonable risk to the life, safety or property of somebody who is in the area but is not connected with the operation.

#### Timing of operations

For operations where public activity levels are variable throughout the day or days of the week. RP should consider scheduling tasks ‘out of hours’ to make an area non-populous. Similarly, the temporary removal of specific high-value or sensitive third-party assets from the operating area can change the status of an area from populous to non-populous. Any specific requirements must be noted on the JSA.

### Operations near aerodromes

The RP must not fly an RPA:

* over a movement area of a controlled aerodrome
* within the no-fly zone of a controlled aerodrome[[4]](#footnote-5)
* within the relevant airspace of a non-controlled aerodrome during a relevant event

unless the RPA is flown:

* IAW an official authorisation
* indoors IAW Section 2.4.13
* tethered IAW Section 2.4.13

Note: See Appendix D1 for the specialised procedures for flying within controlled airspace and D2 for operations within the relevant airspace of non-controlled aerodromes and HLS.

### Operations in Special Use Airspace (SUA)

#### Danger areas

RPs must consider the associated risks when planning a task within a Danger area. The CRP must conduct a risk assessment before approving any operation within a Danger area.

#### Military Operating areas

Approval must be obtained before operating RPA within an MOA. The SUA section of ERSA provides contact details for the administrating authority. All approval conditions must be complied with.

When planning a task, RPs must consider the risks involved in operating in the area. The CRP must conduct a risk assessment prior to any operation within a Military Operating area. Operations that have not received the approval of the administrating authority must not be authorised by the CRP.

#### Restricted areas

RPAs must not be operated in Restricted areas unless approval has been obtained from the controlling authority. All conditions of the approval must be complied with.

The CRP must not approve operations in Restricted areas without the approval of the controlling authority. Details and conditions of the operating approval must be recorded on the JSA for the task.

#### Prohibited areas

Flight within prohibited areas is not permitted under any circumstance.

### Operations at night

Operations at night may be conducted under the generic night approval CASA 01/17 – Approval Operation of RPA at Night (available in Appendix H). Schedule 2 of the approval instrument has the equipment and environmental conditions the RP must follow.

The JSA must include details of how the approval conditions will be met and mitigations for any other risks.

Only the CRP and RPs who have completed the night operations training and assessment (IAW Section 1.5 of this manual) can fly RPA at night.

Operator-specific requirements for night operations, which are in addition to the provisions of the CASA instrument, are in Appendix D3.

### Operations above 400 ft AGL

Operations above 400 ft AGL (measured from the point directly below the RPA) require official authorisation. Before seeking approval, the CRP must conduct an assessment to show any added risks and controls. Items to be considered include:

* proximity to obstacles (shielding)
* crewed aircraft flight paths
* ability to maintain VLOS.
* aeronautical radio requirements
* NOTAM requirements
* environmental conditions.

### Operations outside of VLOS

RPA must not be flown outside of VLOS without CASA approval. If CASA has authorised the operation, procedures can be found in Appendix D.

### Indoor (contained) operations

The CRP may approve indoor operations.

Where the operation is within the no-fly zones of a controlled or uncontrolled aerodrome, the CRP must consider the requirements of PART 101 MOS 4.04 and 9.05, respectively, when approving the task.

Indoor operations may occur during relevant events.

For the specialised indoor operation procedures, refer to Appendix D5.

### Tethered operations

The CRP may approve tethered operations.

Despite the Part 101 MOS 4.04, CASA approval is required for tethered operations in the no-fly zone of a controlled aerodrome.

Tethered operations within the no-fly zones of a non-controlled aerodrome are allowed without extra CASA approval, provided they meet the Part 101 MOS 9.05 requirements.

Tethered operations within the no-fly zone of a non-controlled aerodrome are permitted during relevant events.

For the specialised tethered operation procedures, refer to Appendix D4.

### Environmental and weather limitations

RP must check the prevailing environmental and weather conditions throughout each operation. Operations must not start if the prevailing conditions are outside the RPA’s published operating criteria.

If conditions deteriorate during an operation, the RP must land the RPA as soon as reasonably practical and suspend the operation until the conditions are within the limits of the RPAS.

## Post-flight administration

At the completion of operations, the RP must complete the mission record in the *FlyFreely Office App* and submit for finalisation to the CRP. This procedure is described in <https://knowledge.flyfreely.io/how-to-finalize-your-missions>.

For operations that have been planned and executed using the Flight Record form in Appendix F1, the Flight Record must be uploaded to the *FlyFreely Office App* following this procedure <https://knowledge.flyfreely.io/completing-your-mission-no-field-app>.

As soon as practicable following each operation, the RP must ensure that ‘time in service’ and any known defects are recorded in the *FlyFreely Office App* to ensure an accurate and timely RPAS Technical Log.

## Emergency procedures

### General

The emergency response for all RPA emergencies is to return the RPA to the ground in a safe location. The preference is to do this without damage to the RPA in the shortest possible time while limiting the potential for damage to people and property on the ground.

The priority of actions is:

1. Maintain control of the RPA
2. Manoeuvre the RPA to a safe location
3. Land the RPA

Depending on the emergency, the RP may use automation or manual flight control to manage the situation.

Any expanded emergency procedures and checklists specific to an RPA are in Appendix B.

Where the RPA has expanded emergency procedures, the RP must ensure an emergency checklist is readily available.

The crew should use initial action principles in all operations:

* **For solo RPAS operations:** Aviate, Navigate, Communicate, Administrate (ANCA)
* **For multi-crew RPAS operations:** Communicate (between crew), Aviate, communicate (externally to ATC / relevant stakeholder), Navigate, and Administrate (CANCA)

**Any RPA that loses control, is missing or has crashed must be immediately reported to the Chief Remote Pilot.**

### Flight termination

Where the RP cannot regain control of the RPA, they should try to command a motor stop or activate the flight termination system (if fitted). The RP should consider the likely location and trajectory of the RPA before controlling a motor stop or starting a flight termination system.

The RP must understand that avoiding injury to third parties and their property is paramount and is a higher priority than preventing damage to the RPA.

### Loss of control link

* Monitor the RPA, which should automatically ‘Return-To-Home’ or ‘Land Now’ as programmed.
* If the programmed lost link action does not start within the expected time, the RP should try to recover the command link by cycling the power or restarting the ground station
* If the link does not recover and the RPA is within VLOS, wait for it to land when the battery is flat

### Loss of orientation

* The RP should attempt to establish the orientation of the RPA. If orientation cannot be established after three attempts, they should initiate a Return-To-Home

### RPA crash site management

* Shut down the motors if still running
* Establish a safe perimeter
* Where there is no sign of smoke or fire
  + Inspect the battery(s) for swelling or damage
* Where there are signs of smoke or fire
  + Maintain a safe distance and prepare the fire-fighting equipment for use
  + Avoid contact with the smoke or fumes
* Report the incident to the CRP.
* Record the incident on the aircraft technical log.

### Lost RPA / Loss of VLOS

* Initiate a ‘Return to Home’ (RTH)
* If visual contact with the RPA is not re-established within 1 minute:
  + Command an emergency shutdown.
  + Make a radio broadcast advising all aircraft near an ‘uncontrolled RPA’ along with its last known position, altitude, and bearing.
  + Notify the CRP

NOTE: Before an emergency shutdown is conducted, consideration must be given to the probable location of the RPA and the potential for collision with persons or property.

### Battery Fires

* Establish a safe perimeter around the site
* Use the available fire extinguisher (s) / water to contain the spread of the fire

Note: Class D extinguishers should be used on lithium-metal battery fires, and Class B extinguishers should be used on lithium-ion battery fires. Further venting and fire may occur as more cells within the battery enter thermal runaway. Avoid smoke and fumes and watch the battery fire until it is completely extinguished.

### Equipment

#### Radio Communications Failure

* The RP should land the RPA in a safe location before making any attempt to rectify the radio issue
* Change to the backup radio (where available)
* Where radio communications cannot be re-established, make mandatory radio calls prefixed with ‘transmitting blind.’

#### Controller Screen Failure when out of VLOS

* Initiate a ‘Return-To-Home’

If the ‘Return-To-Home’ function is triggered via the controller screen

* Turn the controller off to initiate the ‘Return-To-Home.’

### Intrusions

#### Intruder RPA or crewed aircraft RPA enters the operating area.

* Manoeuvre the RPA away from the track of the intruder aircraft
* Descend and land the RPA as soon as it is safe to do so

#### Non-company personnel enter the operating area.

* Manoeuvre the RPA away from the person(s)
* Land the RPA as soon as reasonably practicable while attempting to maintain 30m separation

#### Bird hazard

Task an observer (where available) to watch the flight pattern of the bird(s).

* If the bird is actively tracking the RPA
  + Land the RPA as soon as possible
* If the bird is acting aggressively towards the RPA
  + Attempt to rapidly ascent to above the bird’s altitude (fixed wing to add a full roll during the climb where possible)
  + Move laterally away from the direction that the bird approached from
  + Conduct a rapid descent to landing while maintaining forward speed (to reduce the likelihood of the onset of vortex ring state).

#### Animal hazard

* Attempt to manoeuvre the RPA away from the animal.
* If the animal chases the RPA, manoeuvre to a fenced-off area (if possible).
* Land the RPA and shut it down as soon as possible in a safe location.

### Night operations

#### Failure of landing area lighting at night

* If standby lighting is available
  + Activate the standby lighting
  + Continue the operation or land the RPA (as appropriate)
* If standby lighting is not available
  + Check that the Return-To-Home position is clear of obstacles
  + Execute a Return-To-Home

#### Failure of orientation lighting at night

* Execute Return-To-Home

### Environmental

#### Deteriorating weather conditions

* Manoeuvre the RPA clear of the weather (if possible)
* Land the RPA as soon as possible in a safe location

### Crew

#### Incapacitated pilot (single-crew operations)

* Initiate a Return-To-Home.

#### Incapacitated pilot (multi-crew operations)

* If a second company remote pilot is in the vicinity of the ground control station:
  + The second pilot should assume control of the RPA
  + Manoeuvre the RPA to a safe area
  + Land the RPA as soon as possible in a safe location
  + Assess the condition of the incapacitated pilot and initiate emergency response
* If no company remote pilot is in the vicinity of the ground control station:
  + Nearest crew member initiates the "Return to Home" (RTH) procedure
  + Assess the condition of the incapacitated pilot and initiate emergency response

### Tethering

#### All tethering emergencies except broken tether and loss of lift

* Gently pull the RPA down by the tether until it can be captured and powered down

#### Broken Tether

* Initiate a slow descent, ensuring that any tether line that stays attached to the RPA does not foul the propellors
* Land the RPA in a safe location

#### Loss of lift

* Check that the area downwind is clear
* Call out, “Look out above.”
* Shut down the motors

# Maintenance

## Maintenance schedules

### Periodic inspection schedule

All RPA are maintained IAW the maintenance schedules and procedures detailed in Appendix C of this manual. The MC must describe any upcoming maintenance item in the RPAS Technical Log.

#### Firmware and software

Updating RPAS and control system software is a periodic maintenance item and must only be conducted as and when directed by the MC.

### Daily inspection schedule

A serviceability inspection of the RPA must be completed before starting that day’s flight operations. Pre-flight inspection requirements are listed in Appendix C of this manual and the RPAS Technical Log.

The daily inspection is a maintenance item and must be recorded when completed.

## Maintenance authorisation

### Maintenance personnel

Table 9 outlines the roles/entities authorised to conduct specified maintenance activities on RPAS.

Table 9: Maintenance activities and personnel

|  |  |
| --- | --- |
| Person | Maintenance items |
| MC | * All maintenance items |
| RP holding a valid RePL who has completed operator RPA type training | * Daily inspection (including pre- and post‑flight) * Replacement of propellers * Replacement and charge of batteries * Fitting and removal of payloads and role equipment * Update of firmware/software |
| Organisations and service providers assessed by the MC as competent to provide RPAS maintenance services | * All maintenance items |
| Manufacturers of RPAS items and their approved service agents | * All maintenance items |
| Ground crew who have completed operator RPA type training | * Daily inspection (including pre- and post-flight) * Replacement of propellers * Replacement and charge of batteries * Fitting and removal of payloads and role equipment * Update of firmware/software |

## Recording of defects and maintenance

It is the responsibility of all personnel to report defects to the MC as soon as practical.

All maintenance (including daily inspections) must be recorded in the *FlyFreely Office App* or *FlyFreely Field App*.

## Post-maintenance test flights

Before the MC returns an RPAS to service following any rectification or modification that has the potential to affect flight safety, it must have a flight test. Any appropriately licenced RP may conduct a flight test.

The MC must decide the composition of a flight test and detail it on the Flight Record.

The CRP must authorise all RPAS test flights.

An extra test flight is not required where an external provider completes the maintenance and provides written certification that a test flight has been completed.

## Component maintenance and records

Where components of the RPA have time-life or calendar life limits or where CASA requires individual component time-in-service records to be kept, the MC must ensure that the records are kept.

Where applicable, component maintenance must be recorded in the *FlyFreely Office App*. Procedures for conducting scheduled maintenance can be found at:  
<https://knowledge.flyfreely.io/setting-up-an-rpa-maintenance-schedule>

Note: CASR 101 MOS 10 (d)(ii) requires individual time-in-service records for engines, motors, rotors, and propellors on RPA with a MTOW of greater than 25kg.

1. Copy of RPA operator’s certificate

<insert a copy of the RPA operator’s certificate front and back page>

1. List of RPAS types operated

Table 10 lists the make and model of each RPA operated. Personnel must not use an RPA that is not listed in the table.

Table : RPAS types operated

|  |  |
| --- | --- |
| Make | Model |
| <Make> | <Model> |
|  |  |
|  |  |

Note: Adding an RPA model that is not within the scope of the ReOC constitutes a 'significant change' that requires CASA approval. See Part 101 MOS for the definition of ‘significant change.’

1. RPAS type-specific procedures
   1. <My Drone Type>
      1. Pre-flight & post-flight check

Manufacturer checklists are to be used. The latest version of the aircraft user manual contains the checklists.

* + 1. Specific emergency procedures

Aircraft-specific emergency procedures are contained in the aircraft user manual.

* + 1. Maintenance schedule

The manufacturer's maintenance schedule and recommendations are to be used.

Refer to the latest versions of the aircraft user guide on the manufacturer’s website – <Link to manufacturer website>.

* + 1. RPAS maintenance & operational manual(s)

The current versions of the aircraft user and maintenance manuals are available on The *FlyFreely Office App*.

* + 1. Battery management

Refer to the aircraft user manual.

1. Specialised procedures
   1. Operations in controlled airspace

Operations in controlled airspace are allowed without requiring specific CASA approval where the operation is conducted clear of the approach and departure paths, outside of 3NM from the aerodrome measurement points, and below 400 feet AGL.

Operations within 3NM of the aerodrome measurement points, within the approach and departure path, or above 400 feet AGL need specific approval.

* + 1. Obtaining approvals
       1. Civil airspace controlled by Airservices Australia

For simple projects where task performance is not critical, an automated airspace approval should be used in preference, where they are available.

The standard application process is preferred for major projects where significant funds and logistics are required (e.g., travel, accommodation, etc.) or where job performance is critical. This reduces the risk of CASA cancelling an automated airspace pre-approval at short notice.

RP can obtain automated approvals for controlled aerodromes before starting the task.

Where automated approvals are unavailable, the CRP must make a written application to the CASA using Form 101-09.

* + - 1. Military Controlled Airspace

The CRP can obtain a Letter of Agreement to fly in military-controlled airspace directly from the military air traffic control service. ERSA is the source of contact details.

Operations above 400 ft AGL in military-controlled airspace also require an Instrument of Approval from CASA.

* + 1. General operating requirements in controlled airspace

The Chief Remote Pilot must conduct a risk assessment that details the task hazards and the risk mitigation strategies before approving operations in controlled airspace.

All flights within controlled airspace should be geofenced laterally and vertically.

The CRP must ensure that at least one person is certified to use a VHF air band radio and is always onsite.

RP must keep a radio listening watch on the local VHF frequency at least 15 minutes before and throughout the operation. RP must NOT make radio broadcasts unless explicitly requested by air traffic control or in the case of an emergency that might affect crewed traffic.

The CRP must ensure the RPA has an active fail-safe mode triggered if a data-link loss occurs. Before flight, the RP must check the configuration of the fail-safe to confirm it will cause the RPA to:

* adjust altitude to the minimum safe level to provide obstacle clearance and minimum potential for collision with other aircraft and
* move to a predefined safe landing or flight termination area and
* land or otherwise end the flight.

The RP must immediately notify ATC if the RPA exits the operating area (escape event), regardless of whether it was under the pilot’s control at the time of the escape.

Unless otherwise requested by ATC, the RP must ensure a transponder or ADSB (out) capability fitted to an RPA is turned OFF within controlled airspace.

* + 1. Extra requirements when working under a written authorisation

Unless the approval instrument says otherwise, the remote pilot must:

* ensure there is reliable VHF coverage that would allow the remote pilot to communicate with ATC if required.
* follow any direction given by ATC
* not conduct operations unless a NOTAM advising of the RPA operations is active. The CRP must ensure that a NOTAM request is sent.
* follow the conditions on the authorisation if the conditions conflict with a requirement in this manual
  1. Operations within the relevant airspace of a non-controlled aerodrome or HLS

For operations using RPA over 2 kg, the RP must keep a listening watch on the relevant air traffic service frequency or frequencies or the relevant CTAF (as applicable). RP should start listening to the radio 15 minutes before the first launch and continue listening for the duration of the operation of the RPA.

The CRP strongly encourages the use of radio for all operations.

The remote pilot in command must ensure that the RPA is not flown within 500 feet vertically and 1500 meters horizontally of any airborne crewed aircraft unless approved explicitly by the CRP.

For all operations using RPAs over 2 kg, at least one observer trained IAW this manual must be available from 15 minutes before the RPA is launched to the time that the RPA lands. Using an observer is optional but encouraged when using an RPA of no more than 2 kg.

The observer must:

* be in a location that enables them to help with traffic avoidance; and
* have continuous two-way communication with the remote pilot of the RPA

The remote pilot in command must ensure that the RPA is equipped and operated with an active fail-safe mode that will:

* Adjust altitude to the minimum safe level (not above 400 feet AGL) to provide obstacle clearance and minimise the potential for collision with other aircraft.
* transit to a predefined safe landing or flight termination area; and
* land or otherwise end the flight

if the RPA data link or control of the RPA is lost.

* + 1. Operations during a relevant event

Operations using micro-RPA with a gross weight of less than 250g are permitted in relevant airspace during relevant events provided the flight:

* remains clear of the movement area and the approach and departure paths; and
* does not create an obstruction to an aircraft that is taking off or landing.

In all other circumstances, the RP must stop the operation and land the RPA as soon as they become aware of an airborne crewed aircraft operating in the area (‘a relevant event’). The operation may recommence when the crewed aircraft has left the area or ceased operating.

* 1. Night operations

In addition to the requirements of CASA Instrument 01/17, RP should ensure that:

* The take-off and landing areas are lit to near daylight conditions to allow Autoland's capability of the RPA to function normally. Ground lighting must be available for each nominated and alternate landing area. A backup ground lighting system should be available where the JSA includes a single take-off/landing site.
* the selected take-off and landing sites should be visually off-line from the operating area associated with the task. This reduces the effects on night vision associated with looking at brightly lit areas.
  1. Tethered Operations
     1. General requirements for tethered operations
* Non-automated tethering systems must have at least two crew members. One crew member shall control the aerial platform, and the other shall hold the tether line.
* A single crew may use an automated tethering system.
* Crew must have received training and be approved by the CRP to conduct tethered operations.
* The MC is responsible for assessing the suitability of systems for tethered operations and must note any approvals on the maintenance log for the approved system.
* Only MC-approved systems may be used for tethered operations.
* The tether line working load strength must be at least five times the MTOW of the aerial platform.
* The attachment point to the aerial platform must be able to sustain a load of at least five times the MTOW of the aerial platform.
* The maximum length of the tether shall be 150 feet (45 meters).
* For manually operated tethers, the line must be weighted periodically along its length to prevent line sailing and entanglement with the aerial platform during descent.
* The ground anchor point must sustain a vertical load of seven and a half times the MTOW of the RPA without moving.
* Where available, propellor guards should be fitted during tethered operations.
* All crew must wear hard hats, eye protection, and normal PPE during operations.
* The quadrant immediately downwind of the ground tether point should be kept clear of people throughout the operation to a distance equal to the length of the tether.
  + 1. Tethered operations within the no-fly zone of a controlled aerodrome

Reserved

* + 1. Standard language for use when tethering

Crew must use the following standard language during multi-crew tethered operations.

* + - 1. Remote pilot commands

Table : Remote pilot commands

|  |  |
| --- | --- |
| Challenge | Response |
| Taking off, release tether | Copy taking off |
| Release tether | Releasing tether |
| Retract tether | Retracting tether |
| Hold tether | Holding tether |
| Landing, retract tether | Copy landing |
| Slow release / retract | Slowing release / retract |
| Speed up release / retract | Speeding up release / retract |
| Report current tether length | The current tether length is <length in m> |

* + - 1. Tether operator commands

Table : Tether operator commands

|  |  |
| --- | --- |
| Challenge | Response |
| Stop climbing | Stopped |
| Stop descending | Stopped |
| Proceed on task | Copy (climbing/descending/moving) |
| Approaching maximum length | Copy approaching the maximum length |
| Tether at maximum length | Copy tether at maximum length |
| Report indicated height | Indicated height is <length in m> |

* + - 1. Emergency commands

Table : Emergency commands

|  |  |
| --- | --- |
| Challenge | Response |
| STOP STOP STOP | Copy stops |
| LAND IMMEDIATELY | Copy Landing now |
| CLEAR THE AREA NOW – (REPEAT) | (move away from beneath the RPA) |

* 1. Indoor Operations
* Where the operation is within the no-fly zone of a controlled or uncontrolled aerodrome, the CRP must consider the Part 101 MOS 4.04 and 9.05 requirements when approving the task.
* Either the CRP or RP must obtain written permission from the owner of the premises before any operation.
* The building or structure must completely enclose the operation so the RPA cannot escape.
* The RP must ensure that if the RPA collides with any part of the containment area, no material from the RPA or containment area can cause injury to a person or property outside the region.
* The lost link and low battery fail-safe functions must be set to hover rather than return to home.
* The hover height must be set below the lowest ceiling height within the operating area.
* Lighting in the operating area must be adequate to allow the regular operation of any collision avoidance and ground proximity sensors fitted to the RPA
* Remote pilot/s flying the RPA must be proficient in GPS disabled / ATI mode operations. The RP must use a ‘GPS off’ mode, if available.
* The OC shall place signage at each potential entrance to the operating area within the building, warning of drone operations in progress and the need to stay out and keep the entrance closed.
* The RP is to conduct as many test flights as necessary to work out the airflow within the operating area and any likely adverse effects on the RPA behaviours. Non-company personnel may not be in the active area whilst the RP conducts test flights.
* The RP must ensure that the RPA has propeller guards fitted if non-company personnel are within the operational area.
* All non-company personnel inside the operational area must complete a Non-Company Personnel Consent.
* All Non-Company Personnel are to receive a pre-flight briefing before commencement of the operation.
* The RP must complete a JSA, and any non-standard items must be subject to a risk assessment.
* The Flight Record must include details of the containment area and any added controls needed to keep the RPA within the area.

1. Risk rating criteria and risk register template

Table : Consequence values

|  |  |  |
| --- | --- | --- |
| Value | Consequence | Meaning |
| A | Catastrophic | * Catastrophic incident * Fatality * Equipment destroyed * More than $100,000 impact * Threatens the ongoing existence of the organisation |
| B | Hazardous | * Major incident * Serious injury * Major equipment damage * $50,000 – $100,000 impact * Major impact to the organisation’s ability to provide services * A significant reduction in safety margins, or creating physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely |
| C | Moderate | * 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 | * Nuisance * Minor injury * $2,000 – $10,000 impact * Operating limitations required * Use of emergency procedures to manage |
| E | Negligible | * Less than $2,000 impact * Few consequences, managed through normal procedures |

Table : Likelihood values

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

Table 16: Risk rating matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 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 |

|  |  |  |
| --- | --- | --- |
| Risk level | Acceptance level | Actions |
| High | CEO | The activity must be suspended  Risk is considered unacceptable and requires a 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 |

* 1. Risk register

Next Risk Register Review Due Date:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Reference number** | **Date entered in register** | **Hazard** | **Risk description** | **Existing controls** | Likelihood | **Initial risk**  Consequence | Risk rating | **Additional controls** | Likelihood | **Residual risk**  Consequence | Risk rating | **Risk owner** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

1. Forms and templates

All operational records must be maintained in the *FlyFreely Office App*. The included forms are to be used in cases where the app is unavailable, and should be scanned and uploaded to FlyFreely as soon as possible.

* 1. Flight Record

Section 1: Operations overview and preliminary assessment

|  |
| --- |
| Operation identifier: |
| Name of preliminary assessor: |
| Task overview: |
|  |
| Location: |
| Proposed date(s) and time(s): |
| Proposed RPAS type/model(s): |
| Preliminary assessment: |
| **YES** **NO**  30 m from people can be maintained  Clear of populous areas  Below 400 ft AGL  Outside of an active restricted area  Outside of the no-fly zone of a towered airport  Outside of the no-fly area during a relevant event  Operating in day VMC  Operating VLOS  The organisation’s SOP mitigates all hazards  Not near active emergency operations  RPA weight 2 kg or less |
| If you answered **YES** to ALL the above, complete the section below and send it to the CRP for authorisation:  Launch location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Recovery location: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Maximum height planned: \_\_\_\_\_\_\_\_\_ ft AGL  If you answered **NO** to ANY of the above, complete JSA (Section 2 of Flight Record). |

Section 2: Job safety assessment

Section 2 does not need to be completed where an operation falls within the SOC, using RPA that is not heavier than 2 kg, and where no official authorisation is required.

|  |
| --- |
| Map of operating area showing launch and landing locations and any relevant hazard |
|  |

|  |  |  |  |
| --- | --- | --- | --- |
| Airspace class(es) and height(s) |  | Maximum operating height | ft AGL |
| SUA |  | Maximum operating altitude | ft AMSL |
| Nearby aerodromes (include location, distance, type) |  | | |
| Aeronautical radio frequencies |  | | |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| VLOS |  | EVLOS |  | BVLOS |  | DAY |  | NIGHT |  |

|  |
| --- |
| Airspace hazards and mitigations |
|  |

|  |
| --- |
| Ground hazards and mitigations (people, obstacles, interference, etc.) |
|  |

|  |  |  |
| --- | --- | --- |
| Does SOP adequately mitigate all hazards? | YES | NO |
| If NO, detail unmitigated hazards | | |

|  |  |  |
| --- | --- | --- |
| Preliminary assessment / JSA correct | YES | NO |
| If NO, record changes here |  |  |

|  |  |  |
| --- | --- | --- |
| Other operating restrictions/limitations |  |  |
|  | | |

|  |  |  |
| --- | --- | --- |
| Identification of official authorisation obtained (if applicable) |  |  |
|  | | |

Section 3: Approval

|  |  |  |  |
| --- | --- | --- | --- |
| Flight authorisation | Approved | YES | NO |
| Date(s) approved for operations |  | | |
| RPA types/models approved for operations |  | | |
| CRP ARN: | Sign: | Date: | |
| RP ARN: | Sign: | Date: | |

Section 4: Flight log

Part A

RP to complete before starting operations.

|  |  |  |
| --- | --- | --- |
| RP | Second RP | Observer/crew |
|  |  |  |
| Weather  (confirm that conditions meet manufacturer limitations) |  | |
| Onsite validation of planning documentation completed | RP initials: | |

|  |
| --- |
| Detail any omissions and errors in the planning document here |

Part B

RP to complete after operations.

|  |  |  |
| --- | --- | --- |
| Was the operation conducted IAW Sections 1 to 3 of this Flight Record? | YES | NO |
| If NO, record changes here | | |

|  |
| --- |
| General comments |
|  |

Part C

|  |  |  |
| --- | --- | --- |
| Was the RPAS serviceable at the end of the operation? | YES | NO |
| If NO, record the defects on Part 2 of the RPAS Technical log | | |

* 1. RPAS Technical Log

RPAS logs are recorded and managed in *FlyFreely Office App*. This includes a combined report for each RPA covering:

* RPAS Technical Log
* Time in Service Log
* Defect and Maintenance Log

An example of this report is shown below.

A close-up of a log

Description automatically generated

* 1. Initial remote pilot employee record

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ****Contact Details**** | | | | | |
| Pilot Name: |  | ARN |  | | |
| Address: | | |  | | |
| Phone: | | | B | AH | M |
| Email | | |  | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ****Next of Kin**** | | | | |
| Name: |  | | Relationship: |  |
| Address: |  | | | |
| Phone: | B | AH | | M |

|  |  |  |  |
| --- | --- | --- | --- |
| ****Credentials and experience**** | | | |
| Hours: | Multirotor: | Fixed Wing: | Powered Lift: |
| Helicopter: | Airship: | Total: |
| Types Flown: |  | | |
|  | | |
|  | | |

|  |
| --- |
| ****Training and Assessment**** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ****INDUCTION TRAINING**** | | |  | ****RECURRENT TRAINING**** | | |
| **Subject** | **Date** | **Certified by** |  | **Subject** | **Date** | **Certified by** |
| WHS Induction: |  |  |  |  |  |  |
| Policy & Procedures |  |  |  |  |  |  |
| Initial flight check |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| ****OPERATOR APPROVALS**** | | |
| **Approval** | **Date** | **Certified by** |
| Night |  |  |
| EVLOS |  |  |
| Senior Remote Pilot |  |  |

* 1. Induction training record

|  |  |  |  |
| --- | --- | --- | --- |
| Pilot Name: |  | ARN |  |
| Trainer Name: |  | Date of training: |  |

|  |  |
| --- | --- |
| ****Subject/discussion point**** | ****Complete Yes / No**** |

|  |  |
| --- | --- |
| * Knowledge of Operations Manual |  |
| * Knowledge of normal operations |  |
| * Planning requirements (NAIPS, flight plans, NOTAMS, etc.) |  |
| * Briefing requirements IAW the pre-operations briefing form |  |
| * Forms required for general operations (Part F of Operations Manual) |  |
| * Roles and responsibilities of assigned crew positions |  |
| * Emergency procedures (Section 2.6 of Operations Manual) |  |
| * Conduct job safety assessment and risk management procedures |  |
| * Maintenance procedures and internal authorisations |  |
| * WHS issues |  |
| * Crew coordination and support crew duties |  |
| * Introduction to the Document Management System |  |
| * Obtaining automated airspace approvals (where applicable) |  |
| * Introduction to the Compliance Management System (where applicable) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Comments | | | |
| ****Training Acknowledgement**** | | | |
| Completed | YES  NO | | |
| Trainer signature |  | Date |  |
| Pilot Signature |  | Date |  |

* 1. Continuation training record

|  |  |  |  |
| --- | --- | --- | --- |
| Pilot Name: |  | ARN: |  |
| Trainer Name: |  | Date of training: |  |

|  |  |
| --- | --- |
| ****Subject/discussion point**** | ****Complete Yes / No**** |
| Knowledge of Operations Manual |  |
| Knowledge of normal operations |  |

|  |  |
| --- | --- |
| * Planning requirements (NAIPS, flight plans, NOTAMS, etc.) |  |
| * Briefing requirements IAW pre-operations briefing form |  |
| * Forms required for general operations (Part F of Operations Manual) |  |
| * Roles and Responsibilities of assigned crew positions |  |
| * Emergency procedures (Section 2.6 of the Operations Manual) |  |
| * Conduct of a job safety assessment and risk management procedures |  |
| * Maintenance procedures and internal authorisations |  |
| * WHS issues |  |
| * Crew coordination and support crew duties |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | |  |
|  | | | |  |
|  | | | |  |
| Comments: | | | | |
| ****Training Acknowledgement**** | | | | |
| Completed: | YES  NO | | | |
| Trainer signature: |  | Date: |  | |
| Pilot Signature: |  | Date: |  | |

* 1. Observation flight record

|  |  |  |  |
| --- | --- | --- | --- |
| Trainee pilot name: |  | ARN |  |
| Trainer name: |  | Date of training: |  |

|  |  |
| --- | --- |
| Training goals: |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Operation identifier: |  | | |
| Location: |  | Date / Time: |  |
| RPAS type/model: |  | | |
| YES NO  30m from people can be maintained  Clear of populous area  Below 400 ft AGL  Outside of the restricted area  Outside of the no-fly zone of a towered airport  Outside of the no-fly area during a relevant event  Operating in day VMC  Operating VLOS  All hazards mitigated by SOP  Not near active emergency operations  RPA weight 2kg or less | | | |
| Comments: |  | | |
| Trainee pilot signature: |  | Trainer signature: |  |

* 1. Safety occurrence reporting form

Management understands that reporting safety occurrences can sometimes be difficult, particularly for new and junior staff. Management strongly encourages all personnel to voluntarily report all matters they believe pose a risk to our operations.

Anyone can make a report confidentially and anonymously. However, there are situations where people must make reports under legislation, e.g., the PIC of an aircraft involved in an accident or serious incident.

Management treats all reports as confidential to the greatest extent possible. If you would like to receive feedback on the outcome of your report, then please provide contact details. Anonymous reports will have the reporter’s details removed before dissemination.

|  |  |
| --- | --- |
| Check this box if you wish to make an anonymous report | **🞎 Anonymous** |

|  |  |  |  |
| --- | --- | --- | --- |
| ****Reporter’s details**** | | | |
| Reporter’s first name: |  | Reporter’s last name: |  |
| Phone (including area code): | |  | |
| Email: |  | | |
| Reporter’s position/role: | RPIC  RP (not in command)  Observer  Other ground crew  No defined role in the task | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ****Occurrence details**** | | | | |
| Occurrence Date |  | | Occurrence Time |  |
| State / Territory of Occurrence | | NSW  VIC  SA  WA  NT  QLD  TAS  ACT | | |
| Location of event | | | | |
| Was there damage to the RPAS? | | | YES | NO |
| Was there any injury to a person? | | | YES | NO |
| Occurrence class | Incident | | Serious incident | Accident |
| Describe the event | | | | |
| Are any supporting media files, photos, or videos available? | | | YES | NO |
| Have the telemetry logs been kept? | | | YES | NO |

|  |  |  |  |
| --- | --- | --- | --- |
| ****RPAS Details**** | | | |
| RPAS registration: |  | | |
| RPAS make: |  | RPAS model: |  |
| Operation / Job #: |  | | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ****Event Details**** | | | | | |
| Purpose of the operation: |  | | | | |
| Departure location: |  | Destination location | |  | |
| Related runway (if applicable): | |  | | | |
| Type of operation: |  | | | | |
| The phase of flight: | Standing  Taxying  Take-off  Initial Climb  Climb  Cruise  Approach  Descent  Landing  Manoeuvring  Circuits  Holding  Other  Unknown | | | | |
| Operation type: | VLOS | EVLOS | | BVLOS | |
| Altitude type: | AGL  AMSL  Surface | | Altitude | |  |
| Event type: | Bird strike  Other animal strike  Technical failure  Near collision with another plane  Weather / turbulence Other | | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Report ID: |  | Date received |  |
| Assigned to: |  |  |  |
| Action: | | | |
| Date finalised: |  | Finalised by: |  |
| Management review date: |  | Management review by: |  |

* 1. Safety occurrence register

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Occurrence ID | Date received | Anonymous | Assigned to | Date finalised |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |
|  |  | 🞎 YES 🞎 NO |  |  |

* 1. RPA register

Details and registrations for all RPA are managed in the *FlyFreely Office App*.

* 1. Consent to operate with 30m or non-company personnel

| Consent For Operation Near Non-Company Personnel | | |
| --- | --- | --- |
| Regulation Relating to this Operation (*CASR 1998*)  “101.245 Operation near people   1. Subject to sub-regulations (2) and (3), a person must not operate an RPA within 30 meters of a person (the ***second person***) who is not directly associated with the operation of the RPA.   Penalty: 10 penalty units.  (1A) An offence against sub-regulation (1) is an offence of strict liability.  **Note**: For ***strict liability***, see section 6.1 of the Criminal Code.   1. Sub-regulation (1) does not apply if the second person is standing behind the RPA while the RPA is taking off. 2. Sub-regulation (1) does not apply if: 3. the RPA is a very small, small, or medium RPA; and 4. the second person has consented to the RPA operating within 30 m of him or her; and 5. the RPA operates no closer than 15 m of him or her. 6. Sub-regulation (1) does not apply if: 7. the RPA is an airship, and 8. the airship approaches no closer to the second person than 10 m horizontally and 30 ft vertically. 9. Sub-regulation (1) does not apply if the person holds an approval under regulation 101.029 for the purposes of this sub-regulation.” | | |
| I agree that I understand the above regulations surrounding the operation of an RPA within 30m of a person. The RPA operator has explained the risks associated with the operation to me.  I hereby consent to an RPA being operated within 30m but no closer than 15m of me. | | |
| Full Name | Signature | Date |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

* 1. SRP delegation record

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Senior Remote Pilot Delegation Form | | | | | | |
| Start date of delegation | |  | | | | |
| End date of delegation | |  | | | | |
| Restrictions on delegation | |  | | | | |
| Any other specific requirements | |  | | | | |
| SRP Name |  | | Sign |  | Date |  |
| CRP Name |  | | Sign |  | Date |  |
| Handover/takeover brief | | | | | | |
| Applications in progress and status |  | | | | | |
| Current/Upcoming tasks |  | | | | | |
| Internal training to be conducted |  | | | | | |
| RPAS serviceability |  | | | | | |
| Ancillary equipment serviceability |  | | | | | |
| Remote pilots/crew status |  | | | | | |
| Other items |  | | | | | |

1. Training syllabus and checking matrix
   1. Policy and procedure training syllabus

Applicability:

* All RPs and operational crew members.
  + 1. Ground/theory
* Knowledge of operations manual
* Knowledge of normal operations:
  + Planning requirements (NAIPS, flight plans, NOTAMS, etc.)
  + Forms required for general operations (Section 2 in the operations manual)
  + Briefing requirements IAW pre-operations briefing form
  + Roles and responsibilities of assigned crew positions
  + Emergency procedures (Section 2 in the operations manual)
  + Conduct of a job safety assessment and risk management
  + Maintenance procedures and internal authorisations
  + Safety and risk management strategies and WHS issues
* Crew coordination and support crew duties.
  1. RPAS type training syllabus

Applicability:

* RPs operating RPA type (all items)
* Operational crewmembers handling RPA type (items relevant to the role).
  + 1. Ground/theory
* Description of RPAS and components
* Handling of RPAS and transportation
* Handling and charging of LiPo batteries
* Assembly/disassembly of the system, including the camera
* Detailed explanations on the use of the transmitter and operating frequencies and limitations
* Flight controls, sound, and light signals
* Manual and reversionary modes
* Pre-flight inspection
* Problem-solving, fault analysis
* Pre- and post-flight procedures
* Crew management and responsibilities
* Crew coordination (including the use of standard phraseology)
* Use of operating software
* Use of ancillary equipment.
  + 1. Flight exercises
* Range check
* Take-off and landing
* Practical flight exercises (normal automatic control)
* Practical flight exercises (backup manual control)
* Automatic safety features
* Camera operation
* Emergency procedures (may talk through relevant EPs that cannot be simulated safely during flight)
* Specialised RPAS training: night VLOS (N-VLOS), EVLOS, BVLOS as applicable
* Safety.
  1. Night visual line of sight training syllabus

Applicability:

* RPs operating at night.
  + 1. Description of training (N-VLOS-D)
       1. Unit description

This unit describes the skills and knowledge required to operate an RPA at night-time.

* + - 1. Elements and performance criteria
         1. Pre-flight preparation

The RP confirms that:

1. The RPA meets the equipment requirements for an N-VLOS flight.
2. A risk assessment has been completed that incorporates the night visual conditions.
   * + - 1. Night operations
3. Perform all normal manoeuvres under N-VLOS conditions using manual control or an AFMS.
4. Orient and navigate the RPA efficiently and safely at a distance.
5. Maintain an effective lookout for other aircraft and take appropriate action to maintain separation and prevent conflict.
   * + - 1. Night landing
6. Land the RPA safely and without damage within N-VLOS tolerances.
   * + 1. Range of variables
7. Various payloads and RPA configurations.
8. Operations both in dark conditions and under artificial illumination.
9. Various weather conditions.
   * + 1. Underpinning knowledge
10. RPA equipment requirements.
11. Human performance considerations.
12. Night operation considerations.
13. Knowledge of rules and considerations under artificial illumination.
14. N-VLOS operational requirements for operations at a controlled or non-controlled aerodrome (if required).
    * 1. Practical assessment (N-VLOS-P)
         1. Flight test requirements

A person operating under an N-VLOS approval must demonstrate their knowledge of N-VLOS flight requirements as set out in subclause G3.3.2 and competency in the units of competency mentioned in subclause G3.2.3 by performing manoeuvres with an aircraft in the desired category.

* + - 1. Knowledge requirements

The applicant must demonstrate their knowledge of the privileges and limitations of the rating and must also demonstrate knowledge of:

1. The definition of ‘night’ for aviation purposes.
2. RPA requirements for flight at night (compared to day VMC).
3. Applicable rules and considerations for flight at night under bright lights.
4. Considerations for conducting an N-VLOS flight at a controlled or non-controlled aerodrome (if applicable).
5. The visual illusions and human performance limitations that may eventuate with an N‑VLOS flight.
   * + 1. Practical flight standards
6. Ensure the aircraft is fit to fly and is equipped for night flights.

Competently conduct all normal manoeuvres at night manually or with an automated mode as applicable.

Under manual or automated control, orient and navigate the aircraft efficiently and safely at a distance from the control station.

Maintain an effective lookout for other aircraft and take appropriate action to maintain separation and prevent conflict.

* + 1. Theory (N-VLOS-T)
       1. Flight at night theory test

1. Enumerate the additional considerations needed to operate an RPA during an N‑VLOS flight (compared to a flight during the day):
   * under bright lights and
   * in an otherwise dark area.

Define ‘night’ for aviation purposes.

Describe the aircraft equipment requirements for an N-VLOS.

Describe the considerations for conducting an N-VLOS flight at a non-controlled aerodrome.

Describe the additional considerations for coping with equipment failures at night.

* + - 1. Human performance

Explain the relevant human performance and physiological limitations for the conduct of RPAS operations at night:

1. Describe the adaption of the eye to darkness and explain how long the eye takes to adapt to night conditions.
2. Describe why lights have a red filter during night operations.
   * + 1. Risk assessment – night operations

Describe and list any special precautions a RP might take for a night operation.

* 1. Senior Remote Pilot (SRP) training syllabus
     1. Unit description

This unit describes the skills and knowledge required for an RP to be appointed as an SRP.

* + 1. Experience requirements

Before appointment as an SRP, the Remote Pilot must:

* have at least 20 hours operating RPA above 250 grams of which at least 5 hours shall be on the aircraft type to be used by pilots under the control of the SRP
* hold an Aeronautical Radio Operators Certificate or higher aviation radio qualification
* where the SRP's role involves night operations, have completed at least five (5) night flights
* where the SRP's role involves BVLOS operations, have completed at least five (5) BVLOS flights
* where the SRP's role involves operations within 3nm of controlled aerodromes, the SRP must have completed at least five (5) flights operated within 3 NM of a controlled aerodrome.
  + 1. Training

SRP training includes the following areas:

* Operations Manual content
* CASA legislation
* Basic aeronautical knowledge
* Aeronautical information products (maps/charts, ERSA, AIP)
* Interpretation of weather reports
* RPAS limitations
* Record keeping
* Approval of tasks
* Communication with CASA
* Risk management.
  + 1. Assessment

The assessment of an SRP assessment is to consist of the following items:

* + - 1. Scenario activity

A standard RPAS operation which may or may not require permission from CASA. The scenario should be presented as a complex operation in which multiple risks must be identified and mitigated.

* + - 1. Oral Exam

The CRP is to conduct an oral exam consisting of a minimum of 15 questions which cover the following key areas:

* roles and responsibilities of SRP
* Part 101 Vol 3 of the Civil Aviation Safety Regulations (CASR 1998)
* Part 101 Manuals of Standards
* aeronautical publications
* interpreting VTC, including symbols, area frequencies, aerodromes, airspace class and vertical limits, and PRD areas
* decode terminal area forecast and NOTAM
* VMC conditions
* ERSA
* company RPAS procedure
* knowledge of risk identification
* risk management process
* RePL categories
* emergency procedures.

1. Permissions, Exemptions, and Approvals

Intentionally Blank

1. See Part 101 MOS 10A for definition of ‘significant change’. [↑](#footnote-ref-2)
2. ATSB reporting requirements are detailed in the *Transport Safety Investigation Regulations (2021).* [↑](#footnote-ref-3)
3. See Section 23 of the CAA and Part 92 of CASR. [↑](#footnote-ref-4)
4. See Chapters 4 and 9 of the Part 101 MOS. [↑](#footnote-ref-5)