



Australian Government
Department of Climate Change, Energy,
the Environment and Water
Australian Antarctic Division

AAD STANDARD OPERATING PROCEDURE OPERATIONS MANUAL

Volume 5A – RPAS standard operating procedures 2026-2027

*This document sets out the minimum requirements for **remotely piloted aircraft systems (RPAS)** operations within the Australian Antarctic Program (AAP).*



DJI M350 with Ice Penetrating Radar payload at Loken Moraine, near Casey Station (photo Gwil Price).

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Revision history

Version	Date	Summary of changes	Approved by
V1.0	Sep 2022 Doug Thost	Separate Chapter 13 RPA from Volume 5 Aviation SOP to stand-alone SOP, including re-writing and updating several sections. All section numbering has changed. Addition of sections 1 & 2, general introductory statements and sections common to all volumes of SOPs, including key contacts. Additions to section 3; 3.1, 3.2, 3.5, 3.6 and 3.10. Rewrite intro to section 4. Redraft Fig. 1.1 & Fig. 1.2. Update section 7.2.3 to reflect new CASA categories. Updates to section 8.3 to quantify proficiency requirements and RPAS maturity. Included weather minima in 8.1 as per CASA AC101-01 v4.0. Added section 8.5. Updated section 9. Inclusion of Appendix A – RPA application for use template.	GM Antarctic Operations Branch
V1.1	Jan 2023 Doug Thost	Minor typographical corrections throughout. Section 4.1 - Remove reference to CASA 96/17 (repealed) and replace with reference to MOS 2019. Update Section 9.1	GM Antarctic Operations Branch
V2.0	Aug 2023 Stephen Wall / Doug Thost	Minor typographical corrections and update of references and contacts information. Section 4 - Updated with new information regarding the requirements to meet the Chicago Convention which currently prohibits RPA operations outside Territorial Waters (12nm). Section 8.1 – Operating conditions with regards to temperatures and wind speeds updated to align with Environmental drone policy. Appendix B – UAV ATRA form updated to include the Station of operation (this will be updated in the printed forms on the next print run).	GM Antarctic Operations Branch
V3.0	Jun 2024 Stephen Wall	Minor edits throughout to ensure references and links are correct. Change of Responsible Officer to Director of Aviation. Amendment of the requirements for recreational drone operators to hold CASA Operators Accreditation. Updated information on Flight Planning, Command and Control and operational requirements. Updated requirements for Aviation reporting requirements. Amendments to the Model Aircraft Preliminary Notification (Appendix C). Amendments to the RPA Post Flight Report (Appendix D).	Branch Head Antarctic Operations
V4.0	Aug 2025 Doug Thost / Jenn McGhee	Change responsible Officer to DCCEEW Deputy Chief Remote Pilot. Minor updates and edits to ensure references and links are correct. Updated information on landing areas, ships decks and aerodromes. Updated flow chart of AAD Procedures, Master contact list, Post Flight Report and improve clarity of 3.9 RPIC.	Branch Head Antarctic Operations
V5.0	May 2026 Doug Thost	Remove Model Aircraft / Recreational drones from this manual. Complete restructure to avoid repetition and duplication. Define role of AAD Director of Aviation. Update distance limitations on HLA / Ship deck to 0.75 NM. Revise RPAS ATRA (now RORA).	Branch Head Antarctic Operations

Quick Reference Checklist

1. **Excluded category operations are not permitted:** all RPA operations must be under a valid ReOC with RePL-qualified remote pilots (or as otherwise approved by CASA and accepted by AAD/DCCEEW).
2. **No fully autonomous operations.**
3. **Before deployment:** complete Appendix A (Application), obtain environmental authorisation/permit (as required), and confirm CASA credentials (ReOC/RePL/registration).
4. **Before each flight:** obtain local approval (SL/VL/OPSC/FL as applicable) and complete a RORA (Appendix B). Ensure comms plan and crewed-aircraft deconfliction.
5. **Standard operating conditions** apply unless specifically approved otherwise (Section 8). Key rules: VLOS, day/VMC, below 121 m (400 ft) AGL, clear of cloud, ≥5000 m visibility, ≥30 m lateral separation from non-participants, not within 200m from static wildlife, not within 100m from ASPA/ASMA boundary.
6. **After flight:** complete post-flight RORA reporting and submit required records within required timeframes (Section 6 and Section 10).

This volume is organised around how work is actually done: governance and approvals (who approves what), roles and responsibilities (including a RACI matrix), planning and authorisations (before deployment and before each flight), operating rules (what you must do during flight), then reporting/records, environmental considerations, and emergency/incident reporting.

Acronyms

Acronym	Meaning
AAD	Australian Antarctic Division
AAP	Australian Antarctic Program
AAT	Australian Antarctic Territory
AER	AAD Antarctic & Environmental Regulation
AGL	Above Ground Level
AROC	Aeronautical Radio Operator's Certificate
ASPA	Antarctic Specially Protected Area
ATSB	Australian Transport Safety Bureau
BARS	Basic Aviation Risk Standard
BVLOS	Beyond Visual Line Of Sight
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulations
CRP	Chief Remote Pilot
DAMP	Drug and Alcohol Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCRP	DCCEEW (AAD) Deputy Chief Remote Pilot
EIA	Environmental Impact Assessment
EVLOS	Extended Visual Line of Sight
FL	Field Leader
FROL	Flight Radiotelephone Operator Licence
HIMI	Heard Island and McDonald Islands
ICAO	International Civil Aviation Organization
ISR	Intelligence, Surveillance and Reconnaissance
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
MC	DCCEEW Maintenance Controller
MTOW	Maximum Take-Off Weight
OONP	Operations Over or Near People
OPSC	Station Operations Coordinator
ReOC	Remotely Piloted Aircraft Operator's Certificate
RePL	Remote Pilot License
RORA	RPA Operational Risk Assessment
RP	Remote Pilot

Acronym	Meaning
RPA	Remotely Piloted Aircraft
RPAS	Remotely Piloted Aircraft System
SBP	AAD Senior Base Pilot
SL	Station Leader
SOP	Standard Operating Procedure
SORA	Specific Operations Risk Assessment
UAS	Uncrewed Aircraft System
VL	Voyage Leader
VLOS	Visual Line of Sight
WAM	Wilkins Aerodrome Manager

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1 Scope, purpose and definitions

1.1 Purpose

This Standard Operating Procedure (SOP) sets out the minimum requirements for planning, approving, conducting, and reporting remotely piloted aircraft (RPA) operations conducted within the Australian Antarctic Program (AAP).

Within this document, the terminology Remotely Piloted Aircraft System (RPAS and RPA) is used exclusively to describe uncrewed aircraft and their associated components—such as Ground Control Stations (GCS), command and control links, communications systems, and launch and recovery equipment—when these are operated with no pilot on board. This includes remotely piloted and semi-autonomous aircraft systems across all applicable types (aeroplane, multi-rotor, powered-lift and airship).

The term **Remotely Piloted Aircraft (RPA)** refers specifically to any uncrewed aircraft **used for commercial, operational, or scientific tasks**, where the pilot is not physically on board the aircraft. All operational guidance, procedures and requirements in this volume pertain solely to RPAS and RPA activities conducted within the Australian Antarctic Program.

1.2 Scope

- **This volume applies to RPA operations only.**
- **In scope:** RPA operations conducted as part of AAP projects and AAD operational activities in Antarctica, the Australian Antarctic Territory and other Australian external territories (e.g., HIMI), and Macquarie Island where applicable.
- **Ship operations:** RPA operations from AAD-controlled vessels at sea are addressed in Operations Manual Volume 5B.
- **Model aircraft:** Model aircraft (recreational) operations are addressed in Operations Manual Volume 5C.
- **Prohibited/limited:** Excluded category operations are not permitted. Fully autonomous operations are not permitted. Rocket flights and free-balloon operations (other than meteorological balloons) are prohibited unless explicitly authorised.

1.3 Key definitions

- **RPA:** Remotely Piloted Aircraft.
- **RPAS:** Remotely Piloted Aircraft System (RPA plus associated control station, links, and support equipment).
- **VLOS / EVLOS / BVLOS:** Visual / Extended Visual / Beyond Visual Line of Sight (as defined by CASA approvals and the applicable ReOC).
- **RPIC:** Remote Pilot in Command (the person with responsibility for the safety of the flight).

1.4 Key messages and SOP variations

This SOP provides a framework for managing people, equipment and activities in remote and potentially hazardous environments. It establishes a framework where risk is defined at the planning stage and managed dynamically during operations by qualified personnel. In planning and conducting RPA activities, seek clarification from Aviation governance contacts if:

-
- there is any uncertainty in understanding these SOP requirements;
 - you believe these SOP requirements are being misinterpreted by AAP personnel; or
 - you wish to seek a variation to any requirement in this SOP.

Variations: These SOPs are written to provide a clear and consistent framework for AAP operations. It is recognised that specific circumstances may arise where standard procedures do not fit non-standard conditions or events. A variation to this SOP may be considered where there is a justified reason and the risks are appropriately assessed. All proposed variations must be discussed with and agreed to by the AAD Director of Aviation (in consultation with the CRP/DCRP as applicable) prior to the operation.

Feedback on these SOPs is welcomed.

1.5 Relationship to other documents

This SOP is to be read in conjunction with the AAD Operations Manual, including:

- *Volume 1:* Station and field standard operating procedures
- *Volume 2:* Emergency response standard operating procedures
- *Volume 3:* Telecommunications standard operating procedures
- *Volume 4:* Shipping standard operating procedures
- *Volume 5:* Aviation standard operating procedures, including *Volume 5A* (this volume), *Volume 5B* (RPAS operations from a vessel at sea), and *Volume 5C* (Model aircraft)
- *Volume 6:* Fuel transfer standard operating procedures
- *Volume 7:* Watercraft standard operating procedures (including relevant inflatable boat operational procedures where launching/retrieving RPAS from watercraft is conducted)
- *Volume 8:* COVID-19 framework (as applicable)
- *Volume 9:* Supply chain standard operating procedures
- *Volume 10:* Traverse standard operating procedures

Where an external ReOC holder's operations manual conflicts with this SOP, this SOP takes precedence unless the operator's manual requires a more conservative application of procedures than outlined here (in which case the more conservative requirement applies). If operations are proposed beyond the limitations of this SOP, a risk assessment must be completed and the proposed operation discussed with and agreed to by the **AAD Director of Aviation** prior to proceeding.

2 Governance and approvals (workflow)

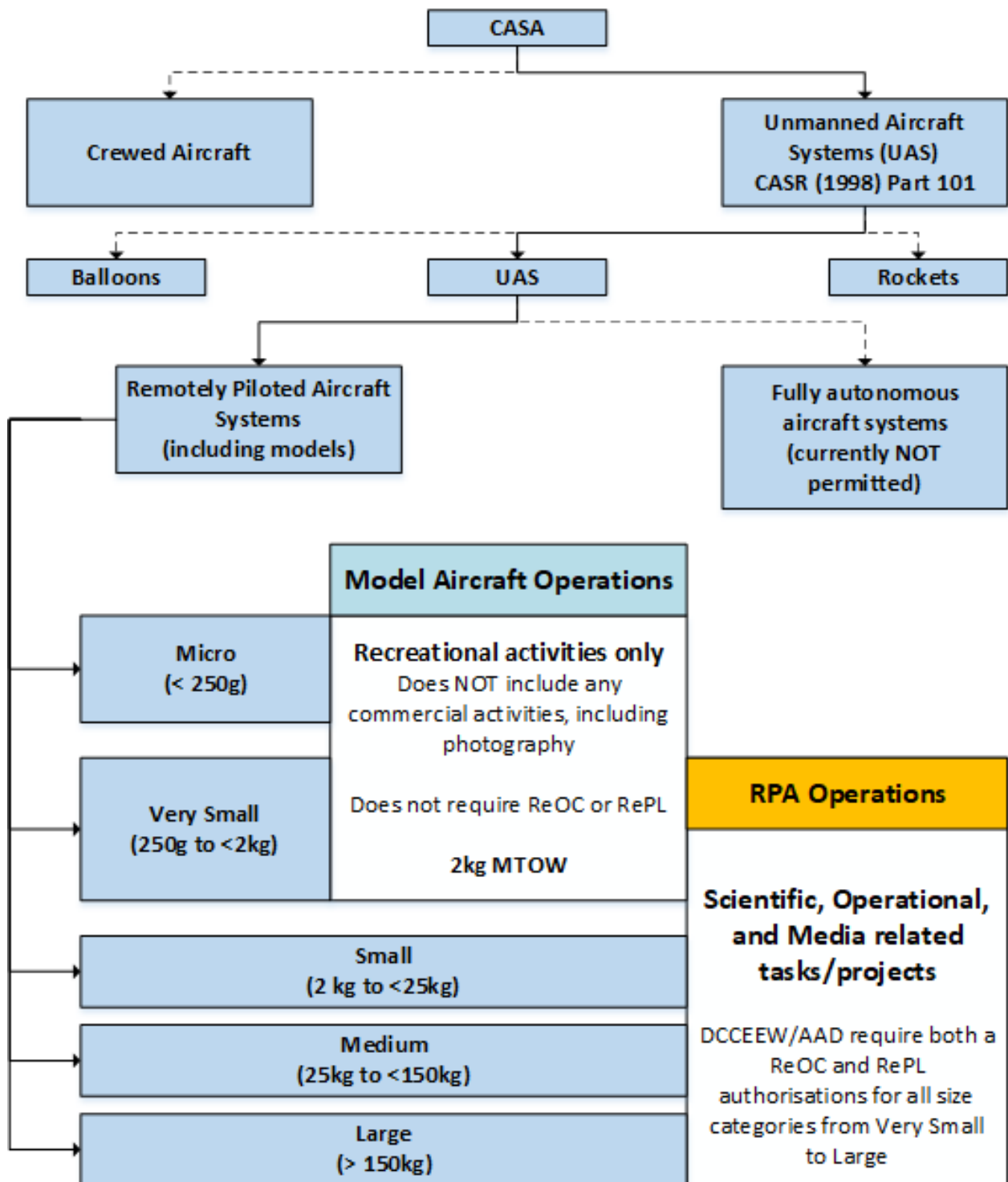
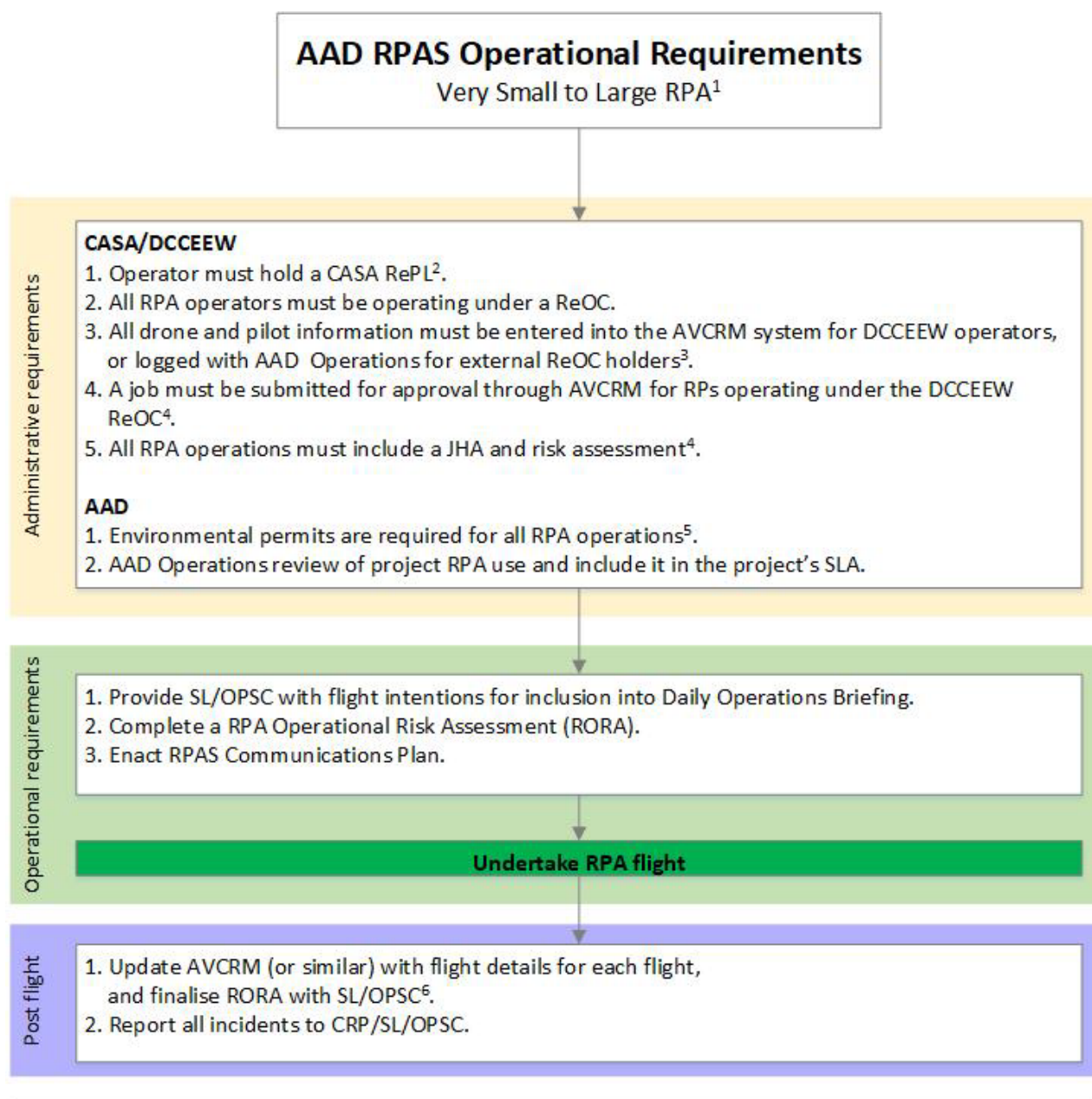


Figure 1. Operating UAS (Uncrewed Aircraft Systems) within the AAP. Solid lines indicate accepted UAS operations, whereas dashed lines indicate UAS operations that are not permitted.



1. Within DCCEEW, all RPA operations require pilots to hold a RePL and operate under a ReOC, regardless of the drone weight category.
There is no CASA "Excluded RPA" category equivalent within DCCEEW.
2. The operator must hold a RePL suitable for the relevant RPA weight category, as identified on their license. Pilots cannot operate RPAs with a greater gross weight than they are licensed to operate.
3. For DCCEEW staff operating departmental RPAs, all proposed flight and RPA information is to be entered into AVCRM for approval. All flight notifications, flight and maintenance logs are also uploaded into AVCRM.
4. RPA operations are required by DCCEEW to undertake a JHA/Risk Assessment prior to operations.
5. Operational, and Media flights with RPA <10kg are covered under the AAD's Aviation IEE. All other flights, including Scientific and flights outside of the Standard Conditions for safe drone operations (including EVLOS and BVLOS), or flights within ASPAs or over animals require a project-specific environmental permit issued by the Antarctic & Environmental Regulations Section, Australian Antarctic Division.
6. Flight logs will need to be provided to the OPSC/SL/VL post flight. For AVCRM users these can be uploaded directly; for externals this can be provided as separate files.

Figure 2. Flow chart of AAD procedures for operating RPA within the Australian Antarctic Program.

Stage	What must be in place	Primary approver / verifier	Evidence / record
Before deployment	- Project support confirmed via SLA (as applicable) - Environmental authorisation / permit (as applicable) - CASA credentials confirmed (ReOC/RePL, RPA registration, any approvals/exemptions) - JSA / risk assessment completed for the activity	AAD Operations Planning (SLA); AER (environmental); DCRP (aviation governance support)	Appendix A (Application); EIA/permit; operator documentation
Before each flight / flight period	- Local operational approval (SL/VL/OPSC/FL/Wilkins Aerodrome Manager as applicable) - RORA completed and authorised (Appendix B) - Comms plan in place (especially where crewed aircraft or other programs operate)	SL/VL/OPSC/FL/Wilkins Aerodrome Manager	Signed RORA; daily brief / comms log as applicable
After flight	- Post-flight report completed (per local process and/or AVCRM) - Operational log / flight log updated	RPIC (completes); SL/VL/OPSC/FL verifies submission	Post-flight report; operational log; pilot logbook / AVCRM record
Incidents / occurrences	- Immediate local notification - Departmental reporting (SIRUS/IHIS as applicable) - ATSB reporting where required	SL/VL/OPSC/FL + CRP/DCRP; ATSB per requirements	Incident report(s); ATSB submission ID

3 Roles and responsibilities (including RACI)

This section summarises the key roles involved in approving and conducting RPA operations. Detailed procedural steps are provided in Sections 4–8.

Activity	RPIC / RP	SL/VL/OPSC/FL / Wilkins AM	DCRP / SBP	CRP / OCRP	AER / Ops Planning
Project approval / SLA	C	I	C	I	A/R
Environmental authorisation / permit	C	I	C	I	A/R
Verify operator credentials (ReOC/RePL/registration/approvals)	R	C	C	A (DCCEEW ReOC context)	I
RORA completion and authorisation	R	A	C	I	I
Flight conduct in accordance with approvals	A/R	C	C	I	I
Post-flight reporting and records	R	A (verifies submission)	C	I	I
Incident / occurrence notification and reporting	R	A	C	C	I

RACI key: R = Responsible (does the work), A = Accountable (approves/owns outcome), C = Consulted, I = Informed.

3.1 Operations Planners (AAD)

Operations Planning develops and issues Service Level Agreements (SLAs) for AAP projects and coordinates early identification of proposed RPA activities, operating areas and support requirements. Operations Planning verifies (in consultation with aviation governance contacts) that external operators hold appropriate CASA authorisations (e.g., ReOC/RePL and any required approvals) and informs Stations/Voyages/Field leadership of likely RPA activities as early as practicable.

All RPA proponents are required to provide a completed Appendix A – Application for the use of Remotely Piloted Aircraft (RPA) within the Australian Antarctic Program (contact the DCRP for a template)

3.2 Antarctic & Environmental Regulation (AAD AER)

AER assesses proposed activities for environmental impacts and issues environmental authorisations (and permits where required) prior to commencement. Environmental authorisations may impose additional conditions (including separation distances, site access constraints and reporting requirements) that must be incorporated into the RORA and local approvals before operations proceed.

3.3 AAD Director of Aviation

The Director Aviation is responsible to Branch Head Operations and Logistics and has overarching responsibility for all aviation regulatory and contractual matters, and management of environmental and enterprise risk on behalf of the Department in relation to all aviation activities conducted in Antarctica, Sub-Antarctica and on the mainland in support of the Australian Antarctic Program. The AAD Director of Aviation is the escalation point for non-standard RPA operations or proposed variations to this SOP.

3.4 DCCEEW Chief Remote Pilot (CRP)

The CRP has overarching responsibility for regulatory compliance and enterprise risk management for RPA operations conducted under the DCCEEW ReOC. The CRP sets operational standards, oversees compliance assurance, and may delegate specified operational approvals to the DCRP/SBP in accordance with the DCCEEW ReOC and internal governance.

3.5 DCCEEW Maintenance Controller (MC)

The Maintenance Controller is responsible for ensuring RPAS maintenance is conducted in accordance with manufacturer specifications and organisational maintenance procedures for operations under the DCCEEW ReOC. This includes maintenance standards, scheduling, defect management, and configuration/equipment logs.

3.6 DCCEEW RPA ISR & Compliance / Program coordination (OCRP)

OCRP compliance/program coordination roles support the CRP and MC by coordinating operational matters, communications, and compliance activities for RPA operations conducted under the DCCEEW ReOC, including liaison with SBP/DCRP, remote pilots and observers as required.

3.7 DCCEEW Deputy Chief Remote Pilot (AAD) (DCRP)

The DCRP is responsible for operational matters relating to RPA operations within the AAP, authorised by the CRP as a delegate for specified approvals. The DCRP supports the CRP in operational governance and training affecting the safety of operations, and may act in the role of CRP when formally delegated.

- Approve standard AAD RPA operations on behalf of the CRP (excluding operations requiring additional CASA/Airservices/military approvals unless otherwise delegated).
- Develop and maintain operating procedures, checklists and supporting guidance for AAP RPA operations.
- Support Operations Planning during SLA development (including advising on feasibility, constraints and required approvals).
- Conduct pilot inductions and, where authorised, training and proficiency checks (including SBP training).
- Support management of digital record-keeping systems (e.g., AVCRM where applicable) and compliance with CASA record requirements.
- Monitor operational compliance, and report safety/compliance issues to the CRP.

3.8 AAD Senior Base Pilot (SBP)

The SBP supports the DCRP in operational matters relating to AAP RPA operations and may perform duties delegated by the CRP/DCRP.

- Assist with approving standard operations where delegated.
- Support remote pilots with procedures, checklists and local operational planning.
- Conduct training and proficiency checks where authorised.
- Escalate safety and compliance issues to the DCRP/CRP.
- Act in the role of DCRP when formally delegated.

3.9 Local leadership (SL/VL/OPSC/FL/Wilkins Aerodrome Manager)

Local leadership are responsible for authorising RPA activities at the operating node (station, voyage, or field location) and ensuring required permissions and controls are in place before flights occur.

- Ensure RPA operations are conducted in compliance with the project SLA, this SOP, and environmental authorisations/permits.

- Verify CASA authorisations/approvals are in place for any non-standard operations (as applicable to the operator's ReOC).
- Ensure RPA operations are considered in daily operational planning and that deconfliction with crewed aircraft and other activities is achieved.
- Authorise the RORA (Appendix B) prior to operations, and apply local conditions (including communications requirements) as needed.
- Ensure required documentation and reports (including RORAs, post-flight reporting, and logs) are submitted in accordance with Section 6.

3.10 Remote Pilot in Command (RPIC)

The RPIC is responsible for the safe conduct of the flight and for ensuring the operation complies with CASA requirements, the operator's approvals, environmental conditions, and this SOP.

- Notify local leadership (OPSC/SL/VL/FL as applicable) of planned missions in advance and ensure the activity is included in daily planning/briefings.
- Ensure required approvals are in place prior to flight (SLA/environmental authorisation/permit and any CASA approvals for non-standard operations).
- Complete the RORA and ensure it is authorised prior to operations.
- Conduct operations safely in accordance with this SOP and the operator's approved procedures, including crewed-aircraft deconfliction and communications requirements.
- Maintain required records (e.g., operational log, pilot logbook and technical/maintenance records as applicable).
- Complete post-flight reporting and immediately notify/report incidents and occurrences in accordance with Section 8.
- Ensure fitness for duty and compliance with AAD DAMP requirements (where applicable).

NOTE: Those people intending to operate RPA should indicate they require the 'safety-sensitive aviation activity' (SSAA) screening on their polar medical checklist, which will initiate the requisite drug screening.

3.10.1 Licensing, proficiency and currency (minimums)

Remote pilots must be certified, proficient, and current on the specific type of RPA they intend to operate.

- Remote pilots should be current for all planned operations as required under their ReOC and Operations Manual, and as directed by their CRP. Currency requirements escalate with the complexity of the RPAS category and planned operation.
- Remote pilots must have either an aeronautical radio operator certificate (AROC) or a flight radiotelephone operator licence (FROL) to operate an aeronautical radio.
- As a minimum, remote pilots must have at least **10 hours on type**, including a minimum of **5 hours in manual or non-GNSS-dependent modes** (e.g., DJI ATTI; Ardupilot Fly-by-wire; Stabilize; Arducopter ALT HOLD).
- For operations from a vessel at sea, pilots must have at least **10 hours in manual modes** regardless of category (refer Operations Manual Volume 5B).

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- For operators of **medium** category RPAs, a minimum of **50 hours total RPA time** is required, including at least **10 hours on type**.
 - For operators of **large** category RPAs, a minimum of **80 hours total RPA time** is required, including at least **10 hours on type**.
 - **Currency requirements:** VLOS minimum one sortie of 30 minutes duration in 90 day period; EVLOS/BVLOS minimum of three sorties or 60 minutes duration in 12 month period. Training flights should represent actual or simulated operational tasks (e.g. mapping missions).

Evidence of proficiency and currency should be documented (e.g., logbook entries and operator records) and may be requested by AAD/local leadership prior to approval of operations.

3.11 External operators / International visiting programs

External operators (including international programs) must ensure they are operating under an appropriate CASA-issued ReOC (or otherwise CASA-accepted pathway) and that remote pilots are appropriately qualified/licensed.

Where overseas credentials are proposed, operators must allow sufficient time for CASA to assess equivalency and may be required to demonstrate operations (including emergency procedures) prior to approval.

External operators must complete Appendix A (Application) and coordinate early with Operations Planning and the DCRP regarding approvals, operating limitations and local deconfliction requirements.

4 Planning and authorisations

This section describes the end-to-end planning and authorisation process for RPA operations in the AAP, from pre-deployment approvals through to daily/mission approvals on station. Use this section together with Section 2 (workflow) and Appendix A (application) / Appendix B (RORA).

4.1 Pre-deployment approvals

RPA activities agreed during Project planning (including SLA where applicable).

- Environmental authorisation/permits issued by AAD Antarctic & Environmental Regulation (AER), where required.
- CASA ReOC and RePL verified for the operator and remote pilots (as applicable).
- CASA RPA registration verified (as applicable).
- Any CASA permissions/exemptions/approvals obtained for non-standard operations (e.g., EVLOS, BVLOS, above 121 m AGL).
- Job Safety Assessment (JSA) and risk assessment completed for the intended activity.
- Where applicable, project-level risk assessments (e.g. JSA) must inform the RORA completed prior to operations.

4.2 Local approvals (on station / in the field / on voyage)

- On arrival at the operating location, obtain local operational approval (SL/VL/OPSC/FL/Wilkins Aerodrome Manager as applicable).
- Notify the SL or OPSC prior to each operation (ideally at least 24 hours in advance) so the activity can be included in daily planning.
- Intended RPA operations must be included in daily planning and morning operations briefings, including operating areas, maximum altitudes, and any potential conflicts.
- Complete a RPA Operational Risk Assessment (RORA) with the approving officer prior to operations (Appendix B). A RORA may be authorised for a defined multi-day period where the scope, location, crew and risk profile remain unchanged, subject to local approval.
- Approving officers must confirm the RPIC meets the minimum licensing, proficiency and currency requirements in **Section 3.10.1** prior to authorising a RORA.
- Comply with any additional communications requirements (e.g., station comms notifications for launch/landing).
- After flight(s), complete post-flight reporting as required (including post-flight report and logs) and submit per Section 6.

4.3 RPA Operational Risk Assessment (RORA)

The RPA Operational Risk Assessment (RORA – Appendix B) is the primary on-site risk assessment and approval tool used to apply SORA-aligned principles to confirm that RPA operations are planned, assessed and conducted safely within the AAP. It enables the approving officer (e.g., OPSC/SL/VL/FL as applicable) to verify that the remote pilot and support crew are suitably qualified, current, and operating within the approvals granted through the project's SLA, environmental authorisation and CASA requirements.

Local approving officers are not expected to assess aviation risk. Their role is to confirm that the proposed operation can be safely integrated into local conditions and activities based on the information provided in the RORA. The RORA requires “delta risks” - the additional or different risk introduced by a specific operation, over and above the normal (baseline) operating context (section 5.1) - to be identified and controlled by the RPIC, in consultation with the approving officer.

Where daily signing is operationally impractical (e.g., remote field parties), the RORA may be authorised for a defined multi-day period, provided the scope of activity, crew composition, location, environmental approvals, and risk profile remain unchanged.

Where multi-day authorisation is used, the team must confirm (daily) that the RORA remains in effect, has been reviewed, and the risk profile is unchanged prior to proceeding. Operational decisions that reduce risk or remain within the approved operating envelope do not require a new RORA. Daily revalidation is intended to confirm that the approved operation remains unchanged and is not a requirement to repeat the full RORA approval process. A new RORA is required where the operation, environment, or controls extend beyond that envelope.

4.4 Risk-based assessment framework (SORA-aligned)

Purpose

AAD applies a structured, risk-based approach to assessing and approving RPA operations. This approach is aligned with the principles of the JARUS Specific Operations Risk Assessment (SORA) methodology and is implemented through the AAD RPA Operational Risk Assessment (RORA) process.

4.4.1 Operating model

AAD applies an integrated operating model that:

- Uses SORA principles to assess operational risk prior to approval
- Applies AAD SOP controls to implement and manage that risk during operations
- Maintains operational assurance through supervision, reporting, and post-flight review

This model integrates:

- Pre-operational risk assessment (via RORA)
- Operational approval (local leadership authorisation)
- Ongoing assurance (compliance with this SOP and reporting requirements)

4.4.2 Application of SORA principles

SORA principles are applied proportionately within the AAP to ensure that:

- Operational risks are identified and understood
- Mitigations are appropriate to the environment and task
- Safety outcomes are demonstrable and traceable

A full SORA submission is not required for AAD operations. Instead, SORA concepts are embedded within the RORA and supporting processes.

4.4.3 Relationship to RORA

The RORA (Appendix B) is the primary method by which SORA-aligned risk assessment is applied in the field.

The RORA must:

- Identify key ground and air risks

-
- Confirm operating conditions (e.g. VLOS/EVLOS/BVLOS, environment, proximity to people/wildlife)
 - Define operational limitations and controls
 - Confirm pilot competence and system suitability
 - Document comms and deconfliction arrangements

The approving officer uses the RORA to determine whether the operation can proceed safely under the conditions described.

4.4.4 Implementation through SOP controls

Safety objectives identified through the RORA are implemented through the controls defined in this SOP, including:

- Crew competence and currency (Section 3.10.1)
- Planning and approvals (Section 4)
- Operating limitations and conditions (Section 5)
- Communications and deconfliction (Section 4.5 and Section 5.2)
- Emergency procedures and reporting (Section 8)

This ensures that risk assessment outcomes are translated into clear, enforceable operational controls.

4.4.5 Proportionality and flexibility

The level of assessment, documentation, and approval must be proportionate to the operational risk.

AAD will apply a pragmatic approach to ensure that:

- Safety requirements are met
- Administrative burden is minimised
- Field operations remain practical and responsive to changing conditions

Where operations fall outside standard operating conditions, additional assessment and approvals are required.

4.4.6 Non-standard operations

Operations outside standard operating conditions (Section 5.1) require:

- Additional risk assessment within the RORA
- Verification of CASA approvals where required
- Explicit authorisation by the approving officer
- Escalation to the DCRP/CRP or Director of Aviation where required

4.5 Communications plan

All planned RPA activities must be communicated in advance. Where crewed aircraft are operating, or where other national programs are active in the area, a more detailed communications plan is required and must be distributed by the SL/OPSC (or equivalent) to relevant stakeholders.

- Notifications to SL/OPSC regarding proposed flights.
- Inclusion in daily operations briefing.
- Methods of communication with Station Comms and/or crewed aircraft as required.
- Schedule of communications with Station Comms (e.g., 5-minute warning, prior to launch, and on completion of all activities) where required.

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- Radio frequencies/channels to be used.
 - Cancellation notice process (issued to the same recipients if the activity is cancelled).

5 Operating rules and limitations

This section defines operating rules and limitations for RPA operations within the AAP. These form part of the approved operating envelope and must be applied unless varied through an approved RORA.

Operational decisions by the RPIC to reduce risk exposure or adapt to conditions **within these limits** are expected and do not constitute a variation.

Where an operator's ReOC/operations manual imposes stricter limitations, the stricter limitation applies. The operating rules in this section represent baseline controls derived from the AAD risk-based assessment framework (Section 4.4) and must be applied unless varied through the approved RORA.

5.1 Standard operating conditions (baseline)

Approval to operate an RPA can only be given by the Station Leader, Voyage Leader, Field Leader, Wilkins Aerodrome Manager or Operations Coordinator (as applicable) as part of the daily air operations activity.

1. RPAS may only be operated by people or organisations that can demonstrate they meet the requirements under CASR 101, including:
 - a. Aviation Reference Number (ARN)
 - b. Remotely piloted aircraft operator's certificate (ReOC)
 - c. Remote pilot license (RePL)
 - d. RPAS operations manual
 - e. RPAS maintenance manual
 - f. RPA flight manual
 - g. Chief RPA remote pilot (CASA approval required)
 - h. RPAS maintenance controller (CASA approval required)
2. The RPAS should be "mature": that is, not operated "out of the box". The RPA maintenance release should record a minimum of 5 hours operating time in service, in various environmental conditions and modes of operation.
3. RPA must be of robust construction with suitable safety features for use in Antarctica.
4. All flights must have both a remote pilot and an observer in attendance.
5. Appropriate personal protective equipment must be worn.
6. The observer must maintain a lookout over the area for wildlife, people or other hazards, changing weather conditions and flight duration, and is responsible for monitoring signs of disturbance to any wildlife.
7. The observer must maintain VHF radio contact with the station communications center if required. The pilot must not use a VHF radio while the RPA is airborne unless equipped with hands-free communications (e.g., headset with VOX microphone).
8. At all times pilots/observers must maintain radio communications with the station communications center (when operational) on the air operations frequency, notifying commencement and cessation of operations.
9. All RPA must have an onsite compass calibration completed before flight unless the RPA does not rely on a magnetic compass for heading information.
10. Flights must maintain a distance of 30 m (laterally) from people, buildings, vehicles or boats, unless otherwise approved (eg for building roof inspections), in accordance with the DCCEEW operations manual.

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11. No flight is permitted over personnel not directly related to the operation of the aircraft.
 12. RPA operations must not operate within the environmental separation distances of static wildlife concentrations (200 m) without prior authorisation (e.g. environmental approval as part of an ASAC-approved science project). Dynamic wildlife, in particular, birds on the wing, present a special case: RPA operations must be aborted if the birds present a significant risk of collision (e.g. bird attacking RPA).
 13. RPA operations must not occur within 100 m of any environmentally sensitive areas without prior authorization (e.g. Antarctic special protected areas or Antarctic special management areas).
 14. For VLOS operations, meteorological conditions must permit unaided visibility of the RPA, the surrounding airspace, and the ground beneath so that the remote pilot can avoid collisions and infringements of the regulations. The weather minima for VLOS RPA flight are as follows:
 - a. 5000 m visibility
 - b. clear of cloud
 - c. only by day.
 15. RPA operations are generally only permitted:
 - a. during daylight hours
 - b. in visual meteorological conditions
 - c. within visual line-of-sight of the RPA
 - d. below 121 m (400 ft) above ground level
 16. Operations must not occur in wind speeds greater than that which is specified by the manufacturer. If a RPA maximum wind speed is not specified by the manufacturer, the maximum operational wind speed shall be limited to 20 km/h (11 knots).
 17. Operations must not occur in temperatures lower than that which is specified by the manufacturer. If a manufacturer's minimum operating temperature is not specified, the minimum operating temperature shall be set at -10°C.
 18. RPA operations may be permitted;
 - a. extended visual line of sight
 - b. beyond visual line-of-sight,
 - c. above 121 m (400 ft) above ground level,
 - d. in conditions other than visual meteorological conditions and daylight hours,
 - e. in conditions outside the OEM temperature specifications (with evidence of effective modifications to enable this),given appropriate training and certification of both the operator and pilot in accordance with CASR 101 requirements, with permitting from Antarctic & Environmental Regulation and with the approval of the authorizing officer.

5.2 Operations near aerodromes, helicopter landing areas (HLAs) and ship flight decks

RPA operations must be separated (spatially or temporally) from crewed aircraft operations. Deconfliction measures must be appropriate to the assessed operational risk and environment, as defined in the RORA. Unless a CASA-issued approval is held and the operation is explicitly authorised, RPA operations must not be conducted within: (a) 3 NM (5.5 km) of a non-controlled aerodrome movement area; or (b) 0.75 NM (1.39 km) of a helicopter landing pad or ship's flight deck, when a crewed aircraft is operating to or from those areas.

- Include RPA operating areas and maximum altitudes in daily briefings and deconflict with crewed aircraft routes and minima.
- If a crewed aircraft becomes active within the relevant proximity, immediately manoeuvre the RPA away from the crewed aircraft flight path and land as soon as safely possible.
- Do not overfly personnel or parked aircraft; maintain at least 30 m lateral separation from personnel and parked aircraft where operations are permitted near parked aircraft.

5.3 Operations over or near people (OONP)

Unless approved by CASA, an RPA must not be operated within 30 m laterally of any person who is not directly involved in the operation. Where closer operations are proposed (e.g., 15–30 m), the operation must be specifically risk-assessed, participants must consent where required, and the operation must be authorised in accordance with the operator's approvals and AAD requirements.

Where operations over or near people (OONP) are required (including mapping missions on station), operators must also comply with the relevant OONP provisions in the *DCCEEW RPA Operations Manual* (refer Section 2.4.6.1 and Annex 03, Section 4: Operations over or near people). Two OONP pathways are used:

- **Pathway 1 – Informed consenting active participant:** people within the OONP area are briefed on the activity and provide informed consent, and the operation is conducted in accordance with the applicable manual and risk controls.
- **Pathway 2 – Use of sheltering to meet maximum impact energy thresholds:** the operation is structured so that persons are protected by suitable sheltering such that impact energy thresholds are met, in accordance with the applicable manual and risk controls.

Any proposed OONP operation must be documented in the risk assessment/RORA and authorised through the operator's approvals and local leadership approvals. Where DCRP approval is required under AAD governance arrangements, this must be obtained prior to the operation.

6 Reporting and records

This section sets out the key reporting deliverables, timelines, and records that must be retained for RPA operations within the AAP.

The AAD has both internal (management, environmental, operational, contractual and safety) and external (CASA) reporting obligations and responsibilities for regulatory, compliance and assurance purposes.

Outlined below are the key aviation deliverables and time frames for documents that must be returned to the Aviation Section in Kingston (via email) to aviation.reporting@aad.gov.au by the tasking officer at each operating node.

6.1 Required deliverables and timelines

Description	Timeline for delivery
RPA Operational Risk Assessment (RORA) (Appendix B)	Within 36 hours of completion
RPA Post Flight Report (per local process / where required)	Prior to next RPA tasking or within 36 hours of completion (whichever comes first)
Aviation Operations Log (or similar) – record of all RPA activities and flight hours (date, project ID, activity description, pilot, RORA reference, etc.).	Weekly (or as directed locally)

6.2 Record keeping

Operators must keep records required by CASA and their ReOC, including (as applicable):

- Chief Remote Pilot records,
- operational releases,
- operational logs,
- remote pilot logbooks,
- technical logs,
- qualifications/competency records,
- and JSAs/risk assessments.

For operations conducted under the DCCEEW ReOC, records are typically managed in AVCRM (compliance and risk management software). Operators working under an external ReOC are not required to use AVCRM, but must be able to provide evidence of job approval and required logs/records to the SL/VL/OPSC/FL/DCRP as requested.

The AAD may request to review records (including evidence of proficiency and currency) prior to operations.

7 Environmental considerations

This section summarises environmental risks and minimum controls for RPA operations. Environmental approvals may impose additional conditions (including separation distances) for specific sites, species, or activities.

7.1 Environmental risks and minimum controls

Potential environmental impacts of RPA include noise, visual and physical impacts. The closer an RPA flies to wildlife (particularly nesting or breeding areas), the greater the risk of disturbance and behaviour modification. Wildlife may perceive an RPA as a competitive or predatory threat. There may also be temporary loss of aesthetic or wilderness values for other expeditioners during operations.

An RPA may crash as a result of:

- Pilot error (more likely when inexperienced).
- Loss of command and control link.
- Loss of power (e.g., low battery temperature or exhaustion).
- Mechanical malfunctions.
- Weather conditions (including stronger winds at altitude or near terrain).
- Magnetic variability impacts on navigation systems for some RPA.
- In-flight collision.

A crashed RPA may cause physical harm to people, structures, flora and fauna. Where elements of the RPA are irretrievable, contaminants (metals, plastics, batteries, fuel) may remain in the environment for an extended period and degrade slowly in cold conditions. Operators must plan for recovery and minimise the likelihood and consequences of loss.

7.2 Environmental approvals and guidance

All RPA operators in the Antarctic (and at Heard and McDonald Islands) must ensure they have applied for and received an environmental authorisation (and permit where required) prior to use of an RPA in Antarctica and other AAP operating areas.

Operational, and Media flights with RPA <10 kg are covered under the AAD's Aviation IEE. All other flights, including Scientific and flights outside of the Standard Operating Conditions (Section 5.1, including EVLOS and BVLOS), or flights within ASPAs or over animals require a project-specific environmental permit issued by the AER, AAD.

Application forms are available on the AAD intranet (<https://www.antarctica.gov.au/about-antarctica/environment/environmental-impact-assessment-approvals-and-permits>).

The Tasmanian State Government administers approvals (contact scientific.permits@dpipwe.tas.gov.au) for Macquarie Island.

8 Emergencies and incident reporting

This section describes minimum emergency actions and reporting requirements for RPA incidents and occurrences.

8.1 Emergency procedures

The RPA mission plan must include procedures for foreseeable emergencies (including planned emergency flight profiles if the command/control link is lost). Depending on system capabilities, this may include transit to a pre-designated recovery area, automated recovery, and/or flight termination procedures where authorised and appropriate.

- Low battery (RPA / controller)
- GNSS loss
- Loss of control
- Loss of RPA / fly-away
- Loss of VLOS
- Crewed aircraft entering the RPA flight area
- Person(s) not associated with operations entering the flight area
- Radio (voice/data) communications failure
- Engine/power system failure

8.2 Incident and occurrence reporting

All accidents/incidents must be reported immediately to the responsible local officer (Voyage Leader, Station Leader, Operations Coordinator, or Field Leader as applicable) and to the appropriate aviation governance contacts (Director of Aviation/CRP/DCRP as applicable). Incidents must also be reported via departmental incident reporting systems accessible via the AAD intranet (search for SIRUS on <https://blizzline.antarctica.gov.au/>).

The Transport Safety Investigation Regulations 2021 require the reporting of certain transport safety occurrences to the ATSB as either immediately or routine reportable matters, and introduced updated requirements for operators of certain types of RPA to make reports to the ATSB (refer to <https://www.atsb.gov.au/reporting-requirements-rpa>).

The regulations define two types of RPAs which are subject to specific reporting requirements.

Type 1 RPAs are those which are type certified, large (over 150 kg) or medium (25 kg to 150 kg) RPA.

Type 2 RPAs are those that are not Type 1, and are not an excluded or micro (under 250 g) RPA.

Type 1 operators are required to **immediately report to the ATSB** RPA occurrences involving:

- death or serious injury;
- accidents;
- loss of a separation standard with aircraft; and,
- serious damage to property.

Less serious incidents and occurrences are required to be reported to the ATSB **within 72 hours**.

Occurrences involving Type 2 RPAs generally only need to be immediately reported to the ATSB if they

involve death or serious injury, while less serious incidents and damage to the RPA will need to be reported within 72 hours.

Such events should be reported online in accordance with ATSB requirements (see website at <http://www.atsb.gov.au/>).

8.3 RPA Accidents within the AAP

In the relatively short history of RPA use within the AAP, there have already been a number of incidents and accidents. Common themes have emerged across all accidents, including automation management challenges, sensor and configuration drift, planning and compliance deviations, human-factor vulnerabilities, and the influence of environment and terrain.

Taken together, the accidents illustrate how automation behaviour, sensor configuration, planning discipline, human performance, and environmental complexity can interact to erode safety margins.

Antarctic/sub-Antarctic environments often present conditions at or beyond what current small-category RPAS are designed to tolerate, increasing both equipment and operator workload when seconds matter.

“Environment & Human Factors” groups together the external conditions (wind, terrain, cold, visibility, platform movement) with the internal pilot limitations (fatigue, dexterity, cognitive overload). In Antarctic and sub-Antarctic operations these all interact: harsh environmental conditions push both aircraft and pilots to their limits, causing **Human Factors to become the dominant variable in accident likelihood.**

All RPA operators are encouraged to:

- **Maintain high levels of proficiency prior to deployment.**
- **Standardise and mandate Pre-mission technical checks:** including the verification of RPA mode, sensor states, and RTH/home-point logic before flight; for moving platforms, update home point to RC on a timed/triggered basis.
- **Practice automation discipline:** Require pilots to brief and practice immediate actions to pause/cancel automation (e.g., PAUSE vs ATTI, RTH cancel) including cold-hands drills and eyes-off-aircraft ergonomics.
- **Set mission design controls:** Hard geofences and distance alerts locked to approval class; peer check of polygons/DEM with on-site recon flights before committing automated missions.
- **Check sensor envelope management:** For Obstacle Avoidance, True Terrain Following; require FPV inset monitoring (using an observer with a second slave controller, for example) during all low-level automation tasks.
- **Empower CRM & observers:** Use scripted challenge/response (distance, wind warnings, automation state), and grant authority to call PAUSE/ABORT.
- **Use fatigue & pressure gates:** Add explicit “go/no-go” human-factors gates (cold stress, hours on task, time remaining in weather window) as part of the pre-task toolbox with stop rules.

9 References and related documents

This section lists key references and related documents that support this SOP.

9.1 Documents supporting this SOP

Serial	Document name	Description	Location
1	<i>AAD Operations manual volumes 1–10</i>	The <i>Operations manual</i> is divided into ten volumes that define the standard operating procedures for major operations undertaken by the Australian Antarctic Division	AAD intranet https://blizzline.antarctica.gov.au/antarctic-operations/operations-manual
2	<i>AAD Field manual</i>	Aide-memoire for field and survival training	Issued to every participant in the AAP
3	<i>AAD incident reporting database</i>	Lists incidents and safety concerns raised by AAD personnel and captures mitigating management actions	AAD intranet Intranet not available at field locations. At these locations, fill out a hard copy and email to Head Office for loading into IHIS or SIRUS. https://blizzline.antarctica.gov.au/health-safety/incident-management/incident-reporting/
4	<i>Part 101 (Unmanned Aircraft and Rockets) Manual of Standards 2019</i>	Prescribes standards for operating procedures of RPAS	Current version is available from the Federal Register of Legislation https://www.legislation.gov.au/Details/F2022C00594
5	<i>ADVISORY CIRCULAR AC 101-01 v6.0 - Remotely piloted aircraft systems - licensing and operations</i>	This AC was developed by the CASA to provide guidance to RPA operators, remote crew, manufacturers, and maintainers on the safe and legal operation of RPA in all classes of airspace.	https://www.casa.gov.au/sites/default/files/2022-09/advisory-circular-101-01-remotely-piloted-aircraft-systems-licensing-and-operations.pdf
6	<i>AAD Drug and alcohol management plan</i>	Sets out AAD policies on drug and alcohol management	https://blizzline.antarctica.gov.au/health-safety/whs-management-system/policies-and-procedures/drug-and-alcohol-policies/
7	<i>Flight Path Guidelines: Avoiding Wildlife in East Antarctica</i>	Details flight paths for fixed and rotary wind aircraft to avoid concentrations of wildlife.	AAD intranet (AAD login required)
8	<i>Air transport of dangerous goods manual – AAD Rev 2 or later version</i>	Detailed description of the dangerous goods procedures for AAD aviation operations	Wilkins Aerodrome office, offices at Casey and Davis Plateau ski landing areas AAD aviation office AAD Intranet
9	<i>DCCEEW Operations Manual V3.1 March 2026</i>	DCCEEW Remotely Piloted Aircraft (Drone) Operations Manual. This provides AAD stakeholders (e.g. SL, OPSC, VL, DVL) visibility of how the DCCEEW systems work. Whilst recognising that not all pilots will be operating under the DCCEEW ReOC, it provides a useful comparison.	Current version is available in AVCRM and can be obtained from the Office of the Chief Remote Pilot drones@dcceew.gov.au

Serial	Document name	Description	Location
10	<i>NOTOC's</i>	DCCEEW Notices to Crew (Remote Pilots) provide up to date information to remote pilots about risks and other relevant information	NOTOC's are issued by the Office of the Chief Remote Pilot, and are emailed to all Remote Pilots and must be read and acknowledged when logging into AVCRM
11	<i>DCCEEW Remotely Piloted Aircraft (Drone) Policy</i>	This policy provides the department's position on the use of RPA for official business. It outlines both the requirements for: i) departmental RPA operators; and ii) external contractors working on behalf of the department.	https://dcceew2.sharepoint.com/sites/INTRA_DCCEEW/_layouts/15/search.aspx/siteall?q=drone%20policy

9.2 Key contacts

Director of Aviation AAD Marc Ware Safety Officer	Telephone: Mobile: Email:	(03) 6232 3157 +61 499 409 998 Marc.Ware@aad.gov.au
DCCEEW Chief Remote Pilot Director OCRP Dr Renee Bartolo	Telephone: Mobile: Email:	(08) 8920 1392 +61 404 868 981 renee.bartolo@dcceew.gov.au drones@dcceew.gov.au
RPAS Deputy Chief Remote Pilot (AAD) Aviation Dr Doug Thost	Mobile: Email:	+61 498 650 673 doug.thost@aad.gov.au drones@aad.gov.au
DCCEEW RPA Maintenance Controller, OCRP Colbey Thew	Mobile: Email:	+61 407 076 405 coleby.thew@dcceew.gov.au
DCCEEW RPA Director, ISR & Compliance, OCRP Isaac Palmer	Mobile: Email:	+61 499 624 679 Isaac.Palmer@dcceew.gov.au
Assistant Director Aviation Operations Aaron Read	Telephone: Mobile: Email:	(03) 6232 3141 +61 419 657 660 aaron.read@aad.gov.au
Aviation Liaison Officer Various people in season	Telephone: Email:	(03) 6232 3436 (24hr. during season) aviation.operations@aad.gov.au
RPAS Senior Base Pilot (AAD) Science Dr Dan Wilkins	Telephone: Mobile: Email:	(03) 6232 3524 0438 197 866 daniel.wilkins@aad.gov.au
RPAS Senior Base Pilot (AAD) Media Simon Payne	Telephone: Mobile: Email:	(03) 6232 3245 0437 957 617 simon.payne@aad.gov.au

10 Appendices

The appendices provide templates and forms used to support the planning and conduct of RPA operations.

Appendix A: Application for the use of an RPA within the AAP

Appendix B: RPA – Operational Risk Assessment (RORA)

Appendix A. Application for the use of a RPA within the AAP

This template is available as a word document from the DCRP (drones@aad.gov.au).

NOTES BEFORE YOU START

1. The operation of a RPA as part of an Australian Antarctic Project in Antarctica, the subantarctic, or on the RSV Nuyina is viewed by the Department of Climate Change, Energy, Environment and Water (DCCEEW) as the same as an operation in Australia, and is subject to the same rules, regulations, and laws. Currently, operations from the RSV Nuyina are restricted to within Australian Territorial waters (that is, within 12 nautical miles of the territorial coastline, including Australian Antarctic Territory). CASA may allow operations on the High Seas on a case-by-case basis.

2. This application aims to ensure your team are appropriately licensed and trained prior to deployment, and to determine what type of data (eg physical, chemical, optical) you are collecting and how you propose collecting it.

3. If your intention is to fly a RPA owned/operated by your Project, you will need (as a minimum) to be operating under an Australian Civil Aviation Safety Authority (CASA) issued Remote Operator Certificate (ReOC), with CASA licensed pilots and RPA.

4. If your flight profile falls outside the standard operating conditions for RPA operations (refer AAD RPAS Standard Operating Procedures Vol. 5A, section 5) you will need CASA approval for those operations (eg BVLOS operations or operations above 400 feet AGL).

5. If your RPA falls within the CASA definition of an excluded RPA (that is, <2 kg MTOW) you will still need to satisfy the requirements of Note 3, to meet DCCEEW operational requirements (refer AAD RPAS Standard Operating Procedures Vol. 5, section 5.1 (1)).

6. International programs participating within the AAP may hold equivalent certification to a ReOC or RePL under their respective civil aviation authorities (e.g. FAA or CAA). However, they must contact CASA (RPAS@casa.gov.au) for verification of those certifications (see <https://www.casa.gov.au/drones/drone-rules/travelling-your-drone> for links to further information).

7. International operators may be asked to position their mission team in Australia with sufficient time to allow testing and demonstration flying, including emergency responses, before approval is granted.

8. RPA activities in the Antarctic (and at Heard and McDonald Islands) require an environmental authorisation and often a permit. Application forms are available on the AAD intranet (<https://www.antarctica.gov.au/about-antarctica/environment/environmental-impact-assessment-approvals-and-permits>). The Tasmanian State Government administers approvals for Macquarie Island.

Please complete the following sections: 1. General, 2. Pilot & Crew, 3. RPA, 4. Sensor. Create a new section for each drone (ie 3.1, 3.2, etc) and sensor you intend to operate. For the purposes of this application, "Sensor" refers to a camera, temperature probe, magnetometer, radar, LiDAR etc., or a sampling device (like a water sampler).

NOTE: delete sections in yellow and replace with an appropriate answer.

Links

[CASA - The Civil Aviation Safety Authority](#)

[Civil Aviation Safety Regulations 1998](#)

[AAD UAS Standard Operating Procedures & Environmental Policy](#)

AAD Standard operating conditions for RPA:**Operations are generally only permitted:**

- during daylight hours
- in visual meteorological conditions
- within visual line-of-sight of the RPA
- below 400 feet (121 m) above ground level
- in maximum wind speeds as per the manufacturers' limitations.

Given appropriate training and certification of both the operator and pilot in accordance with Civil Aviation Safety Regulations 1998, Part 101 requirements, RPA operations may be permitted:

- beyond visual line-of-sight,
- above 400 feet (121 m) above ground level,
- in conditions other than visual meteorological conditions and daylight hours.

1. GENERAL

1.1	AAP Project Number	
1.2	Project principal contact Project Technical contact (Name, email, phone)	1. 2.
1.3	Description of the aims of the Project and why you are using RPA. Include data gathering objectives. Minimum flight height to achieve resolution aims? Consideration given to wildlife disturbance?	
1.4	Do you propose operating under the DCCEEW ReOC?	YES NO (to 1.5)
1.5	Do you propose operating under another CASA issued ReOC? If YES , provide email contact of the Organisation's Chief Remote Pilot.	YES (Attach a copy of the ReOC and evidence of Public Liability Insurance in section 5) CRP Name: CRP email: NO (to 1.6)
1.6	Do you propose applying to CASA for recognition of your country's Civil Aviation certification?	YES (Be aware that applications with CASA can take time. Please advise us of your progress well in advance of any voyage deadlines) NO (RPA operations not permitted. Proceed to Sensor sheet)
1.7	Estimate of total number of missions during the field season, and possible mission duration.	Example answer: 2-5 missions per day of 10-20 minutes duration each. Estimate a maximum of 100-120 flights.
1.8	Will your RPA be operating within Visual Line of Sight (VLOS)? (ie generally within a radius of <500m, RPA size dependant)	YES NO

1.9	Extended Visual Line of Sight operations (within 1.5km from pilot for EVLOS 1). EVLOS	YES NO
1.10	Beyond Visual Line of Sight operations. BVLOS	YES NO
1.11	>121m (400 feet) AGL	YES NO

NOTE: If you answered YES to 1.9, 1.10 or 1.11 we will require further information regarding your mission profile including CASA approval to undertake such operations

1.12	Additional notes or relevant information	
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2. PILOT & CREW

2.1	Names of Pilot and Crew	1. Senior pilot 2. Secondary pilot 3. etc...
2.2	Licences / Endorsements (eg RePL, MR <25kg; Powered Lift <25kg)	<i>Attach CASA issued RePL and/or evidence of crew training for <u>each</u> pilot & crew member listed in Section 2.5</i>
2.3	Do your pilots have experience operating the RPA from a ship at sea (if this is required as part of your project)?	N/A or DETAILS
2.4	If applicable, provide details of your pilots' experience operating at latitudes >60° N or S, or similar environments (eg mountainous terrain)	<i>(for example: cold weather, high magnetic inclination and declination, manual as opposed to automated flight)</i>
2.5	Total hours flight time/Time on type (at time of application) for each nominated pilot	Pilot 1: Total hours: Time on type: Pilot 2: Total hours: Time on type:

2.6	Additional notes or relevant information (eg hours experience EVLOS / BVLOS)	
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3. RPA (Note: please duplicate this section if you propose operating more than one RPA type)

3.1	RPA Manufacturer / Model / Type / CASA category / Number to be used Enter "In-house" if you or your organisation have built the RPA	<i>Example answer: DJI Matrice M350 RTK Multirotor (quad) Small (<25kg) Two (includes back-up airframe)</i>
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3.2	Date of purchase and Total hours on RPA airframe to be operated.	Date of Purchase: Total Hours on RPA airframe:
3.3	RPA registered with CASA	YES (Attach evidence of CASA registration in Section 5) NO
3.4	Public Liability Insurance	YES (Attach Insurance Schedule) NO
3.5	Power type (eg LiPo battery, Heavy Fuel, Petrol, Hybrid)	Example answer: Hybrid power with UL petrol motor generating power for LiPo batteries in flight
3.6	If Battery: Type, Size, Cells	eg LiPo, 100Wh, 5400 mAh, 6S
3.7	Dangerous Goods Class(es)	eg Class 9 Miscellaneous DG, Class 3 Flammable liquids
3.8	Number of batteries, and battery Charging & equipment storage requirements (eg temperature sensitive)	eg 12 x 5700 mAh batteries. Ambient store, do NOT freeze. Storage area for batteries and charging 1.0m x 1.0m desk/bench space. Set-up area 2.5m x 1.0m desk/bench space
3.9	Size, Weight and number of transport containers for all RPA components.	
3.10	Size and Weight of RPA and payload (ready to fly)	
3.11	Radio operating frequencies used for Command/Control	For example, 2.400 - 2.4835 GHz; 5.725 - 5.850 GHz
3.12	If applicable, has equipment been used on a vessel at sea? Provide details	N/A or DETAILS
3.13	In the event of a ditching, will the RPA float?	Note: this is obviously a consideration for operations at sea. Requirements for floatation may be tempered by reliability and failsafe mechanisms associated with the RPA type (eg multiple batteries, motors, IMUs etc), or the potential for float fitment to degrade flight performance.
3.14	Proven low temperature operating limit	Example answer: OEM data sheet lists as -10°C however we have modified battery with additional insulation, which combined with battery pre-warming allows ops down to -20°C
3.15	OEM and/or demonstrated maximum wind speed operating limit	Note: AAD Standard Operating Procedures currently impose an 11 knot (20 km/h, 5.6 m/s) maximum limit for RPA operations if the manufacturer does not specify a windspeed limit. Given appropriate certification, training, and operational experience, operations above this wind speed limitation may be permitted.
3.19	Does your RPA rely on a magnetic compass for heading information?	Note: Operations from the RSV Nuyina may not permit an accurate compass calibration, which precludes many commercially available RPAs from operating in automated modes (eg waypoint flying) due to the high magnetic declination (60° to 80° W) and inclination in Antarctica. Explain how you will overcome this limitation (for example: using manual flight modes only; using dual GNSS receivers for heading information).

3.20	What GNSS constellation(s) does your RPA use for Automated flight modes?	
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3.21	Additional notes or relevant information	
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4. SENSOR (Note: please duplicate this section if you propose using more than one sensor)

4.1	Sensor Type (eg Optical, Radar, Meteorological; or physical sample (eg water).	
4.2	Sensor is Commercially available	Make: Model: URL:
4.3	Sensor is developed "in-house"	<i>N/A or List any references to previous work. Include details of Size and Weight</i>
4.4	Sample type collected (if applicable)	<i>eg 500 ml water samples, 1 per flight</i>
4.5	Sensor integration	<i>eg Connects directly to DJI M350 using DJI Skyport</i>
4.6	Sensor Power requirements	

4.7	Additional notes or relevant information	
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Note for international programs that DO NOT hold Australian RPA accreditation: DCCEEW owns and operates a number of RPA with trained and licenced pilots that may be able to satisfy your mission requirements, by integrating your sensor on to one of DCCEEWs RPA.

5. Please use this section to attach ReOC, RePL(s), CASA RPA registration record, and Insurance documents (or include all as appropriately named attachments in accompanying email)

6. Please use this section to attach any additional information you feel is relevant to your application. For example: photographs or detailed description of your "in house" drone or sampling device, details of field experience, publications as a result of your work.

Appendix B. RPA Operational Risk Assessment (RORA)

B.0 Purpose

The RPA Operational Risk Assessment (RORA) is the mandatory tool used to assess, approve, and record all RPA operations within the Australian Antarctic Program (AAP). The RORA establishes the approved operating envelope for the proposed activity, within which the RPIC may make operational decisions (e.g. timing, tactical decisions).

The RORA provides a structured, proportionate method to:

- Identify operational risks
- Define mitigations and controls
- Confirm operational readiness
- Support approval by local leadership

A RORA is required for:

- All RPA operations conducted within the AAP
- All locations (station, voyage, field)
- All operating conditions (standard and non-standard)

The level of detail within the RORA must be proportionate to the complexity and risk of the operation.

B.1 Email approval, versioning, and multi-day RORA revalidation

RORA approval method (email authorisation – no signature required)

RORA approval may be provided via email authorisation. Where email authorisation is used, a handwritten signature is not required, provided the approval record meets the minimum traceability requirements below.

An approving officer's authorisation is evidenced by an email reply from their AAD email account that:

- explicitly states Approved / Not approved;
- references the RORA unique identifier and version (e.g., "RORA 20271124-5209-CASEY v1.0");
- includes the date/time of approval (automatic via the email timestamp); and
- states any conditions/limitations applied by the approving officer (if any).

Email approvals must be retained as part of the operational record (see Records section), either by saving the email thread to the approved record location or by exporting the email chain to PDF.

RORA identifier and subject line (to ensure traceability)

Each RORA must have a unique identifier. As a minimum, the identifier must include:

- date (YYYYMMDD),
- project or task reference (where applicable), and
- operating node (station / field location / voyage),
- pilot/team identifier (where required locally).

Recommended subject line format:

- RORA APPROVAL – [RORA ID] – vX.X – [Location/Node] – [Activity]
- For multi-day approvals: RORA MULTI-DAY APPROVAL – [RORA ID] – vX.X – [Start–End Dates]

The RORA document (Word/PDF) must be attached to the initial approval email and must display the RORA ID and version in the document header or first page.

Version control and record integrity

RORAs must be managed using version control to maintain a clear distinction between:

- the version that was approved before the activity, and
- the final operational record after the activity.

Minimum versioning standard:

- RORA v1.0 (Pre-activity / Approved baseline): the version submitted for approval and authorised prior to the activity.
- RORA v2.0 (Post-activity / Final record): the finalised record completed after the activity window, capturing outcomes and any operational notes required for record keeping.

Approved baseline versions (e.g., v1.0) must not be edited after approval. If changes are required, the pilot must issue a new version (e.g., v1.1) and obtain approval (or reauthorisation) as required.

Multi-day RORA approval (max. 7 days) with daily approving-officer revalidation

Where operationally appropriate, a RORA may be approved for a defined multi-day period up to 7 days, subject to approving officer discretion and local conditions.

Multi-day approval may only be used when the following remain unchanged:

- operating location / operating area,
- task scope and flight profile (including max height/distance and applicable operating rules),
- crew composition and roles,
- aircraft type/configuration and serviceability status,
- communications plan / deconfliction arrangements (including proximity to crewed aircraft operations),
- environmental authorisation/permit conditions relevant to the activity, and
- overall risk profile.

Daily revalidation requirement:

Even when multi-day approval is used, the approving officer must provide daily revalidation before flight(s) proceeds that day. Daily revalidation may be provided by email in the same thread and must explicitly state either:

- “Revalidated for DATE – no material changes”

or

- “Revalidated for DATE – changes noted: [brief list],” including any updated conditions/limitations.

This approach does not reduce oversight; it retains daily approving-officer involvement while reducing repetitive re-creation of unchanged documentation.

Reauthorisation triggers (new RORA or new RORA version)

Reauthorisation is required where the operation extends beyond the defined operating envelope or where the assumptions underpinning the original assessment are no longer valid. A full reauthorisation (new RORA or revised RORA version) is required if any material change occurs, including (but not limited to):

- change in operating location/area or proximity to aerodromes/HLAs/ship flight deck activity,
- change in task scope, flight profile, or operating method (e.g., VLOS/EVLOS/BVLOS status, automation use),
- change in aircraft type/configuration, or any serviceability issue affecting risk controls,
- change in crew composition/roles or reduced supervision/observer coverage,
- change in comms plan, loss of comms capability, or new deconfliction constraints,
- change in weather/environmental conditions that affects risk controls or minima,
- change in environmental authorisation/permit requirements or conditions, or
- any incident, near miss, abnormal event, or safety concern indicating the risk profile has changed.

Where reauthorisation is triggered, operations must not proceed until the revised RORA is authorised.

Post-activity finalisation (Final RORA record)

Following completion of the activity window (single day or multi-day), the pilot must finalise the record by producing RORA v2.0 (Final) (or a clearly labelled “Post-activity addendum” attached to v1.0), capturing as a minimum:

- dates/times covered,
- summary of flights conducted,
- any deviations from plan and why,
- any safety, environmental, or operational issues encountered,
- any accidents/incidents/near misses and reporting actions taken, and
- lessons/feedback for procedure improvement (where relevant).

B.2 RPA – Operational Risk Assessment

The RORA template is available as a word document to provide a paperless pathway for the approval process. The RPIC should complete the sections in gold, with risk management review and discussion to be undertaken with the SL/OPSC/FL/VL prior to the operation. Final details and sign off are completed by the RPIC and approving officer before sending the completed form to aviation.reporting@aad.gov.au.

The RORA is reproduced below:

RPA - Operational Risk Assessment	
Remote Pilot	<i>Insert name</i>
Team Member(s)	<i>Insert name(s)</i>
RORA ID (unique identifier)	YYYYMMDD-PROJECT#-STATION/LOCATION
Status	<i>Draft / Approved / Final</i>

Approval Scope

This RORA confirms that:

- AAD SOP controls apply and are met for this operation
- Operational Safety Objectives (OSOs) are satisfied
- Only operation-specific risks (delta risks) are assessed below

This RORA does not repeat standard AAD Vol. 5A SOP requirements unless modified.

Multi-day approval section (delete if not required)

Multi-day approval (7 day maximum)	DD/MM/YYYY	to	DD/MM/YYYY
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Daily revalidation log table

Date	Revalidated by	“No material changes”	Change notes	Outcome
	Approving officer	No change/Changes	NA or brief description	Approved/Not approved

Material change triggers	Day	2	3	4	5	6	7
Location/operating area changed	Y/N						
Task scope/flight profile changed							

Aircraft type/config/serviceability changed						
Crew/roles changed						
Comms/deconfliction changed						
Environmental permit/conditions changed						
Incident/abnormal event occurred						

If “Yes” to any item, operations must not proceed until a revised RORA version is issued and approved. These changes represent new or increased (delta) risk requiring reassessment.

RPA Category:	Very Small < 2kg	Small 2-7kg	Small 7-25kg	Medium 25-150kg	Large > 150kg
RPA type:	Multirotor	Helicopter	Fixed-wing	Powered Lift	
Power:	Battery	Liquid fuel	Other (describe)		
RPA manufacturer & model, unique ID:					

Duplicate table above if more than one RPA used for task

Locality of operation; Flight description & objectives; max. wind limitation; min. temperature limitation

Insert detailed description here. Include maps if appropriate.

Operational Safety Objectives (OSOs) and Delta Risk

A. Operational Safety Objectives (OSOs)

Confirm that the following safety outcomes are met under SOP controls:

RPA Operational Considerations items reviewed	Yes/No
Remote Pilot and other personnel providing support to the task have provided a ‘Plain English’ summary of major task risks in the planning meeting	Yes/No
Job approved in AVCRM or equivalent (evidence shown)	Yes/No
RPA operations risk assessment/JHA completed either via AVCRM or hard copy	Yes/No
Task planning has approval for operations outside of SOC (e.g. ops >400 ft. AGL, EVLOS)	Yes/No/NA
VLOS - RPA Pilot confirms task can maintain VLOS requirements	Yes/No/NA
EVLOS - RPA Pilot and observers qualified and equipped. CASA approval in place and sighted	Yes/No/NA
BVLOS - RPA Pilot qualified. CASA approval in place and sighted	Yes/No/NA
Are personnel providing support to RPA pilot appropriately: Briefed, trained, licensed, DAMP compliant (as applicable)	Yes/No
Deconfliction with crewed aircraft operations assured. Discussed local traffic and/or potential for international traffic (known/unknown).	Yes/No
Discussed: Cold Stress & Dexterity. For exposed ops >30 min at ≤0°C, require ability to rewarm or rotation of operator; insert a ‘hands warm’ check before landing.	Yes/No
Discussed: Fatigue. If field duty >10 h or mission complexity high, require a second pilot or delay; include a ‘press-on-itis’ pause prompt in pre-operations toolbox.	Yes/No
Discussed: Weather & Micro-climate. If operating near terrain features (cliffs, headlands), add a rotor/lee-side wind briefing and set lower wind thresholds.	Yes/No
Discussed: Stop Rules. Any exceedance (distance, wind warning, BVLOS event) triggers **PAUSE** and re-brief or RTH. Abnormal event management considered.	Yes/No
Additional risks identified and mitigated as noted in table below. List only risks that are new, changed, or elevated for this operation compared to standard SOP operations	Yes/No
Operation-specific risks (delta risks)	Risk controls

Authorising Officer satisfied with responses provided and that identified delta risks are appropriately controlled: Yes/No

RPA Pilot: Signature: Date:

Authorising Officer: Signature: Date:

Approval may be provided by email from the approving officer's AAD account. The approval email must reference RORA ID + version. If email approval is used, **signature fields** may be left blank or marked 'Approved by email'.

Record integrity: Once v1.0 is approved, save as a PDF and attach to email thread. If changes are required, issue a new version (v1.1, v1.2, etc.). Complete a separate **Final record (v2.0)** after the activity period, and attach as a PDF to email thread. Send thread to aviation.reporting@aad.gov.au

Post Activity completion (Final record – v2.0)

Flight Log – add additional rows if required

Flight	Start / Stop time (HH:MM)	Flight duration (MM)	Max. distance from pilot (m)
1			
2			
3			
4			
5			
6			

Any operational, safety or environmental issues to report (including unintended interactions with wildlife, people, buildings, vehicles, weather)?

Were there any serviceability issues with the aircraft?

Pilot Signature:

Date:

SL / OPSC comments:

SL / OPSC Signature:

Date:

Approver email template (copy/paste)

Subject: RORA MULTI-DAY APPROVAL – [RORA ID] – v1.0 – [StartDate–EndDate] – [Location] – [Activity]

Initial approval (Day 1 / start of period)

Approved for **[Day 1]** and for the **multi-day period [start–end] (max 7 days)** under **RORA [RORA ID] v1.0** (attached).

Revalidation required daily before flight(s).

Daily revalidation reply (Days 2–7)

Revalidated for **[DD MMM YYYY] (Day X of Y)** under **RORA [RORA ID] v1.0**.

No material changes / Changes noted: [brief list].

Approved to proceed today subject to: **[none / list]**.

If not approved

Not approved for **[DD MMM YYYY]** under **RORA [RORA ID] v1.0**.

Reason: [brief].

Required actions before reconsideration: [brief].

Pilot daily check template (copy/paste)

Send this each day (or use it as the “prompt” for the approving officer) in the same email thread:

Subject: RORA DAILY CHECK – [RORA ID] – v1.0 – Day X of Y – [DD MMM YYYY]

Daily check for **[DD MMM YYYY] (Day X of Y)** under **RORA [RORA ID] v1.0**:

- Task/location/area: **unchanged / changed (detail)**
- Crew (pilot/observer/roles): **unchanged / changed (detail)**
- Aircraft/config/serviceability: **serviceable / issue (detail)**
- Weather forecast within minima + aircraft limits: **yes / no (detail)**
- Comms + deconfliction (crewed aircraft/ops): **unchanged / changed (detail)**
- Environmental conditions/permit requirements: **unchanged / changed (detail)**
- Incidents/abnormal events since last validation: **none / detail**

Request **daily revalidation** to proceed today.