

► This RA has been substantially re-written; for clarity no change marks are presented – please read RA in its entirety ◀

RA 1600 – Remotely Piloted Air Systems

Rationale

There is a requirement to acquire and operate appropriate Remotely Piloted Air Systems (RPAS). Therefore, there needs to be in place a proportionate regulatory and certification framework; this is based on the RPAS operating intent and the level of Risk their proposed activity poses. Without agreed frameworks to assist organizations to acquire, develop and operate appropriate RPAS (based on the way in which they are planned to be operated, and physical attributes (mass, speed, energy, etc)), RPAS may present uncontrolled and unmitigated Risks to Life (RtL). The categorization of RPAS (which considers both RPAS type and method of operation) directs which Regulation and AMC apply. This Regulatory Article (RA) provides an overview of the Categorization system and directs the regulatory requirements to ensure that organizations acquire appropriate RPAS and correctly operate them in the relevant Category¹ to enable suitable regulatory frameworks to be applied to their operation. This will ensure that RPAS are safe to operate and are being operated safely throughout their life.

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Scope

The purpose of Categorization is to set proportionate regulatory frameworks to ensure that RPAS operations are conducted safely. The process of RPAS categorization considers both the RPAS type and method of operation.

For RPAS with a Maximum Take-Off Weight (MTOW)² up to 25 kg, RPAS operations can be conducted in the Open or Specific S1 categories. For these operations, the Regulations are designed to be contained, suitable for operators with limited or no aviation qualifications or experience, and are restricted to Visual Line of Sight (VLOS) or no more than 2 km Beyond Visual Line of Sight (BVLOS) from the Remote Pilot (RP). Open and Specific S1 operations need only comply with RA 1600 and the applicable RA from RA 1601 – RA 1604. These RAs set the Risk boundaries in which the operations are to be conducted and RPAS Responsible Officers (RPAS RO) / RPAS Accountable Managers (RPAS AM) are only required to assess that they remain within these boundaries.

For operations of RPAS with maximum take-off mass greater than 25 kg, or where the operating range is more than 2 km from the RP, or other factors apply that increase RtL beyond that for Specific S1 and below, operators need to follow the whole of the MAA Regulatory Publications (MRP), with derogations appropriate to the level of Risk. Aviation Duty Holder (ADH) / Accountable Manager (Military Flying) (AM(MF))³ are required to manage the RtL to As Low As Reasonably Practicable and Tolerable in accordance with (iaw) RA 1020⁴ or RA 1024³.

Categorization is based on the Risk RPAS operations pose to uninvolved persons⁵ on the ground and other air users. The Risk is dependent on many factors including, but not limited to air vehicle mass, dimensions, speed, range of operation, duration of exposure⁶, robustness of link, the nature of the airspace, and the quality of training. As the Risk increases, the robustness of the Integrity and Assurance required to demonstrate that operations are safe will increase.

¹ Hereafter "Category" refers to Category and / or Categories.

² Including Aircraft Stores and Payload.

³ Refer to RA 1024 – Accountable Manager (Military Flying).

⁴ Refer to RA 1020 – Aviation Duty Holder and Aviation Duty Holder-Facing Organizations – Roles and Responsibilities.

⁵ Uninvolved persons are those who either are not participating in the RPAS operation or have not received clear instruction or Safety precautions from the RPAS RO / RPAS AM. A person is 'participating' if they are acting on behalf of, or under Safety instruction of, the RPAS RO / RPAS AM.

⁶ Exposure is a function of the numbers of third parties at Risk from the operation and the time during which they are at Risk.

Definitions

Definitions relevant to the RA 1600 Series

RPAS Categories

1. RPAS are categorized by an MAA RPAS Letter of Endorsed Categorization (LEC).
2. **Open Category**
 - a. Open Category operations present a low RtL and are bounded by three main factors:
 - (1) The MTOW of the RPAS is less than 25 kg.
 - (2) The RPAS is operated within VLOS⁷.
 - (3) The RPAS is not flown at a height greater than 120 m (400 ft) from the closest point of the surface of the earth.
 - b. The Open Category is divided into three operating sub-categories:
 - (1) **Open A1 (Fly 'over' people)**. Operations within the Open A1 sub-category are only to be conducted with RPAS that present a low RtL due to their low MTOW (less than 250 g) and their physical attributes / construction. The Open A1 sub-category allows operations over uninvolved persons but not flight over areas of high population density.
 - (2) **Open A2 (Fly 'close to' people)**. Operations within the Open A2 sub-category are only to be conducted with RPAS that have a MTOW of less than 4 kg and are capable of being operated safely to a minimum horizontal distance of 30 m from uninvolved persons, or down to 5 m horizontally if a 'low speed mode'⁸ is fitted and selected.
 - (3) **Open A3 (Fly 'far from' people)**. Operations within the Open A3 sub-category are only to be conducted with RPAS that have a MTOW of less than 25 kg. The Open A3 sub-category allows operations to a minimum horizontal distance of 50 m from uninvolved persons and not within 50 m of Congested Areas⁷.
3. **Specific Category**
 - a. Specific Category operations present a greater RtL than that of the Open Category; this includes where one or more elements of the operation fall outside the boundaries of the Open Category.
 - b. The Specific Category is divided into two sub-categories:
 - c. **Specific S1**. Operations within the Specific S1 sub-category are those to be conducted with RPAS that:
 - (1) Have a MTOW of less than 25 kg, and
 - (2) Are required to operate Beyond Visual Line of Sight (BVLOS)⁷ up to a maximum of 2,000 m from the RP, and
 - (3) Are flown inside the UK Flight Information Region and in Segregated Airspace.
 - d. **Specific S2**. Operations within the Specific Category are those to be conducted with RPAS that either:
 - (1) Have a MTOW of 25 kg or greater, or
 - (2) Are required to operate BVLOS in excess of 2,000 m from the RP.
4. **Certified Category**
 - a. Operations within the Certified Category present a greater potential RtL than that of the Specific Category and present an equivalent 2nd and 3rd party RtL to that of crewed aviation.

⁷ Refer to MAA02: Military Aviation Authority Master Glossary.

⁸ "low-speed mode" limits the maximum speed to 3 m/s when selected by the RP.

Definitions

b. Criteria that add complexity and therefore may lead to Categorization as Certified include⁹:

- (1) Flight over areas of high population density, or;
- (2) Carriage of people, or;
- (3) A determination by the MAA that residual RtL is too great unless the RPAS is certified, based on a combination of: MTOW, Remotely Piloted Aircraft (RPA) size, VLOS or BVLOS operation, overflight of people, airspace integration and classification, Detect And Avoid, etc, or;
- (4) Automatic or autonomous systems with procedures that prevent the RP from directly controlling the RPA throughout the entirety of its flight (except for unplanned emergency conditions such as lost link⁷ profiles).

5. **Armed RPAS and RPAS transporting Dangerous Cargo**

a. RPAS are considered to be armed if they carry a kinetic or directed energy weapon and are designed to be launched and recovered to be used again¹⁰. Armed Systems that are not designed to be recovered post-launch, may be considered one way attack systems and need not comply with MAA Regulation. If the RPA is capable of flight with the munition removed then, when the munition is fitted, it is considered an armed RPAS and subject to the MRP.

Note:

The MAA recognizes that there may be some ambiguity when determining whether an armed system meets the criteria of RPAS or one way attack system. Examples may include cases whereby the RPAS munition can be removed (rather than built-in) but will never be re-used or in the case of a loitering munition that is designed to take an indirect route to target. Early engagement with the MAA is encouraged to ensure the most appropriate Regulatory framework is applied in conjunction with the Defence OME Safety Regulator (DOSR).

b. RPAS that are armed or carry dangerous cargo^{11, 12} will be categorized either in the Specific S2 or the Certified Category. Armed Specific S2 RPAS will be constrained to named Operations and Designated Danger Areas (DDA) only.

6. **Swarming.** An RPAS swarm is defined as the operation of more than one RPA controlled collectively rather than individually¹³. Swarming operations are likely to be categorized as Specific S2 or Certified according to the assessed RtL.

7. **Dropping of materiel.** Dropping of materiel is defined as articles intentionally separated from the Aircraft that are under the pull of gravity only. Operations that intentionally involve RPAS dropping materiel are likely to be categorized as Specific S2 or Certified according to the assessed RtL.

8. **Flight over areas of high population density.** Gatherings where persons are unable to move away due to the density of the people present¹⁴.

9. **Uninvolved person(s).** An individual, or group of individuals, who either: Are not, in any way, participating in the RPAS operation; or Have not received clear instructions and safety precautions from the Remote Pilot, the RPAS operator or a person nominated by the RPAS operator, to follow throughout the operation and in the event the RPAS exhibits any unplanned behaviour. (CAP 722 derived)

⁹ These characteristics may be approved in a lower Category where the overall Safety argument supports it.

¹⁰ Other effectors including chemical, acoustic and target designation are considered armed RPAS.

¹¹ Refer to AAP-06 - The North Atlantic Treaty Organization (NATO) Glossary of Terms and Definitions (English and French).

¹² For example (non-exhaustive list): Explosives, radioactive material, flammable liquids, dangerous or volatile chemicals, strong acids, compressed gases, biological agents, poisons.

¹³ Derived from Civil Aviation Authority (CAA). "Unmanned Aircraft Systems. Rotary Wing Swarm Operations – Visual Line of Sight Requirements, Guidance & Policy. Civil Aviation Publication (CAP) 722E".

¹⁴ Derived from CAP 722 definition of "Assemblies of people".

**Regulation
1600(1)**

Remotely Piloted Air System Categorization

1600(1) All UK military registered RPAS **shall** be categorized¹⁵.

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Remotely Piloted Air System Categorization

10. RPAS **should** be categorized into one or more of the following: Open A1, Open A2, Open A3, Specific S1, Specific S2 sub-categories or Certified Category.

11. Organizations **should** submit a Categorization submission to the MAA¹⁶; an MAA Categorization Panel **should** thereafter confirm the valid / applicable Category. Organizations planning on submitting a Categorization submission **should** contact the MAA at the earliest opportunity to discuss intent and operation.

12. **Responsibility for RPAS Categorization.** Once an organization recognizes the need to categorize an RPAS it intends to operate, an appropriate person within the organization **should** accept responsibility for completing the MAA Categorization submission as follows:

a. **Open A1, Open A2, Open A3, and Specific S1 sub-categories.** The RPAS RO / RPAS AM of the organization that plans to operate the RPAS **should** be responsible for submitting a Categorization submission to the MAA.

b. **Specific S2 sub-category.** The Type Airworthiness Authority (TAA)¹⁷ (with ADH / AM(MF) / Senior Responsible Owner (SRO) endorsement¹⁸) **should** be responsible for submitting the Categorization submission to the MAA.

c. **Certified Category.** The TAA¹⁷ (with ADH / AM(MF) / SRO endorsement¹⁸), or the AM(MF) only¹⁹, **should** be responsible for submitting the Categorization submission to the MAA.

13. **Categorization Submission.** Cases for Categorization **should** be based on the operating Risk (which includes, but is not limited to: MTOW, dimensions and speed of the remote air vehicle and the nature of the proposed operations, including the range from the RP and the airspace).

14. Open and Specific S1 Categorization submissions **should** provide detail to allocate a Category, identifying processes and aggravating factors coupled with mitigations that contribute to both the Safe to Operate and Operate Safely arguments.

15. **UK Military Aircraft Register (MAR) Requirements.** RPAS **should** be registered on, and de-registered from, the UK MAR iaw RA 1161²⁰. For Open Category and Specific S1 sub-category RPAS, application for UK MAR registration is implicit in the Categorization submission²¹ and there is no requirement to submit a separate application. Specific S2 sub-category and Certified Category RPAS **should** comply with RA 1161.

16. The LEC is likely to be issued close to first flight.

a. **Open Category and Specific S1 sub-category.** Categorization submission information, **should** as a minimum include:

(1) A statement detailing why the RPAS belong in the proposed RPAS Category and sub-category (Open A1, Open A2, Open A3, and / or Specific S1).

¹⁵ In this RA, from this point on, the term 'categorize' / 'categorized' / 'categorization' refers to the MAA-endorsed RPAS Category which defines an appropriate Regulatory Framework.

¹⁶ Contact via DSA-MAA-MRPEquiries@mod.gov.uk.

¹⁷ Where the Air System is Civilian-Owned, ownership of regulatory responsibility by either the TAA or Type Airworthiness Manager (TAM) needs to be agreed within the Sponsor's approved model for Type Airworthiness (TAW) management; refer to RA 1162 – Air Safety Governance Arrangements for Civilian Operated (Development) and (In-Service) Air Systems. Dependant on the agreed delegation of TAW responsibilities TAM may be read in place of TAA as appropriate throughout this RA.

¹⁸ For RPAS intended for embarked operations the Ship Platform Authority and Ship Duty Holder, where known, **should** be consulted and involved in the categorization process.

¹⁹ For RPAS in the Special Case Flying operating category; Refer to RA 1163 – Air Safety Governance Arrangements for Special Case Flying Air Systems.

²⁰ Refer to RA 1161 – Military Registration of Air Systems operating within the Defence Air Environment.

²¹ The Categorization submission is in place of the Release To Service (RTS) / Military Permit To Fly (MPTF), the Air System Safety Case (ASSC), and the Application for Approval in Principle.

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- (2) The applicable information as detailed within the Categorization Safety Checklist at Annex B.
- b. **Open A1 sub-category.** The organization submitting a Categorization submission for RPAS to operate in the Open A1 sub-category **should** ensure, and make clear within the Categorization submission, that the RPAS being acquired has a European Union (EU) / UK conformity marking or is designed to similar standards.
- c. **Open A2, Open A3, and Specific S1 sub-categories.** The organization submitting a Categorization submission for RPAS to operate in the Open A2, Open A3, and Specific S1 sub-categories **should** ensure, and make clear within the Categorization submission, that the RPAS being acquired has a EU / UK conformity marking or is designed to similar standards. If the RPAS does not hold a conformity marking, it **should** be designed to similar standards, and the RPAS manufacturer **should** be endorsed by the Defence Equipment & Support (DE&S) RPAS Delivery Team (DT).
17. Specific S2 and Certified Categorization submissions **should** provide detail of the proposed regulatory governance construct the RPA will follow for MAA agreement, including substantiated arguments for any requested derogations from the MRP.
18. Due to the likely impact on contracting and default adherence to the full MRP, the Categorization submission **should** be made early in the project life cycle and align with Application for Approval in Principle (AAiP) for MAR application to allow for associated governance to be contracted and enacted through normal routes.
- a. **Specific S2 sub-category.** Categorization submission information is provided in RA 1605²².
- b. **Certified Category.** Categorization submission information **should** as a minimum include:
- (1) A statement detailing why the RPAS belongs in the proposed Category.
 - (2) A technical description of the RPAS.
 - (3) A detailed description of RPAS operating intent²³.
 - (4) The Airworthiness Strategy²⁴.
 - (5) The proposed Design Safety Target²⁵.
19. Following receipt of the completed RPAS Categorization submission, the MAA **should** confirm the RPAS Category and / or sub-categories (if applicable) and issue an MAA RPAS LEC detailing confirmation of the RPAS Category.
20. The LEC **should** remain valid for the duration of the organization's RPAS operations provided the conditions specified in the LEC remain extant. Where an operating organization wishes to expand beyond those conditions, including changes to the equipment, operating intent or operating environment:
- a. The organization **should** resubmit the Categorization submission and an associated Safety argument to the MAA, noting that the updated Category may be different to that previously endorsed.
 - b. A new LEC **should** be in place prior to any operation under the new conditions.
 - c. For new organizations and / or use cases for Specific S2, the ASSC (Live) and RTS Recommendation / MPTF (In-Service) Recommendation **should** be re-submitted to the MAA for review.
 - d. If a requirement is identified for an RPAS being operated in the S1 sub-category to be operated outside its extant LEC for a specific operational

²² Refer to RA 1605 – Remotely Piloted Air Systems Specific S2 sub-category.

²³ For commercial off-the-shelf (COTS) RPAS this could be the Concept of Use (CONUSE); or for more complex RPAS this could be based on the operating intent, the Statement of Operating Intent (SOI), etc (non-exhaustive list).

²⁴ Refer to RA 1606 – Remotely Piloted Air Systems - Certified Category.

²⁵ Refer to RA 1230 – Design Safety Targets.

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requirement, the use of a Special Purpose Clearance (SPC)²⁶ **should** be applied.

21. Organizations wishing to add or remove different RPAS models to an extant Open Category or Specific S1 sub-category LEC are only required to submit an Appendix 1 to the Categorization Safety Checklist at Annex B. Appendix 1 submissions **should** only be submitted if no changes have been made to the original endorsed Safety Checklist Annex B.

22. For Certified Category, no further LEC applications **should** be submitted following completion of initial Certification activity iaw RA 5810. The full MRP will apply and further LEC submissions provide no additional benefit.

23. Development activity (including Test and Evaluation (T&E), trials, and experimentation) **should** only be approved and undertaken by T&E endorsed organizations and Suitably Qualified and Experienced Persons²⁷.

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Remotely Piloted Air System Categorization

24. Civil Registered, Military Operated RPAS are regulated by RA 1166²⁸.

25. RA 1600 applies to UK Military Registered RPAS, whether Military-Owned or Civilian-Owned and / or Military Operated or Civilian Operated. This includes Civilian-Owned and Civilian Operated RPAS operating extra-territorially under contract to the MOD.

26. RA 1600 does not apply to:

a. Privately-owned RPAS (ie non-MOD owned and not on the UK MAR) operated by MOD personnel outwith their MOD duties²⁹.

b. Civil Registered or Unregistered Civilian-Owned RPAS and Civilian Operated RPAS operating, iaw the Air Navigation Order / Overseas National Regulations, under contract to the MOD.

c. Other Nation's military RPAS.

27. MOD owned and / or operated RPAS in the Open Category and Specific S1 sub-category must have 'Authority to Proceed' and security accreditation granted iaw 2023DIN03-17³⁰ prior to Categorization and use.

28. The MAA may categorize RPAS into a different Category than that submitted if deemed appropriate.

29. The MAA will form a RPAS Categorization Panel chaired by an Authorizing Officer to review the Categorization submission. It is expected that the MAA Categorization process, from receipt of the Categorization submission to issuance of a LEC or provisional Categorization response, will be no longer than 60 working days. Where the MAA has to request further information from the submitting organization to inform the Categorization decision, the response may be delayed.

30. The LEC will detail confirmation of the RPAS Category and or sub-categories detailing the Regulatory Framework to be applied.

31. Early engagement with the MAA is encouraged to reduce impact on project timelines. Engagement will ideally be during the equipment assessment phase (or earlier if possible) to enable the Categorization submission to be submitted no later than Full Business Case to ensure that the correct certification and regulatory regime can be adopted.

32. The Categorization Safety Checklist at Annex B provides a list of topics to be considered in the cases for Open Category and Specific S1 sub-category Categorization. However, it is recognized that minimal detail may be available when a Categorization submission is made during the RPAS Concept phase. Nonetheless, it is in the best interests of the submitting organization to include as much detail as is

²⁶ Refer to RA 1604 – Remotely Piloted Air Systems Specific S1 sub-category.

²⁷ Refer to RA 2370 – Test and Evaluation.

²⁸ Refer to RA 1166 – UK Civil-Registered Aircraft Utilized by the Ministry of Defence.

²⁹ ie where the use is private or recreational.

³⁰ Refer to 2023DIN03-17 – Procurement and use of small UAS (sUAS) in Defence-OS.

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available. This will, in turn, enable the MAA to make the best-informed RPAS Category assessment.

33. The Specific S1 sub-category represents the greatest RtL that an RPAS RO can manage. The RtL is bounded through the LEC. Elevation of Risk beyond this point requires an ADH chain and entry into Specific S2 sub-category.

34. The MAA recognizes that the full suite of artefacts and evidence for Specific S2 sub-category and Certified Category RPAS may not be available at LEC submission and that ASSC and RTS / MPTF review will be completed prior to commencement of flight.

35. Any re-Categorization may require additional MRP compliance including Certification, Continuing Airworthiness management, etc. Therefore, organizations may wish to seek initial Categorization in an appropriate Category if they envisage operating intent and / or conditions being expanded later.

36. It is important that an organization wishing to bring an RPAS into service within the Defence Air Environment fully understands the extent of its proposed usage in so far as is practicable throughout the life of the Air System, in order that an appropriate RPAS can be acquired from the outset (future-proofing). Changes to the requirements once In-Service will require re-assessment of the Categorization which may lead to the categorized RPAS not being suitable for the revised operating intent and / or conditions.

37. Selection of the correct RPAS is dependent on the intended CONUSE and Concept of Employment. Organizations can refer to Annex A, Figure 1 to assist in determining appropriate RPAS categories and physical attributes from the outset.

38. The acquisition of RPAS to be operated in the Open Category or Specific S1 sub-category is likely to be undertaken outside of the DE&S acquisition process, by organizations with minimal RPAS experience. DE&S RPAS DT, CATALYST DT or DE&S Airworthiness Team (DAT) are able to provide guidance on the acquisition of such RPAS.

39. Where RPAS will be operated in the maritime environment (ie embarked aviation), the Ship's Platform Authority and Ship Duty Holder are likely to be essential in the provision of Subject Matter Expertise for the Categorization submission³¹. The RPAS categorization needs to be reviewed to ensure the original RPAS categorization remains accurate, or requires a re-categorization, with a change in CONUSE / CONOPS if used in maritime environment.

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1600(2)**

Remotely Piloted Air System Regulatory Requirements

1600(2) The appropriate Regulatory Framework **shall** be applied to all RPAS.

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Remotely Piloted Air System Regulatory Requirements

40. Organizations responsible for RPAS categorized in the:

- a. Open A1 sub-category **should** ensure compliance with the regulatory requirements as detailed in RA 1601³².
- b. Open A2 sub-category **should** ensure compliance with the regulatory requirements as detailed in RA 1602³³.
- c. Open A3 sub-category **should** ensure compliance with the regulatory requirements as detailed in RA 1603³⁴.
- d. Specific S1 sub-category **should** ensure compliance with the regulatory requirements as detailed in RA 1604²⁶.

³¹ Refer to RA 1395(5): Ship Air-Release Remotely Piloted Air Systems.

³² Refer to RA 1601 – Remotely Piloted Air Systems Open A1 sub-category (Fly 'Over' People).

³³ Refer to RA 1602 – Remotely Piloted Air Systems Open A2 sub-category (Fly 'Close To' People).

³⁴ Refer to RA 1603 – Remotely Piloted Air Systems Open A3 sub-category (Fly 'Far From' People).

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- e. Specific S2 sub-category **should** ensure compliance with the regulatory requirements as detailed in RA 1605²².
- f. Certified Category **should** ensure compliance with the regulatory requirements as detailed in RA 1606²⁴.

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41. RPAS operating in the Open and S1 sub-categories do not require a RTS / MPTF. RPAS operating in the S2 sub-category and Certified Category require an RTS / MPTF. There may be a requirement to have an MPTF (Development)²⁶ for Test and Evaluation activities.

ANNEX A

Figure 1 – Categorization Schematic (for illustrative purposes only – see RAs for definitive applicability)

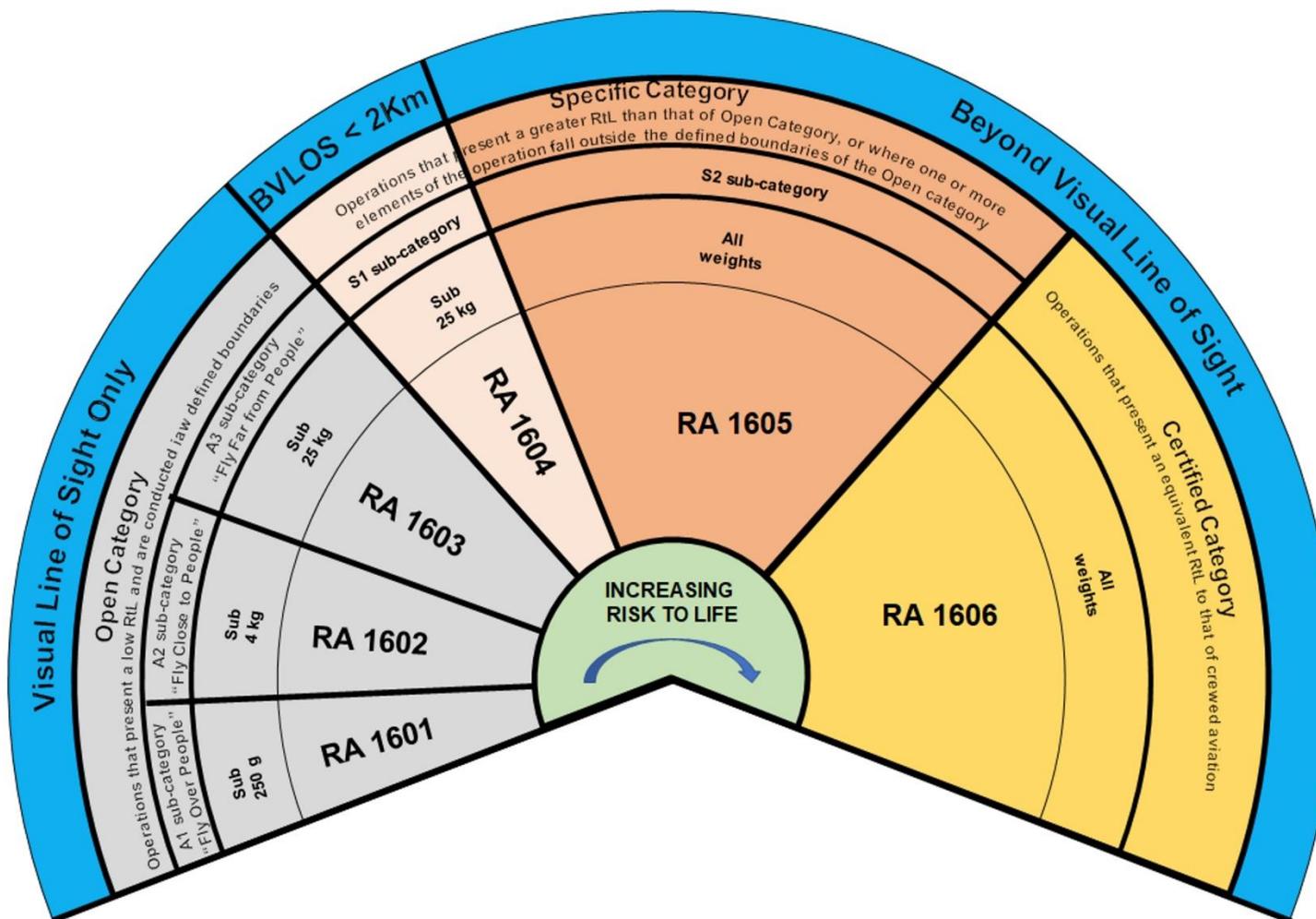
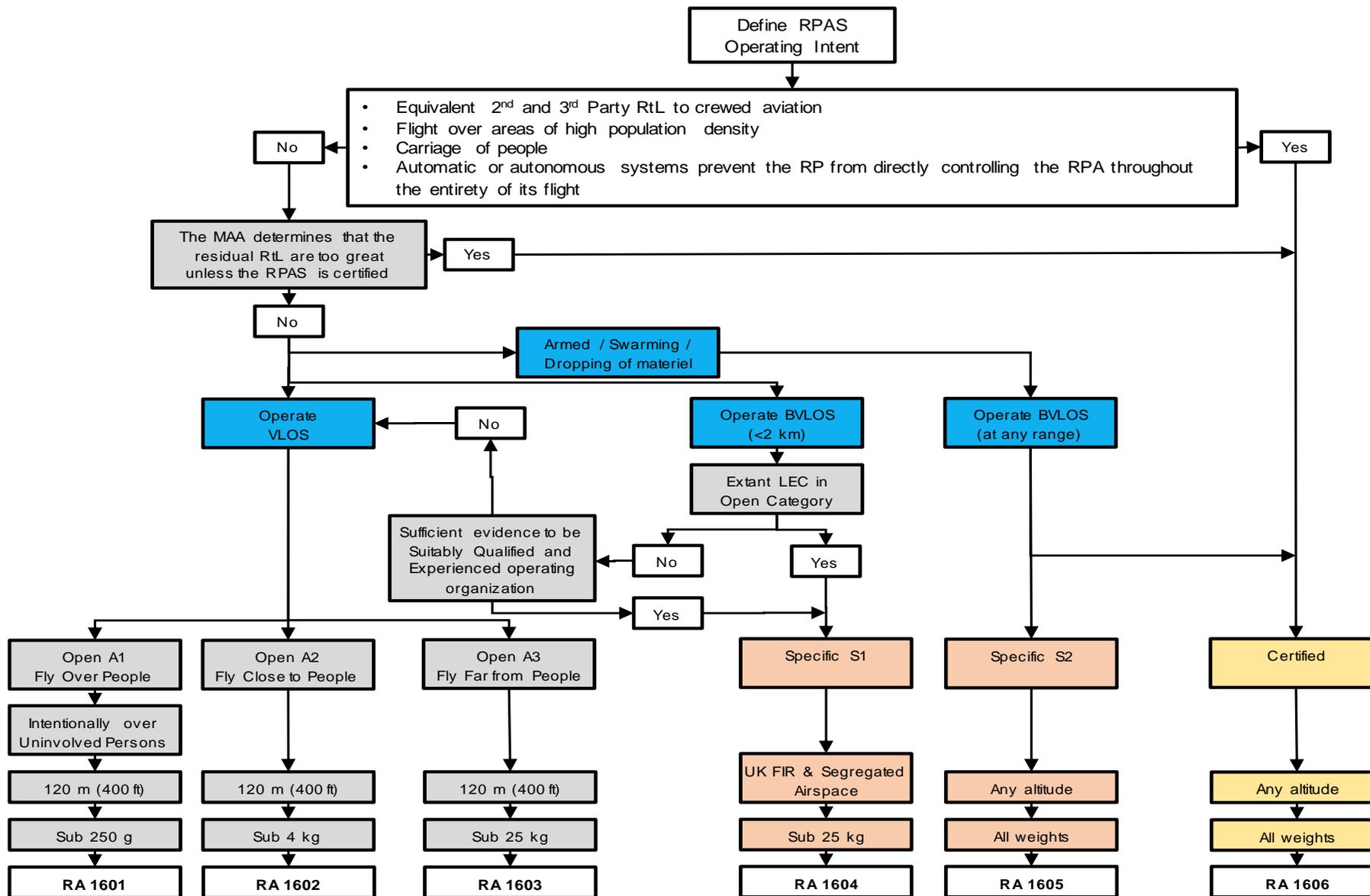


Figure 2 – Categorization Flow Chart (for illustrative purposes only – see RAs for definitive applicability)



ANNEX B

Categorization Safety Checklist

The Categorization Safety Checklist provides recommended headings and content to be considered for inclusion in the submission for Open Category and Specific S1 sub-category RPAS Categorization. It is recognized that some of the content detailed below might not be available at the time the Categorization submission is prepared. Nonetheless, it is in the best interests of the submitting organization to include as much information as available to inform the MAA Categorization.

1. Organization

*{Full details of the organization that is subject to the submission – all areas detailed below ought to be covered as a minimum. **Where examples are given, they are not exhaustive**}*

- 1.1. Structure of organization and management
{Brief description}
- 1.2. Key personnel
{As appropriate, eg RPAS RO, RPAS AM. Aviation qualifications and experience to be included if applicable}
- 1.3. Responsibility and duties of the RP
{Expected duties of the RP}
- 1.4. Responsibility and duties of support personnel in the operation of the RPAS
{eg RPs might use an assistant to help with the operation of the RPA. Give a brief description of this person's responsibilities and duties}
- 1.5. Flight team composition
{Composition of the flight team according to nature of operation, complexity, type of RPA, etc}
- 1.6. Operation of multiple types of RPAS
{Detail any limitations to the numbers and types of RPAS that a RP might operate if appropriate}
- 1.7. Qualification requirements
{Details of the qualifications, experience or training necessary for the RP or support crew according to the types of RPAS and roles employed by the RP}
- 1.8. Crew health
{A statement and any guidance to ensure that the crew are appropriately fit before conducting any operations}
- 1.9. Logs and records
{Requirements for logs and records of flights for the RPAS and by the RP}
- 1.10. Details of the RP training programme
{Training and checking requirements for RPs and support crew as determined by the RPAS RO / RPAS AM to cover initial, refresher and conversion syllabi. Include any independent assessment of RP competency and currency requirements}
- 1.11. Occurrence prevention, Occurrence reporting, and Flight Safety programme
{Include any reporting requirements and interface with Safety Management System}
- 1.12. Change Management (Modifications)
{Detail how the organization manages changes to the original design}
- 1.13. Other documents
{As considered necessary – copies of any documents ought to be attached}

2. Operations

*{Details of the operating environment and procedures subject to the submission – all areas detailed below ought to be covered as a minimum. **Where examples are given, they are not exhaustive**}*

- 2.1. Operating Intent / Types of operation
{Detail nature of operation (eg Visual Line of Sight, flexible / dynamic tasking, day / night, weather, operating behaviour, etc)}
- 2.2. Operating Areas
{Full detail of expected areas of geographic operations including operating areas (eg Congested Areas, open countryside, roads, etc). Consideration of overflown population density, suitability of launch and recovery locations and required services}

- 2.3. Operating limitations, conditions, and related factors
{Minimum and maximum operating conditions and limitations; reference any applicable limitations document if available and / or applicable; maximum kinetic energy; MTOW; maximum speed; population density}
- 2.4. Aggravating and / or mitigating factors table affecting or likely to affect the RPAS Category or Categories.
- 2.5. Supervision of RPAS operations
{A description of any system to supervise the operations of the RP}
- 2.6. Operating site planning and assessment
{Airspace operating environment considerations and procedures (eg controlled or restricted airspace, local avoids and Hazards, electromagnetic environment, etc)}
- 2.7. Communications
{Awareness and links with other users and Aircraft Aircrew / RPs}
- 2.8. Weather
{Consideration of RPAS environmental limitations}
- 2.9. On site procedures
 - a. Site Survey *{Methods of surveying operating area, identifying Hazards and any recorded Risk Assessment}*
 - b. Selection of operating area and alternate *{Methods of identifying and selecting operating area and how the alternate would be kept clear}*
 - c. Crew briefing *{Procedures to brief crew (eg task, responsibilities, duties, emergencies, etc)}*
 - d. Cordon Procedure *{Adherence of separation criteria}*
 - e. Communications *{Procedures to maintain contact with crew and adjacent air operations if appropriate}*
 - f. Weather Checks *{Met brief provision, limitations and operating considerations}*
 - g. Refuelling *{To include changing / charging of batteries}*
 - h. Loading of equipment *{Detail procedures taken to ensure security of loaded equipment}*
- 2.10. Assembly and functional checks
{Checks conducted on completion of assembly of the system}
- 2.11. Pre-flight checks
{Checks conducted immediately prior to flight}
- 2.12. Flight Procedures
{Start, take-off, in-flight, landing, shutdown}
- 2.13. Post-flight or between flight checks
{Detail the checks or inspections conducted both after flight and between flights, do appropriate Maintenance documents exist to return the Air System to a serviceable state?}
- 2.14. Emergency Procedures
{Include lost link, flyaway, Airspace encroachment, fire (RPA and Ground Control Station), etc. Preventive measures ought to also be detailed, along with a list of alarms and associated instructions, etc. Preventive measures ought to also be detailed}
- 2.15. Surveillance of Operations
{Surveillance methods for verification of RPAS geospatial positioning}

ANNEX B – APPENDIX 1**Categorization Safety Checklist**

Technical descriptions and details of the RPAS that is subject to the submission – all areas detailed below **should** to be covered as a minimum. **Where examples are given, they are not exhaustive.**

3. Systems

- 3.1. Details of Design Organization and manufacturer / production organization
{The designer and manufacturer might be the same company, include details of any approvals that such organizations hold}
- 3.2. Recognized standards, to which the equipment has been designed, built and tested
{Details of any standards that might or might not be aviation related and might add to the safety argument. Where known this ought to include test and evaluation evidence}
- 3.3. The designed flight envelope
{Full description of the flight envelope including: MTOW, flight duration, communications range, max height and speeds to maintain safe flight and glide profile (where appropriate). Include effects on flight envelope of differing payloads}
- 3.4. RPA dimensions
{Full dimensions to be given including mass with and without fuel; with and without any payloads, etc}
- 3.5. RPA energy
{maximum speed (m/s), maximum kinetic energy (joules)}
- 3.6. Design features
{Detail the design features of the system, materials used, type of structure, etc}
- 3.7. Software Assurance
{Detail the software version, and the steps taken to assure the software}
- 3.8. Construction
{Detail the build nature of each Air System and how structural strength is assured}
- 3.9. Electrical power and distribution
*{Detail the electrical power and distribution, include battery type and number, generator specifications, equipment ratings, load shedding where appropriate, etc. This section **should** also consider any storage considerations related to batteries (eg on board ship)}*
- 3.10. Propulsion System
{Detail the Propulsion System(s) used, power output, type of propeller / rotor, etc}
- 3.11. Fuel System
{Detail the fuel system arrangement, type of fuel, fuel delivery, etc}
- 3.12. Flight Management System and Flight Control System
{Detail of how the RPA is controlled, control linkages, control rigging, include any automatic stabilisation, etc}
- 3.13. Navigation and Guidance
{Detail the system used for navigation and guidance, include any automatic piloting, telemetry, etc}
- 3.14. Other avionics
{Detail any other avionics fitted to the system}
- 3.15. Launch and Recovery
{Describe the launch and recovery systems and detail any landing aids fitted to the system}
- 3.16. Payloads
{For each RPA give a technical description of the payload expected to be installed or carried}
- 3.17. Emergency recovery or safety systems
{Detail any systems fitted to the RPA or Ground Control Station (GCS) that contribute to safe flight or handling including their modes of operation (eg ballistic parachutes, propeller guards, independent flight termination, flight recovery system, etc)}
- 3.18. Modifications to the system
{Detail any Modifications that have been made post initial design}

- 3.19. GCS
{Where a laptop / tablet is utilized give details of the type of operating system and other technical specifications. Give detail of process for firmware and software updates, and what flight parameters, commands, and data are recorded}
- 3.20. Command and Control Link (C2)
{Describe the C2 infrastructure, how its integrity is monitored and the reaction of the system to degraded signal strengths}
- 3.21. C2 Loss Prevention
{What design characteristics or procedures are in place to prevent and mitigate loss of data link whether due to Radio Frequency (RF) interference, equipment malfunctions (RPA / GCS) or atmospheric conditions}
- 3.22. Lost Link
{Describe the RPA lost data link logic, profile and management for all phases of flight}
- 3.23. Whole system single points of failure (SPOF)
{For each element of the whole system, identify where SPOF might exist or alternatively where redundancy exists (eg motors, propellers, etc)}
- 3.24. Lifting, Maintenance schedules and inspections as applicable
{Describe the general Maintenance philosophy for the platform}
- 3.25. Repair and servicing as applicable
{Where repairs to the system are necessary describe the repair and servicing philosophy}
- 3.26. Known failure modes
{For the whole system identify known failure modes and detail preventive strategy}
- 3.27. Failsafe features
{Detail any failsafe features in the design of the system}
- 3.28. Operating limitations and conditions (for Categorization phase only) as applicable
{List the minimum and maximum operating conditions to highlight any mitigating or aggravating factors}
- 3.29. Transportation requirements
{Detail how the system is transported between sites. Include all carry cases, transport description, etc}
- 3.30. EU Conformity Standard / Similar Standards
{Detail the conformity standard of the RPAS}