NOTIFICATION OF AUTHORIZED AMENDMENT (MAA-NAA- 14/55)

Document Set(s):	RN 2014/06 (D Tech)	**Regulatory Article(s)/Manual Chapter(s)**	RA1120 – 1600 – 2130 – 2310 – 4050 - 5002

RFC Reference	2014/229	**NPA Reference**	*NPA 14/14*

Amendment Author	MAA Reg CAw3 CAM	Redacted	Redacted
Amendment Supervisor	MAA-Reg-DepHd	Redacted	Redacted
Amendment Independent	MAA-Cert-S and ADS	Redacted	Redacted

Amendment Classification (As per MAA SOP 20 Matrix)	**Novel/Contentious (2*)**	**Publishing Requirements:**	Dec 14

AUTHORIZED AMENDMENT

This NAA covers the publication of RN 2014/06 (D Tech), notifying the Regulated Community of the pending publication of the regulations derived consequent of the MAA's review of RPAS regulations, previously distributed for comment under NPA 14/14.

RA 1120 is updated to reflect the introduction of RPAS categorization.

RA 1600 introduces a modified and scalable classification system to RPAS systems allowing greater flexibility in the application of regulations. This ensures appropriate and proportionate regulation to ensure the platforms are safe to operate and operated safely.

RA 2130 and RA 2310 incorporate minor amendments specific to RPAS operation.

RA 4050 defines the responsibility and requirement for continuing airworthiness requirements of RPAS.

RA 5002 addresses the responsibility and authority for design and modification of RPAS through either Service or contractor organizations.

The Regulated Community is given notice of the above regulations, introduced as attachments to the covering RN. The implementation date for these regulations will be the 19 Jan 15 and these publications will be updated fully into the MRP on this date under cover of a separate NAA.

ISSUE STATE CHANGES (if more lines required, contact the MRP Team)

Document Title	***Previous Issue***		***New Issue***
RA 1120	3	*To*	4
RA 1600	NA	*To*	Initial
RA 2130	2	*To*	3
RA 2310	2	*To*	3
RA 4050	2	*To*	3
RA 5002	NA	*To*	Initial

APPROVAL Approved by: (IAW MAA SOP 20 Matrix)	**Post** **Name** **Rank**	*MAA-Tech-D* Redacted Redacted	**Original, non redacted, signed**

Regulatory Notice

19 Dec 14

MAA/RN/2014/06 (D TECH) – REMOTELY PILOTED AIR SYSTEMS (RPAS) REGULATORY FRAMEWORK

Issue

1. The introduction of the RPAS Regulatory Framework.

Scope

2. This Regulatory Notice (RN) covers the detailed introduction of the new regulatory articles and revised glossary of terms with respect to RPAS.

Aim

3. The aim of this RN is to ensure that all personnel who procure and operate RPAS, or are seeking to do so, within the Defence Aviation Environment are familiar with the new regulatory regime. The relevant regulations have now been approved for publication and will be published into the MAA Regulatory Publications (MRP) and effective on **19 Jan 15**. They are attached to this RN so that the Regulated Community may make appropriate provision for their introduction. This RN also provides detail on the implementation of these new regulations. Those regulations that are subject to amendment are detailed below:

a. MAA02 Master Glossary.

b. MAA03 Regulatory Processes (Annex F).

c. RA 1120 Military Aircraft Registration.

d. RA 1600 RPAS.

e. RA 2130 Safety Equipment, Survival Drills and Training.

f. RA 2310 Role Specific Fixed Wing.

g. RA 4050 Continuing Airworthiness of RPAS.

h. RA 5002 RPAS Design and Modification Engineering (DME).

Implementation

4. This guidance is effective immediately.

Background

5. An end-to-end review of RPAS regulation has been conducted by a MAA Multi-Disciplinary Team in wide consultation with external stakeholders seeking to create a more proportional and effective regulatory regime. This has resulted in re-brigading of content; amendment of RAs where incoherence or ambiguity were identified; the removal of

unnecessary regulation and the introduction of a new classification framework and associated Design Modification Engineering and Continuing Airworthiness regulations. These regulations are at Attachments1 to 6; additionally, as aid to understanding, a précis of how the regulations will apply to the RPAS categories is at Annex A.

Transition Arrangements

6. **Effective Date**. The regulations attached to this RN will be effective from 19 Jan 15. The application of these new regulatory requirements will be staged as outlined below. This will afford organizations time to understand and prepare for the changes, most notably the classification process and the staffing of an RPAS categorization submission to the MAA:

a. **RPAS Pre-Main Gate on 19 Jan 15**. RPAS pre-main gate on 19 Jan 15 must comply with the attached regulations in full and will be required to submit a categorization application to the MAA before Main Gate.

b. **RPAS In Service or Beyond Main Gate on 19 Jan 15**. RPAS already in service or beyond Main Gate on 19 Jan 15 will be formally transitioned to the RPAS Regulatory Framework via the submission of an application for categorization and the receipt of an associated Letter of Endorsed Categorization from the MAA[1]. Transition of all RPAS via a Letter of Endorsed Categorization will be complete by 19 Jan 16. Until an organization has received a Letter of Endorsed Categorization their RPAS must comply with the full MRP.

c. **Path to Compliance**. All RPAS TAAs or Heads of Organizations should submit a transition plan for their RPAS to the MAA by 20 Apr 15 to enable timelines for individual RPAS to be agreed. Early engagement with the MAA such that transition plans may be synchronized is encouraged.

MAA Website

7. This RN will be published on the MAA Website on 19 Dec 14. The attachments to this RN will then be uplifted as into the MRP under the cover of a separate NAA, and will become effective from on 19 Jan 15. Associated updates to MAA 02 and MAA 03 will be published under a separate NAA before the 19 Jan 15.

Queries

8. Any queries or requests for further guidance on the content of this RN should be submitted in the first instance, by email to MAA Enquiries MAA-EnquiriesMailbox@mod.uk.

MAA Director (Technical)

Annex:

A. Summary of MAA RPAS Categories and Regulatory Outcomes.

Attachments:

1. RA 1120 Military Aircraft Registration.
2. RA 1600 RPAS.
3. RA 2130 Safety Equipment, Survival Drills and Training.

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[1] This process is detailed in MAA03 Annex F.

4. RA 2310 Role Specific Fixed Wing.
5. RA 4050 Continuing Airworthiness of RPAS.
6. RA 5002 RPAS Design and Modification Engineering (DME).

Annex A
To MAA/RN/2014/06
Dated 19 Dec 14

SUMMARY OF MAA RPAS CATEGORIES AND REGULATORY OUTCOMES

MAA RPAS Category	I(a)	I(b)	I(c)	I(d)	II	III
Notional MTOW	0.2kg	2kg	20kg	150kg	600kg	-
Categorization Required?	Yes	Yes	Yes	Yes	Yes	Yes
Senior Duty Holder	No	Yes	Yes	Yes	Yes	Yes
Operating Duty Holder	No	Yes	Yes	Yes	Yes	Yes
Delivery Duty Holder	No	Yes - OF4, previous comd experience not required	Yes	Yes	Yes	Yes
Chief Air Engineer	No	Yes - I/CEng, familiarity with 4000 series regs required	Yes - I/Ceng, prev EA level G	Yes - I/Ceng, prev EA level G	Yes	Yes
Type Airworthiness Authority	No	Yes - B2/OF4	Yes - B2/OF4	Yes	Yes	Yes
Release To Service	No	Yes	Yes	Yes	Yes	Yes
Air System Safety Case	No	Yes - can delegate to DDH	Yes - can delegate to DDH	Yes	Yes	Yes
Occurrence Reporting	No	Yes - DH can waive Occurrence Safety Investigations to Local Occurrence Investigation	Yes - DH can waive Occurrence Safety Investigations to Local Occurrence Investigation	Yes	Yes	Yes
Continuing Airworthiness Management	No	By CAE	By CAE	By CAE	By CAMO	By CAMO
Military Airworthiness Review Certificates	No	No - airworthiness sample audit	No - airworthiness sample audit	No - airworthiness sample audit	Yes	Yes
Ageing Aircraft Audit	No	No	No - sufficient proof still required to prove ageing processes are accounted for	No - sufficient proof still required to prove ageing processes are accounted for	Yes	Yes
Maintenance (RA4000 to RA4849)	No	CAE can auth deviations to: Gnd handling, Eng Auths, non-eng tradesmen,	CAE can auth deviations to: Gnd handling, Eng Auths, non-eng tradesmen,	CAE can auth deviations to: Gnd handling, Eng Auths, non-eng tradesmen,	Yes	Yes

MAA RPAS Category	I(a)	I(b)	I(c)	I(d)	II	III
		tool control, independent inspections, aircraft documentation	tool control, independent inspections, aircraft documentation	tool control, independent inspections, aircraft documentation		
Airworthiness Strategy	No	Yes	Yes	Yes	Yes	Yes
Integrity Management	No	No	Yes – combined IM permitted / tailored approach	Yes – OLM programme at the discression of the TAA	Yes	Yes
Certificate of Design	No	No – Intent of RA 5103 must still be achieved	No – Intent of RA 5103 must still be achieved	Yes	Yes	Yes
Certification of RPAS and engines (Def Stan 00-970 pt 9)	No	No - Equipment Safety Assessment Report	No - Equipment Safety Assessment Report	Yes	Yes	Yes
Design Safety Targets	No	No	No	Yes	Yes	Yes
Software assurance	No	No - Hazard analysis required	No - Hazard analysis required	Yes	Yes	Yes
RPAS weight and balance recording and reporting	No	No	No - process to check	Yes	Yes	Yes
RPAS engine weight and balance recording and reporting	No	No - process to check	No - process to check	Yes	Yes	Yes
Configuration Management Plan	No	No	Yes - tailored	Yes	Yes	Yes
DAOS	No	No – Requires a QMS	No - Requires a QMS	Yes	Yes	Yes
MAOS	No	No - Requires a QMS	No - Requires a QMS	Yes	Yes	Yes
GCS evacuation procedures (if required)	Yes	Yes	Yes	Yes	Yes	Yes

RA 1120 - Military Aircraft Registration

Rationale

The registration of military aircraft (as defined in MAA01) and their identification marking is required by international agreement to provide each aircraft with a unique identity. Head of Oversight and Approvals (Hd O&A) MAA issues the registrations of UK military aircraft and maintains a central register of all military aircraft on behalf of the Secretary of Sate.

Contents

Regulation 1120(1)

Military Aircraft Registration

1120(1) All UK Military Aircraft **shall** be registered on the UK Military Aircraft Register (MAR).

Acceptable Means of Compliance 1120(1)

Military Aircraft Registration

Registration of UK Military Aircraft

1. All prospective UK military aircraft, ► excluding those Remotely Piloted Aircraft Systems (RPAS) categorized as Class I(a)[1],◄ **should** be registered under the authority of the post holder responsible for sponsoring the military use of the aircraft type. The prerequisites for military registration are that the aircraft **should** be:

   a. Capable of controlled flight.

   b. Intended to complete multiple flights.

   c. Required to operate in a manner outside that permitted by the Air Navigation Order (ANO), or the aircraft operation or design is outside Civil Aviation Authority (CAA) expertise.

   d. Owned by the Ministry Of Defence, or have a Certificate of Usage (CofU) as a Military Aircraft if owned by a civilian organization (see also RA 1123).

2. ► For all aircraft, including RPA, minimum UK military markings **should** also be displayed; see AP119A 0601-0B Chapter 9.

3. RPA[1] categorized as Class I(b) or I(c) will not be registered as individual airframes (this includes aerial targets used/employed within a defined weapons range[2]); instead the Type will be given a one-off Military Aircraft Registration Number. For these RPAs the Aviation Duty Holder/Accountable Manager (Military Flying) **should** maintain a record of individual aircraft identified by a unique serial number (identifying both the operator and the airframe); and **should** ensure that both the Type Military Aircraft Registration Number and the unique aircraft serial number are displayed on the main fuselage.◄

4. For the military registration of civil-owned aircraft that will not be operated in the Service Environment, RA1121 **should** be used in addition to this RA.

Guidance Material 1120(1)

Military Aircraft Registration

The Military Aircraft Register (MAR)

5. The registration of aircraft provides a unique identity that enables the following essential actions:

   a. The certification of fitness for flight of individual airframes.

   b. Identification in flight.

   c. Configuration control.

[1] ►Categories of RPA are defined in RA 1600 RPAS◄
[2] ►Note that this includes temporary ranges at sea, eg High Seas firing.◄

Guidance Material 1120(1)

d. A record of usage and maintenance.

6. The CAA registers all UK registered civil aircraft.

7. Procedures for registration include the requirement to issue Certificates of Registration and De-registration; these certificates provide the auditable record of aircraft being placed on, and removed from, the MAR.

Aircraft Registration

8. A flow chart outlining the requirements for military registration is attached at Annex A.

Allocation of Provisional Registration Numbers

9. Once the sponsor has confirmed that military registration of particular aircraft is required, the TAA may apply to Hd O&A MAA for allocation of provisional registration numbers. The application must be made in writing, giving the following information:

a. The aircraft type and mark.

b. The contract number.

c. The airframe and build number of each aircraft.

d. The estimated dates of first flight for each aircraft.

10. The Registrar will then provisionally enter the aircraft details onto the MAR and notify the TAA of the provisional numbers.

Registration

11. As soon as the TAA is able to advise a firm date for the first flight of each airframe, or for Military Registered Civil-Owned Aircraft (MRCOA) when the CofU has been signed, he will advise Hd O&A MAA who will authorize the Registrar to make the aircraft active on the MAR and issue a copy of the Certificate of Registration (see Annex B). Hd O&A MAA will retain the originals.

12. The TAA is responsible for reporting to Hd O&A MAA all events that affect the status of the aircraft on the Register.

De-registration

13. Where appropriate the Registrar will make the aircraft inactive on the MAR and issue a copy of the Certificate of De-registration to the TAA or the disposal agency as appropriate (see Annex C). Hd O&A MAA will retain the originals.

Transfer of Aircraft

14. When aircraft are transferred from the MAR to a civil or other nation's military register, Project Team Leaders must ensure that all UK military markings are removed.

Note:

Aircraft registration numbers are never removed from the MAR. De-registered aircraft are shown as inactive and have no authority to fly except in accordance with paragraphs 14-17 below.

►◄

Civil Registered, Civil Owned Historic Military-Type Aircraft

15. Historic military type aircraft, that have been awarded a CAA Certificate of Airworthiness or a CAA Permit to Fly, may be granted permission, in the interests of aviation history, to display original, historically accurate military livery and 'applicable to type' military registration numbers in lieu of a civil registration number.

16. Applications to display historic military markings and liveries must be made to the appropriate Front Line Command (FLC) in accordance with the procedures detailed on the CAA web page entitled 'Exemptions from the need to display markings on UK Registered Aircraft'. The FLC will assess the application and its supporting

Guidance Material 1120(1)

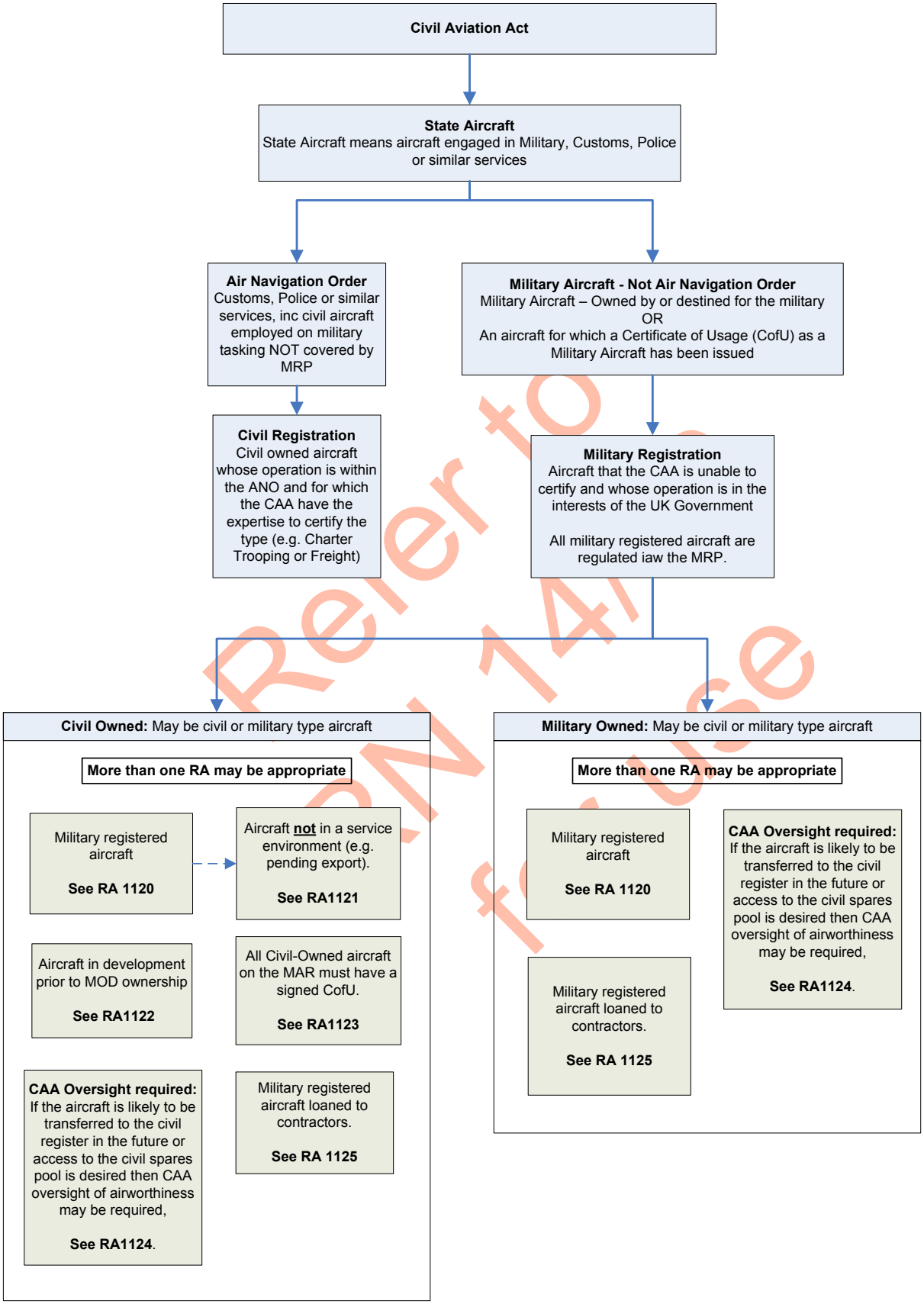
documentation and, if satisfied, will forward the request to the Hd O&A MAA.

17. Providing the historic military registration number is not already in use it will be authorized. Hd O&A MAA will authorize the Registrar to annotate the MAR. The Registrar will maintain a separate section within the MAR to identify UK military registration numbers that have been authorized for display on civil-owned historic military type aircraft.

18. A letter of permission to operate with historic markings and liveries will be issued by the FLC to the applicant, copied to the Registrar. In order for the applicant to gain CAA exemption from Article 10 of the ANO they must send their letter of permission to the CAA Aircraft Registration Section in accordance with the guidance provided on the CAA web site.

ANNEX A

MILITARY AIRCRAFT REGISTRATION



ANNEX B

CERTIFICATE OF REGISTRATION

Military Aviation Authority

MAA

Certificate of Registration

This is to certify that the following aircraft

Type:

Mark:

Manufacturer:

Build Number:

Previous Registration Number (if applicable):

Has been allocated the Military Aircraft Registration Number:

and has been entered on the United Kingdom Military Aircraft Register with effect from:

Date: *Time:*

MILITARY AIRCRAFT REGISTRAR

for MAA Date:

ANNEX C

CERTIFICATE OF DE-REGISTRATION

Military Aviation Authority

MAA

Certificate of De-Registration

This is to certify that the following aircraft

Type:

Mark:

Manufacturer:

Build Number:

Previous Registration Number (if applicable):

which had the Military Aircraft Registration Number:

has been removed from the United Kingdom Military Aircraft Register

with effect from:

Date: *Time:*

►◄

MILITARY AIRCRAFT REGISTRAR

for MAA Date:

RA 1600 - Remotely Piloted Air Systems (RPAS)

Rationale

There is a requirement to determine and apply an appropriate and proportionate regulatory regime for RPAS to ensure that an RPAS is safe to operate and is being operated safely.

Contents

Regulation 1600(1)

RPAS MRP Compliance

1600(1) The MRP **shall** apply to all RPAS, in the Defence Aviation Environment (DAE)[1] with the exception of RPAS categorized as Class I(a) which are exempt from the other regulations in the MRP except RA 1600(1) and RA 1600(2)[2] . However, the individual in charge of operating the Class I(a) RPAS **shall** be responsible for ensuring its safe operation.

Acceptable Means of Compliance 1600(1)

RPAS MRP Compliance

1. Class I(a) RPAS **should not** be operated:

   a. In any aerodrome traffic zone, except with the permission of either the appropriate Air Traffic Control unit or the person in charge of the aerodrome.

   b. In a manner that presents undue risk or hazard to any person, vessel, structure, vehicle or infrastructure.

Guidance Material 1600(1)

RPAS MRP Compliance

2. Where there is a difference between the regulation contained in this RA and the remainder of the MRP this RA will take precedence.

3. All RPAS must be operated in a manner that minimizes the risk and hazards to other airspace users, ground crew and persons over which such RPA are flown iaw the MRP 2000 Series: Flying Regulations (FLY) and 3000 Series: Air Traffic Management Regulations (ATM).

4. Research has demonstrated that for a Remotely Piloted Aircraft (RPA) below 200g, ie Class I(a), the risk to 2nd or 3rd parties, either on the ground or consequent from Mid-Air Collision, can be considered broadly acceptable in its own right without requirement for further mitigation beyond the AMC stated at RA 1600(1) (ie the actual risk of death or serious injury from a collision is effectively independent of frequency of occurrence). The responsibility for ensuring correct initial and continued categorization and adherence to RA 1600(1) falls to the parent organisation of the individual in charge of operating the Class I(a) RPAS.

5. Regardless of mitigation RPAS with a MTOW greater than 200g will not be categorized as Class I(a).

6. This regulation does not apply to the use of RPAS by individuals or organizations which would be considered private, sport or recreational (ie non state

[1] The DAE is defined in MAA 02 .
[2] From this point on in this RA the phrase “All RPAS” will refer to “All RPAS, less those categorized as Class I(a).”

Guidance Material 1600(1)

use); such use is governed by the UK CAA iaw CAP 722 and CAP 393.

Regulation 1600(2)

RPAS Categorization

1600(2) An Organization seeking to bring an RPAS into use in the DAE **shall** present a case to the MAA for its endorsed categorization[3] which will define the appropriate regulatory regime prior to Main Gate.

Acceptable Means of Compliance 1600(2)

RPAS Categorization

7. The case for categorization presented to the MAA **should** cover the following:

   a. A technical description of the RPAS.

   b. A description of the operating intent.

   c. A statement of proposed categorization and the aggravating and/or mitigating factors affecting the RPAS categorization (a list of typical factors is at Table 2 in Annex A).

   d. A statement of which MRP RAs are deemed to be applicable to the proposed categorization and the method of compliance.

   e. An outline Airworthiness Strategy/Air Safety Strategy.

   f. A proposed Design Safety Target, in accordance with (iaw) RA 1600(8).

   g. Detail of the key stakeholders, where identified, eg Release to Service Authority (RTSA), Aviation Duty Holder (DH)/Accountable Manager (Military Flying)(AM(MF)), Defence Equipment and Support (DE&S) Project Team (PT), Type Airworthiness Authority (TAA), Front Line Commands (FLC), OCD Sponsor (for MRCOA), Capability Sponsor.

   h. A statement that all documentation has been verified by the applicant.

8. The case for categorization **should** be endorsed by all key stakeholders (as a minimum the TAA and Aviation DH/AM(MF)) prior to submission to the MAA.

9. Changes to the equipment, operating use or environment of the RPAS, which may change the categorization of the RPAS, **should** be re-presented to the MAA.

10. The case for categorization and the signed MAA Letter of Endorsed Categorization **should** be retained for the life of the RPAS Type plus 5 years.

Guidance Material 1600(2)

RPAS Categorization

11. The MAA RPAS categories are explained at Annex A.

12. There are a wide range of organizations seeking to introduce RPAS into the DAE, such as DE&S PTs, FLC units and trials organizations. Ultimately it will be the head of the organization which plans to introduce an RPAS into the DAE who will be responsible for submitting a case to the MAA for its categorization.

13. For those organizations seeking to procure an RPAS, early engagement with the MAA is encouraged. The case for categorization will ideally be made as early as possible in the procurement of the system to ensure that the correct regulatory regime is identified. For RPAS being procured through DE&S ideally this will be prior to Initial Gate[4], and certainly no later than Main Gate to ensure acquisition contracts are appropriately defined. When a case for categorization is made during the Concept Phase the SQEP panel will determine a provisional category based on the information provided which, at this early stage, may be limited. Before reaching Main Gate, organizations will be required to submit a full case for categorization.

[3] From this point on the phrase 'categorized' in this RA refers to the MAA-endorsed category which defines how the RPAS will be regulated. RPAS Categories are listed at Table 1 of Annex A.
[4] It is recognized that during the Concept phase it may not be clear that an RPAS can best meet the requirement.

Guidance Material 1600(2)

14. The application process, required inputs, necessary stakeholders and outputs are outlined in more detail at Annex F to MAA03.

15. The case for categorization presented to the MAA needs to consider the characteristics of the RPAS in its operating context. This case must be submitted in coordination between all stakeholders where identified; for example in the Service Environment there needs to be a discussion between RTSA, TAA, and Aviation DH to determine a case for categorization describing their operating intent. In regards to the RTSA it is desirable that they are engaged in the categorization submission, however they can not endorse the application due to their requirement to remain independent.

16. A non-prescriptive list of aggravating and mitigating factors is at Annex A. Given the vast array of RPAS brought into service, it would be unhelpful to be prescriptive on the exact content to be contained in the categorization submission. The level of detail contained in the full categorization submission will depend on the extent of the deviation being sought from the initial baseline Maximum Take off Weight (MTOW) category and the relevant aggravating and mitigating factors.

17. Annex B provides a list of recommended topics to be considered in the categorization submission. It is understood that the detailed content will be dependent on the specifics of the individual case. It is in the best interests of the applicant to include as much detail as is available to aid decision-making.

18. The MAA will consider each RPAS presented for categorization on a case by case basis. The NATO RPAS MTOW classification has been utilized as the start point for the MAA categorization schematic, as shown in Annex A. However the aggravating and mitigating factors regarding how and/or where the system will be operated are equally as significant in understanding the Risk to Life (RtL) that an RPAS poses.

19. The MAA will provide a signed Letter of Endorsed Categorization to the applicant which will state the categorization of the RPAS. The Letter of Endorsed Categorization will remain valid for the life of the RPAS provided the conditions specified in the Letter of Endorsed Categorization remain extant.

20. It is necessary to outline an intended Airworthiness Strategy for the RPAS at the point of submitting the categorization request. The evidence gathered and submission itself may subsequently be used to further develop an Airworthiness Strategy and an Air System SC such that they are proportionate and appropriate for that RPAS type, iaw RA 1600(4) and RA 1600(5).

21. Where an Aviation DH/AM(MF) wishes to expand the operating envelope beyond the conditions specified in the Letter of Endorsed Categorization, or where change to the equipment would result in a change to its air safety baseline[5], then they are required to resubmit a case for categorization outlining their proposal. It is important to note that this may result in a re-categorization of the RPAS which may, in turn, require additional MRP compliance (including certification). Therefore, it is highly recommended that when a system is being procured, where there is a high likelihood of its operating envelope being subsequently expanded, then the first categorization submission ought to seek a categorization at an appropriately high level.

Regulation 1600(3)

RPAS Responsibilities

1600(3) All RPAS **shall** be operated under the authority of either an Aviation DH, iaw RA 1020[6], or AM(MF), iaw RA 1024[7], who is responsible for ensuring its safe operation.

The Aviation DH **shall** ensure that he is supported in the execution of his duties, for all RPAS within his area of responsibility (AoR), by a Senior Operator (SO), iaw RA 1022[8], and Chief Air Engineer (CAE), iaw RA 1023[9].

[5] For RPAS categorized as Class I(d), II or III which have been certified then such changes would fall into those considered to be Major Changes, iaw RA 1500.
[6] RA 1020 Roles & Responsibilities: Aviation DH and Aviation DH-Facing Organizations.
[7] RA 1024 AM(MF).
[8] RA 1022 Roles & Responsibilities: SO.

Regulation 1600(3)

For all RPAS a TAA **shall** be responsible for the Type Airworthiness of the system throughout its life from development to disposal, iaw RA 1015[10].

Acceptable Means of Compliance 1600(3)

RPAS Responsibilities

Aviation DH

22. The Aviation DH **should** follow AMC stated in RA 1020[6], except that for RPAS categorized as Class I(b) the SQEP requirements of the Delivery DH (DDH) are that they:

a. **Should** be at least an OF4; such DHs must nevertheless be answerable to a designated Operating DH (ODH).

b. Need not have previous aviation unit command experience in order to fulfil the role provided their appointment is endorsed by the appropriate ODH.

AM(MF)

23. AM(MF)s **should** follow AMC stated in RA 1024[7].

SO to Aviation DH

24. The SO **should** follow AMC stated in RA 1022[8] for RPAS, except that for RPAS categorized as Class I(b) the SQEP requirements of the SO to the DDH are that they:

a. **Should** be at least an OF2; such SOs must nevertheless be answerable to a designated DDH.

b. **Should** have aviation and supervisory experience appropriate to platform type and operating environment and **should** be endorsed by their DDH.

CAE to Aviation DH

25. The CAE **should** follow AMC stated in RA 1023[9], except that for RPAS categorised as Class I(b), I(c) or I(d) the CAE to the DDH **should** meet the following criteria:

a. Be a professionally registered engineer, either:

(1) IEng level where he is supervised by a professionally registered CEng engineer; or,

(2) CEng level where he operates without supervision.

b. And either:

(1) Specifically for RPAS categorized as Class I(b) have familiarity with the 4000 Series: Continuing Airworthiness Engineering Regulations (CAE) (in lieu of previous MAP Engineering Authority experience); or,

(2) Specifically for RPAS categorized as Class I(c) or I(d) previously held Engineering Authorizations at level G.

TAA

26. The TAA **should** be appointed by the Operating Centre Director iaw AMC stated in RA 1015(1)[10], except:

a. For RPAS categorized as Class I(b) or I(c) the TAA may reduced to a B2/OF4.

b. For RPAS categorized as Class I(b) or I(c) the TAA is not required to contract with approved Design Organizations (DO) or with Approved Maintenance Organizations, iaw RA 1005(1)[11], but **should** ensure that the contracted organizations have an appropriate quality management system in place.

[9] RA 1023 CAE – Air Safety Responsibilities.
[10] RA 1015 Roles & Responsibilities: TAA.
[11] RA 1005 Competent Organizations and Responsibilities.

Guidance Material 1600(3)

RPAS Responsibilities

TAA

27. With regard to the TAA's responsibilities for RPAS categorized as Class I(b) or I(c), where it is considered to be in the MOD's interest then organizations may be considered for inclusion under either the Design Approved Organization Scheme (DAOS) or Maintenance Approved Organization Scheme (MAOS). In the absence of an appropriate DAOS or MAOS approval then the TAA will document in an endorsed Airworthiness Strategy the arrangements made to ensure the competence of any contracted organizations.

28. In regard to discharging their responsibility for MRCOA not operated in the Service Environment then the TAA must follow RA 1121[12].

Regulation 1600(4)

RPAS Airworthiness/Air Safety Strategy

1600(4) For all RPAS the strategy for demonstrating and sustaining its airworthiness **shall** be detailed in either:

a. An Airworthiness Strategy **shall** be produced by the TAA iaw RA 1220[13]; or,

b. An Air Safety Strategy produced iaw RA 1121[12] which the TAA **shall** review and accept.

Acceptable Means of Compliance 1600(4)

RPAS Airworthiness/Air Safety Strategy

29. Nil.

Guidance Material 1600(4)

RPAS Airworthiness/Air Safety Strategy

30. The content and level of detail of the Airworthiness/Air Safety Strategy will be proportionate to the characteristics and complexity of the particular system ie an RPAS categorized as Class I(b) will not require the same level of detail as an RPAS categorized as Class III.

31. For MRCOA RPAS not operated in the Service Environment then the applicant organization must submit their Air Safety Strategy iaw RA 1121[12].

Regulation 1600(5)

RPAS Air System SC

1600(5) For each RPAS Type the appropriate Aviation DH or AM(MF) **shall** own and manage an Air System SC which provides an evidenced and coherent argument that the system is safe to be operated and is being operated safely.

Acceptable Means of Compliance 1600(5)

RPAS Air System SC

32. For all RPAS the ODH/AM(MF) **should** demonstrate that the Air System is safe to operate and is being operated safely through an Air System SC meeting the AMC stated in RA 1205[14], except that for RPAS categorized as either Class I(b) or I(c) the ODH may delegate responsibility for the Air System SC to the DDH, but such a delegation **should** be documented.

33. Where the ODH has delegated responsibility for the Air System SC to the DDH, then the DDH **should** follow the responsibilities defined for the ODH stated in AMC to RA 1205[14].

[12] RA 1121 Air Safety Arrangements for MRCOA not Operated in the Service Environment.
[13] RA 1220 PT Airworthiness and Safety.
[14] RA 1205 Air System SC.

Guidance Material 1600(5)

RPAS Air System SC

34. The catastrophic loss of an RPA, by definition, does not automatically result in a hazard to persons; it is therefore necessary to define the system's use in order to understand the RtL that it poses. The Air System SC, as the mechanism for drawing together the pan-Defence Lines of Development (DLOD), has been identified as the key means to provide the requisite level of understanding of the RtL.

35. The use of an Air System SC is defined in RA 1205[14]; however, it must be noted that this RA currently only defines this as a requirement for the ODH. For RPAS this RA mandates the Air System SC as a universal requirement for all RPAS operations including those conducted under the Contractor Flying Approved Organization Scheme (CFAOS) with an AM(MF). In regards to the application of RA 1205(3)[14] AM(MF) may make the declaration to their Sponsor in order to provide assurance in support of RA 1121(2)[12].

36. Further GM regarding preparation of the Air System SC is provided in RA 1205[14]. Clearly, the content/detail of the Air System SC will be dependent on the particular system ie an RPAS categorized as Class I(b) will not require the same content or detail as an RPAS categorized as Class III. Aviation DH/AM(MF) may use Annex B as a useful checklist when completing their Air System SC. It is recognized that much of this content may exist within the RPAS Release to Service (RTS) / Military Flight Test Permit (MFTP) / Certificate of Usage (CofU) as appropriate.

Regulation 1600(6)

RPAS Clearances

1600(6) For all RPAS the Aviation DH or AM(MF) **shall** ensure that the RPA is operated iaw with limitations articulated in:

a. An RTS, iaw RA 1300[15]; or,

b. A MFTP, iaw RA 5202[16]; or a CofU, iaw RA 1121[12] and RA 1123[17].

Acceptable Means of Compliance 1600(6)

RPAS Clearances

37. The RTS **should** be approved following AMC stated in RA 1300[15].

38. For RPAS undergoing trials and development flying an MFTP **should** be approved iaw AMC stated in RA 5202[16].

39. For RPAS which are MRCOA a CofU **should** be approved iaw AMC stated in RA 1121[12] and RA 1123[17].

Guidance Material 1600(6)

RPAS Clearances

40. Where an RPAS has been purchased as a Commercial Off The Shelf (COTS) product, or where there is another reason why there is limited evidence (eg software of unknown provenance), or where there is a lack of a formal Military Type Certification for RPAS categorized as Class I(b) or I(c), then there may well be a case to authorize an RTS or MFTP based on limited evidence although this may result in the authority imposing additional constraints to operation.

41. The content/detail of the RTS/MFTP will be dependent on the particular system, ie an RPAS categorized as Class I(b) will not require the same level of detail or evidence as an RPAS categorized as Class III.

42. Further GM related to RPAS RTS and MFTP is contained in RA 1300[15] and RA 5202[16] respectively.

[15] RA 1300 RTS.
[16] RA 5202 Certification for Flight Trials.
[17] RA 1123 CofU for MRCOA.

Regulation 1600(7)

RPAS Occurrence Reporting

1600(7) For all RPAS the Aviation DH, AM(MF), Heads of Establishment and Commanders **shall** ensure that all Air Safety reportable occurrences are reported iaw RA 1410[18].

Acceptable Means of Compliance 1600(7)

RPAS Occurrence Reporting

43. All RPAS occurrences **should** be reported, investigated and recorded iaw with AMC stated in RA 1410[18] except for RPAS categorized as Class I(b) or I(c) where the Aviation DH/AM(MF) may waive the requirement for an Occurrence Safety Investigation (OSI) down to a Local Occurrence Investigation (LOI) for an accident where the means of loss is consistent with the operating use of the system; this process **should** be detailed in orders or the organization's Operations Manual.

Guidance Material 1600(7)

RPAS Occurrence Reporting

44. Examples of when it would be appropriate for the DDH to waive a full OSI for a Category 5 accident might include: where an RPAS target is deliberately shot down over a controlled range, or where an RPAS's loss was consistent with its intended concept of use. Ultimately it is for the DDH to decide that there is nothing to be gained from a formal OSI. As a minimum the subsequent LOI still requires codification by the Incident Manager prior to being closed down.

Regulation 1600(8)

RPAS Certification

1600(8) The TAA **shall** ensure that RPAS categorized as:

a. Class I(d), II or III **shall** be:

(1) Certified iaw RA 1500(1)[19].

(2) Designed to agreed safety targets.

b. Class I(b) or I(c) **shall**:

(1) Be exempt from certification in accordance with RA 1500[19].

(2) Have an evaluation process carried out in line with the intent of RA 1500(1)[19].

(3) Have an Equipment Safety Assessment carried out and documented in accordance with RA 1220(3)[13].

Acceptable Means of Compliance 1600(8)

RPAS Certification

45. RPAS categorized as Class I(b) or I(c) are not required to meet Design Safety Targets. The TAA **should** use an Equipment Safety Assessment iaw RA 1220[13] to inform the agreed safety target that will be established in the Letter of Endorsed Categorization.

46. RPAS categorized as Class I(d) **should** use a Design Safety Target based on STANAG 4746 (light rotary wing RPAS) or STANAG 4703 (light fixed wing RPAS) as referenced in Def Stan 00-970 Part 9.

47. RPAS categorized as Class II or III **should** use a Design Safety Target established in STANAG 4671 (fixed wing RPAS) or STANAG 4702 (rotary wing RPAS), including any UK reservations, as referenced in Def Stan 00-970 Part 9.

Guidance Material 1600(8)

RPAS Certification

48. For RPAS categorized as Class I(b) or I(c) the TAA will provide assurance of the Equipment DLOD of the initial RTS Recommendation iaw RA1013(1)[20] and RA1500(1)[19] prior to RTS as an alternative to formal certification.

[18] RA 1410 Occurrence Reporting.
[19] RA 1500 Certification of UK Military Registered Air Systems.
[20] RA 1013 DE&S Air Systems OCD – Provision of Airworthy and Safe Systems.

Guidance Material 1600(8)

49. As stated in AMC, Design Safety Targets for Class I(d), II or III RPAS are based on STANAG requirements. The selection of the appropriate STANAG is based on the MAA-endorsed categorization and not exclusively the "weight" boundaries within the STANAGs. Therefore, it is possible that an MAA-endorsed RPAS categorization may fall into a different STANAG "weight" category.

50. Figure 1 below may be used to determine the appropriate Design Safety Target.

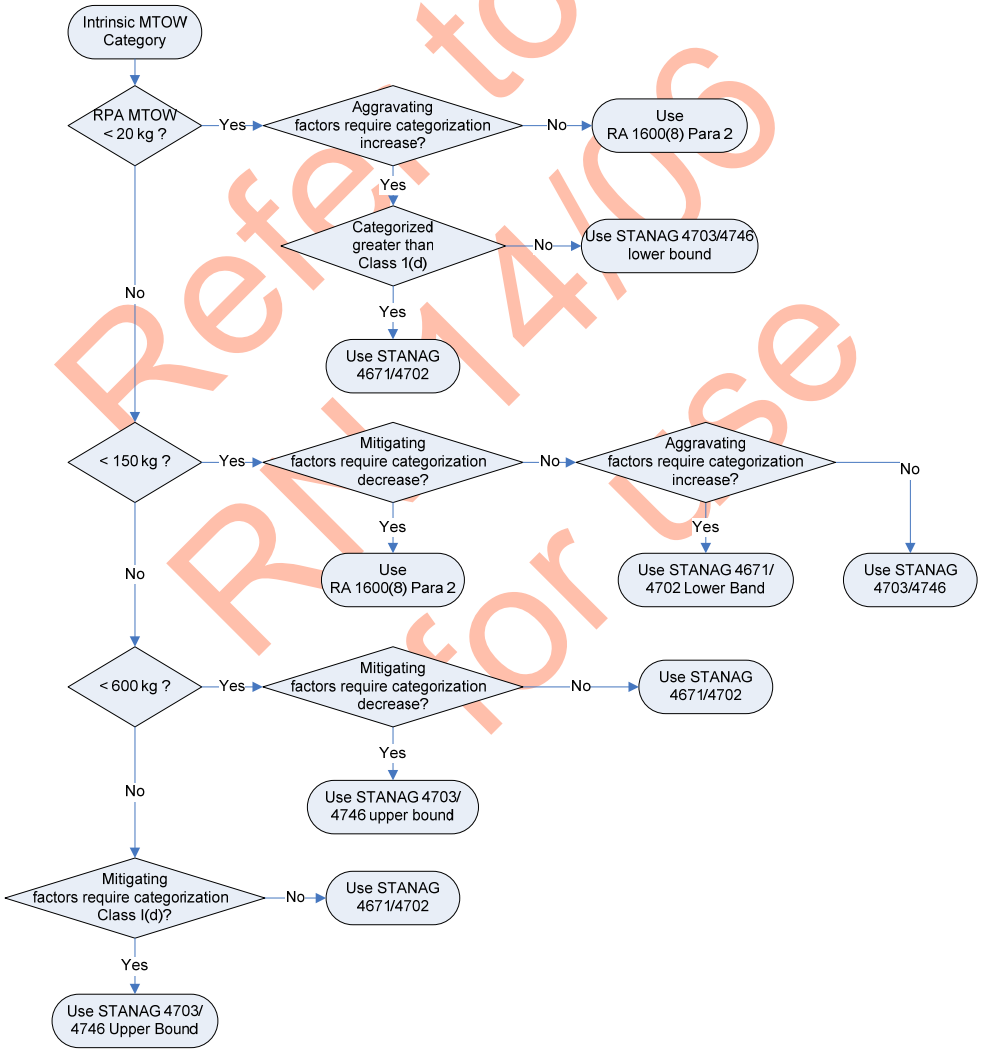
51. As an example to illustrate how the selection of the appropriate Design Safety Target is determined, consider a 12 kg RPAS which is intended to operate over urban areas, and categorized as a class 1(d) RPAS due to aggravating factors. Referring to Figure 1 below:

a. The RPAS has a MTOW of less than 20 kg.

b. Aggravating factors have forced a categorization change to a Class 1(d), therefore "Yes," is selected at the Aggravating Factor decision point.

c. The next decision point asks if the platform is categorized greater than Class 1(d). In this case the answer is "no," and therefore the Design Safety Target from STANAG 4703/4746 is required, which would be 1 x 10^{-4} per flying hour.

Figure 1. RPAS Design Safety Target Determination



52. Design Safety Targets for all RPAS will be incorporated into Def Stan 00-970 Part 9 once the appropriate STANAGs have been ratified. Def Stan 00-970 Part 9 will also include details of any UK reservations to the STANAGs. TAA's are advised to seek advice from MAA Certification Structures and ADS (MAA-Cert-SandADS@mod.uk) on the use of these STANAGs for the setting of Design Safety Targets.

Regulation 1600(9)

RPAS Continuing Airworthiness

1600(9) The Aviation DH is responsible for the Continuing Airworthiness of their RPAS and **shall** ensure that they are maintained iaw RA 4050[21].

The AM(MF) is responsible for ensuring that there is an appropriate Continuing Airworthiness post holder who **shall** ensure the RPAS are maintained iaw RA 4050[21].

Acceptable Means of Compliance 1600(9)

RPAS Continuing Airworthiness

53. Nil.

Guidance Material 1600(9)

RPAS Continuing Airworthiness

54. Nil.

[21] RA 4050 Continuing Airworthiness of RPAS.

ANNEX A

MAA RPAS Categorization Process

1. The categorization of an RPAS will be an important step in the procurement, operation and management of the system which will define its regulatory regime. The categorization system permits a proportional regulatory regime across the entire spectrum of RPAS. The NATO Classification, based on MTOW, has been utilized as the baseline for Categorization (see Table 1). While MTOW is used as the initial determinant of RPAS categorization, the intended use and operation of the RPAS is potentially a more significant factor in understanding the 2nd and 3rd party RtL that it poses. MTOW will not be considered the sole determinant of the final categorization of an RPAS but must also be considered alongside the aggravating and mitigating factors of its operation and characteristics. The RPAS categorization philosophy is shown illustratively at Figure 1, where it may be seen that an RPAS category is not always directly linked to its MTOW. RA 1600 must be consulted for the definitive application of the appropriate RAs to the RPAS category.

Table 1 - NATO Class and Common Taxonomy

MTOW	NATO Class	Common Taxonomy	Starting MAA Category
< 200g	Class I < 150 kg	NANO	Class I(a)
200g to 2kg		MICRO <2kg	Class I(b)
2kg-20kg		MINI 2-20 kg	Class I(c)
20kg-150kg		SMALL >20 kg	Class I(d)
> 150kg	Class II 150 - 600kg	TACTICAL >150 kg	Class II
> 600kg	Class III > 600kg	MALE / HALE / Strike	Class III

2. There are a wide range of factors that could be considered to be aggravating or mitigating to the risk posed by a particular RPAS to 2nd and 3rd parties. A non-exhaustive list of such factors is provided in Table 2.

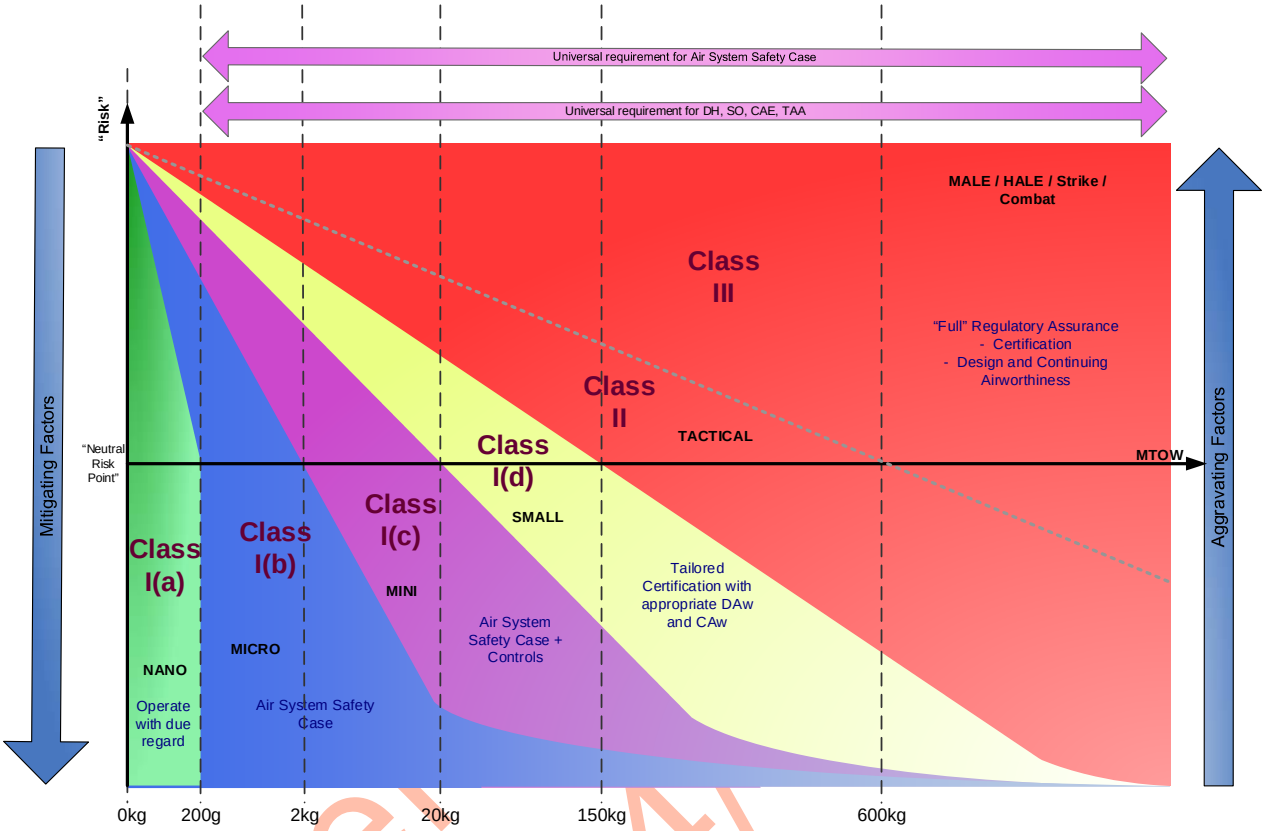
Table 2 - Categorization Aggravating and Mitigating Factors[22]

Mitigating Factors	Aggravating Factors
• Operation in Visual Line of Sight (VLOS) • Operation in Segregated Airspace • Overflight of low population density • Flight termination system • Redundancy • Frangibility of RPAS structure	• Extended range operation Beyond VLOS (BVLOS) • Operation in non-Segregated Airspace • Overflight of congested areas / high population density • Weaponisation • Failure mode - high Kinetic Energy • Complexity

3. The organization seeking to bring the RPAS into the DAE needs to consider the characteristics of the system; the intended operation with specific understanding of where that might take place and the corresponding exposure of 2nd and 3rd parties in that environment; and the method of operation such that it controls the RPA within the intended area of operation.

[22] NB: This highlights a number of expected factors; however, it is non-exhaustive. Applicants must consider all potential aggravating and mitigating factors specific to the RPAS being categorized.

Figure 1 - MAA Regulatory Categorisation Schematic (for illustrative purposes only - see RAs for definitive applicability)



ANNEX B

Safety Checklist

This Safety Checklist provides recommended headings and content to be included in the Categorization Submission. However, it is recognized that some of the content detailed below may not be available at the time the categorization submission is prepared. It is in the best interests of the applicant to include as much information as available to inform the Letter of Endorsed Categorization. This checklist is equally applicable when constructing an Air System SC and is especially constructed to assist Aviation DH developing Air System SC for RPAS in the I(b) and I(c) categories. It is recognized that much of the content will be covered by documents such as the RTS etc.

1. Organization

{Full details of the organization that is subject to the application – all areas detailed below ought to be covered as a minimum. Where examples are given they do not outline the full requirement}

1.1. Structure of organization and management
{Brief description}

1.2. Key personnel
{As appropriate, eg TAA, DDH, AM(MF), CAE etc.}

1.3. Responsibility and duties of the RPAS Commander
{MRP 2000 series will provide guidance}

1.4. Responsibility and duties of support personnel in the operation of the RPAS
{Operators may 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 pilot may operate if appropriate}

1.7. Qualification requirements
{Details of any qualifications, experience or training necessary for the pilot or support crew according to the types of RPAS and roles employed by the operator}

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 pilots}

1.10. Details of the operator training programme
{Training and checking requirements for pilots and support crew as determined by the operator to cover initial, refresher and conversion syllabi. Include any independent assessment of pilot competency and currency requirements}

1.11. Accident prevention and Flight Safety programme
{Include any reporting requirements and interface with Safety Management System}

1.12. Other documents
{*As considered necessary – copies of any documents ought to be attached}*

2. Systems

{Technical descriptions and details of the Air System that is subject to the application – all areas detailed below ought to be covered as a minimum. Where examples are given they do not outline the full requirement}

2.1. Details of design organization and manufacturer/production organization
{The designer and manufacturer may be the same company, include details of any approvals that such organizations hold}

2.2. Recognized standards to which the equipment has been designed, built and tested if applicable
{Details of any standards that may or may not be aviation related and may add to the safety argument. Where known this ought to include test and evaluation evidence}

2.3. The designed flight envelope
{Full description of the flight envelope including: MTOW, duration, communications range, max height and speeds to maintain safe flight and glide profile (where appropriate). Include effects on flight envelope of differing payloads}

2.4. RPA dimensions
{Full dimensions to be given including mass with and without fuel; with and without any payloads etc.}

2.5. Design features
{Detail the design features of the system, materials used, type of structure, software assurance etc.}

2.6. Software Assurance
{ Detail the features of the software assurance}

2.7. Construction
{Detail the build nature of each air system}

2.8. Electrical power and distribution
{Detail the electrical power and distribution, include battery type and number, generator specifications, equipment ratings, load shedding where appropriate etc.}

2.9. Propulsion system
{Detail the propulsion system(s) used, power output, type of propeller/rotor etc.}

2.10. Fuel System
{Detail the fuel system arrangement, type of fuel, fuel delivery etc.}

2.11. FMS and Flight Control System
{Detail of how the RPA is controlled, control linkages, control rigging, include any automatic stabilisation etc.}

2.12. Navigation and Guidance
{Detail the system used for navigation and guidance, include any automatic piloting, telemetry etc.}

2.13. Other avionics
{Detail any other avionics fitted to the system}

2.14. Launch and Recovery
{Describe the launch and recovery systems and detail any landing aids fitted to the system}

2.15. Payloads
{For each RPA give a technical description of the payload expected to be installed or carried}

2.16. 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 e.g. ballistic parachutes, propeller guards, independent flight termination, flight recovery system etc.}

2.17. Modifications to the system
{Detail any modifications that have been made post initial design}

2.18. GCS
{Where a laptop is utilised give details of the type of operating system and other technical specifications. Give detail of process for firmware and software updates}

2.19. C2
{Describe the C2 infrastructure, how its integrity is monitored and the reaction of the system to degraded signal strengths. Outline the RF plan for the intended operating area}

2.20. C2 Loss Prevention
{What design characteristics or procedures are in place to prevent and mitigate loss of link whether due to RF interference, equipment malfunctions (RPA/GCS) or atmospheric conditions}

2.21. Lost Link
{Describe the RPA lost link logic, profile and management for all phases of flight}

2.22. Whole system single points of failure (SPOF)
{For each element of the whole system, identify where SPOF may exist or alternatively where redundancy exists}

2.23. Change Management (modifications)
{Detail how the organization manages changes to the original design}

2.24. Lifing, maintenance schedules and inspections
{Describe the general maintenance philosophy for the platform}

2.25. Repair and servicing
{Where repairs to the system are necessary describe the repair and servicing philosophy}

2.26. Known failure modes
{For the whole system identify known failure modes and detail preventative strategy}

2.27. Failsafe features
{Detail any failsafe features in the design of the system}

2.28. Operating limitations and conditions (for categorization phase only)
{List the minimum and maximum operating conditions that would usually be detailed in the RTS to highlight any mitigating or aggravating factors}

2.29. Transportation requirements
{Detail how the system is transported between sites. Include all carry cases, transport description etc.}

3. Operations

{Details of the operating environment and procedures subject to the application – all areas detailed below ought to be covered as a minimum. Where examples are given they do not outline the full requirement}

3.1. Area of operation
{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}

3.2. Type of operation
{Detail nature of operation e.g. VLOS, flexible/dynamic tasking, day/night, weather etc}

3.3. Operating limitations and conditions
{Minimum and maximum operating conditions and limitations; reference RTS if available}

3.4. Supervision of RPAS operations
{A description of any system to supervise the operations of the operator}

3.5. Operating site planning and assessment
{Airspace operating environment considerations and procedures e.g. controlled or restricted airspace, local avoids and hazards}

3.6. Communications
{Awareness and links with other users and aircraft operators}

3.7. Weather
{Consideration of RPAS environmental limitations}

3.8. On site procedures

a. Site Survey *{Methods of surveying operating area, identifying hazards and any 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 e.g. 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}*

3.9. Assembly and functional checks
{Checks conducted on completion of assembly of the system}

3.10. Pre-flight checks
{Checks conducted immediately prior to flight}

3.11. Flight Procedures
{Start, take-off, in-flight, landing, shutdown}

3.12. Post-flight or between flight checks
{Detail the checks or inspections conducted both after flight and between flights}

3.13. Emergency Procedures
{Include lost link, flyaway, fire (RPA and GCS), etc. Preventative measures ought to also be detailed}

3.14. Surveillance of Operations
{Surveillance methods for verification of RPAS geospatial positioning}

RA 2130 - Safety Equipment, Survival Drills and Training

Rationale

Aircrew operating UK Military Aircraft need to have a thorough working knowledge of all safety equipment and survival drills appropriate to their aircraft type and role.

Contents

Regulation 2130(1)

Safety and Survival Training

2130(1) On conversion to a new aircraft type all aircrew **shall** complete the appropriate safety and survival drill training mandated by Aviation Duty Holders or Accountable Managers (Military Flying) (AM(MF)).

Acceptable Means of Compliance 2130(1)

Safety and Survival Training

1. Aviation Duty Holder and AM(MF) Orders covering safety and survival drills **should** include, where necessary, the following:

a. The category into which each unit within their area of responsibility (AoR) falls for the periodicity of drills table at Annex A.

b. Any additional requirement or change in periodicity to that indicated at Annex A.

c. The procedures to be followed when a dispensation or extension is deemed necessary.

d. The safety and survival drill requirements for supernumerary crew, and, where appropriate, passengers.

e. The qualifications to be held by personnel delivering safety and survival training.

Guidance Material 2130(1)

Safety and Survival Training

2. **Abandon Aircraft Drill on the Ground**. The abandon aircraft drill will be practised wearing maximum bulk AEA and SE from the strapped in position.

3. **Ejection Drill and Manual Separation Drill**. Ejection drills will include a comprehensive review of the seat components, its operation, limitations and ejection sequence. Drills must include the strapping in procedure and safety implications of not strapping in correctly. Practical drills in the use of each firing handle, if appropriate, and seat failures will be conducted with personnel wearing their complete AEA and the seat in the normal flying position.

4. **Wet drills.** When wet drills are conducted, it is deemed that the equivalent dry drill has been completed. Similarly when a sea drill is completed this will replace the requirement for the associated pool drill.

5. **Dry Liferaft and Life Preserver Drills**. Dry liferaft and life preserver drills will include a lecture and appropriate demonstrations covering all aspects of personal SE

Guidance Material 2130(1)

carried and give instruction in helicopter rescue techniques.

6. **Synthetic Parachute Training**. Synthetic parachute training will be conducted wearing the appropriate full AEA and SE and is to include parachute flight drills, associated emergencies, parachute landings in all directions and assisted falls. A briefing that covers ground dragging and harness release will also be given. In addition, water parachute dragging drills will be practised in conjunction with wet liferaft drills.

7. **Wet Multi-Seat Liferaft Drill**. Multi-seat liferaft drills include a requirement for aircrew whose aircraft do not normally carry multi seat liferaft. They are conducted to familiarize aircrew with the type of liferaft that may be supplied to them by rescue crews, or in which they may have to survive when flying as a passenger in a transport aircraft. However, some dispensations are given in the periodicity chart promulgated at Annex A.

8. **Underwater Escape Training (UET)**. UET training is required for all helicopter aircrew in accordance with Annex A. Aviation Duty Holders and AM(MF) must consider the UET requirements for supernumerary crew and passengers who fly regularly in helicopters over the sea. It will normally be carried out in a suitable rotary-wing module at the UET Unit (UETU), RNAS Yeovilton (AIR Course 319) although alternative facilities may be used for detached units or Defence Contractor Flying Organizations.

9. **Short Term Air Supply System (STASS) Dry Drill**. Initial STASS dry drills will be completed at the UETU. Subsequent STASS dry drills will be completed in accordance with Annex A, and may be carried out locally.

10. **STASS Wet Drill**. STASS wet drills will be completed by eligible personnel at the same time as UET. All personnel required to undertake wet STASS training will be medically screened prior to the training, using the Medical Screening Questionnaire at Annex D.

11. Aviation Duty Holders and AM(MF) may permit personnel who are medically boarded and assessed as permanently unfit for wet STASS training, but who have previously completed wet STASS training, to conduct dry STASS drills only. This judgement will be made with medical guidance on a case by case basis and must be recorded in the individual's Flying Log Book.

12. **Safety Boat**. Whenever safety and survival training is carried out at sea or in open water, a safety boat will always be in attendance. In the case of aircraft carriers and other ships carrying more than one helicopter, the safety boat may be replaced by a helicopter in the SAR role at immediate readiness on the deck or airborne and able to reach the exercise area within three minutes flying time.

13. **Combat Survival Training**. Aviation Duty Holders and AM(MF) will issue Orders detailing the requirements for and periodicity of combat survival training.

14. **Specific Exemptions.** Those aircrew and trainees not required to conduct over water training sorties may be exempted from the liferaft/preserver drills, wet winching drills and UET/STASS drills as detailed in Aviation Duty Holder or AM(MF) Orders. This exemption will be formalized in writing.

Regulation 2130(2)

Safety and Survival Training Currency

2130(2) All aircrew required to fly as crew **shall** be current for all safety and survival drills, including those required for embarked operations, appropriate to aircraft type and role.

Acceptable Means of Compliance 2130(2)

Safety and Survival Training Currency

15. Unless an extension or dispensation has been granted, the maximum periodicity of drills **should not** exceed those promulgated in Annex A.

Guidance Material 2130(2)

Safety and Survival Training Currency

16. Aviation Duty Holders and AM(MF) may grant extensions to the periodicity indicated at Annex A for operational reasons, or in exceptional circumstances. Exceptionally, after an appropriate risk assessment, Aviation Duty Holders and AM(MF) may exempt crews from maintaining currency in a specific drill when they consider that it is not applicable to an aircraft type and/or role.

Regulation 2130(3)

Wearing and Carriage of Aircrew Equipment Assemblies (AEA) and Safety Equipment (SE)

2130(3) Aviation Duty Holders and AM(MF) **shall** issue detailed orders covering the wearing and carriage of approved AEA and SE by aircrew, supernumerary crew and passengers in all aircraft under their AoR.

Acceptable Means of Compliance 2130(3)

Wearing and Carriage of Aircrew Equipment Assemblies (AEA) and Safety Equipment (SE)

17. For aircraft with a Release To Service (RTS), only AEA and SE approved in the Aircraft Document Set (ADS) **should** be worn or carried.

18. For non-RTS aircraft, Aviation Duty Holders and AM(MF) Orders and/or Defence Contractor Flying Organizations' Clearances **should** detail the AEA and SE to be worn and carried.

19. **Modification of Equipment.** AEA and SE **should not** be modified in any way without approval of the relevant equipment authority. Where no equipment authority exists, approval **should** rest with the Aviation Duty Holder or AM(MF).

Guidance Material 2130(3)

Wearing and Carriage of Aircrew Equipment Assemblies (AEA) and Safety Equipment (SE)

20. Nil.

Regulation 2130(4)

Safety Harnesses

2130(4) All aircraft occupants **shall** be suitably restrained in all phases of flight.

Acceptable Means of Compliance 2130(4)

Safety Harnesses

21. Unless specifically authorized by the aircraft commander, Aircrew and Supernumerary Crew **should** wear the appropriate restraint harness, secured to a suitable anchorage point, at all times, except when attached to a winch cable or, when required to move about within the cabin (eg. Air Stewards). Aircraft Commanders **should** only allow crew safety harnesses to be unfastened in flight when necessary to complete authorized tasks. However, the pilot controlling the aircraft **should** be securely strapped into his seat at all times.

22. For take-off and landing, Aircrew and Supernumerary Crew **should** be seated and restrained using a seat harness. Specific circumstances where seat-harness restraint for take-off and landing is not appropriate **should** be detailed in Aviation Duty Holder or AM(MF) Orders.

23. Passengers and troops **should** be strapped in at all times when the aircraft is moving except under the provisions of RA2340.

Guidance Material 2130(4)

Safety Harnesses

24. Orders must specify the occasions and safety procedures where discrete activities require an ejection seat occupant to 'unstrap'.

25. Dispatcher harnesses, whilst preventing the wearer from inadvertent exit from the aircraft, do not provide the same degree of restraint or protection as seat harnesses. The time spent solely restrained in a dispatcher harness or attached to a winch cable must be kept to a minimum consistent with the safe completion of the task.

Regulation 2130(5)

Survival and Rescue Equipment

2130(5) Survival and rescue equipment of the appropriate type and scale **shall** be carried for all occupants.

Acceptable Means of Compliance 2130(5)

Survival and Rescue Equipment

26. **Liferafts**. Liferafts in sufficient numbers, and of sufficient capacity to accommodate all the occupants of the aircraft, **should** be carried where a forced landing over land cannot be achieved. Aviation Duty Holders and AM(MF) may empower authorizing officers to waive this requirement where operational considerations render the carriage of liferafts impractical or when they are satisfied that all reasonable steps have been taken to ensure that rescue can be accomplished within predicted survival times.

27. **Medical Supplies**. Medical supplies and/or first aid kits appropriate to the aircraft role and number of occupants **should** be carried.

28. **Survival Packs**. Aviation Duty Holders and AM(MF) **should** specify when and what type of survival packs **should** be carried onboard the aircraft.

Guidance Material 2130(5)

Survival and Rescue Equipment

29. Nil.

Regulation 2130(6)

Ejection Seat Anthropometrics

2130(6) All personnel for whom ejection seats are provided **shall** be checked for size and weight to ensure that they fit within the seat parameters.

Acceptable Means of Compliance 2130(6)

Ejection Seat Anthropometrics

30. An Ejection Seat check **should** be conducted by an Authorized Medical Examiner (AME) or qualified crew member prior to the first flight on type and when wearing appropriate maximum and minimum bulk AEA and SE to ensure that there is adequate clearance between the seat occupant and the aircraft structure.

31. **Ejection Seat Boarding Weight Limits**. Aviation Duty Holders and AM(MF) **should** ensure that the minimum and maximum boarding weight limits for the ejection seats of each appropriate aircraft type under their command are established and displayed in appropriate areas alongside weighing machines. Aircrew **should** ensure that they remain within the promulgated limits.

Guidance Material 2130(6)

Ejection Seat Anthropometrics

32. **Ejection Seat Check.** Ejection seat checks for ad-hoc occupants need not be conducted wearing maximum and minimum bulk, but must be conducted with the AEA and SE appropriate for the sortie to be flown.

ANNEX A

PERIODICITY OF SAFETY AND SURVIVAL DRILLS

	F/W A/C with Ejection Seats		F/W A/C with Parachutes		F/W A/C without Parachutes		Helicopters		►RPAS◄
	Maritime Role (1)	Other	Overland Flight Only	Other	Maritime Role (1)	Other	Maritime Role (1)	Other	-
Dry Training									
Abandonment aircraft	6m	6m	6m	6m	6m	6m	6m	6m	►6m (9)◄
Ejection and manual separation	9m	9m	-	-	-	-	-	-	-
Bale out (static seat)	-	-	6m	6m	-	-	6m (8)	6m (8)	-
Dry liferaft (primary) and preserver drill	6m	6m	-	6m	6m	1yr	6m	1yr	-
Dry multi seat liferaft drill (2)(3)	2yr	2yr	-	-	6m	-	6m	1yr	-
Synthetic parachute training (4)	2yr	2yr	2yr	2yr	-	-	2yr (8)	2yr (8)	-
Pool Training (5)									
Liferaft (primary) drill	1yr	1yr	-	1yr	1yr	1yr	6m	1yr	-
Parachute dragging	1yr	-	-	1yr	-	-	1yr (8)	-	-
Training at sea / Environmental Pool Trainer (6)(7)									
Parachute dragging	2yr	2yr	int/opp	2yr	-	-	2yr (8)	2yr (8)	-
Liferaft (primary) drill	2yr	2yr	int/opp	2yr	2yr	int/opp	2yr	int/opp	-
Multi seat liferaft drill (2)(3)	int/opp	int/opp	int/opp	int/opp	int/opp	int/opp	2yr	int/opp	-
Wet winching drill	int/4yr	int/opp	int/opp	int/opp	2yr	int/opp	2yr	int/opp	-
Escape Training (under water)									
STASS dry drill	-	-	-	-	-	-	6m	1yr	-
STASS wet drill	-	-	-	-	-	-	2yr	3yr	-
Underwater escape training	4yr	-	-	-	-	-	2yr	3yr	-

Legend

int	Initial drill to be as early as practicable in flying training
opp	On an opportunity basis
6 m	6 monthly
9 m	9 monthly
1 yr	Yearly
2 yr	2 Yearly
3 yr	3 Yearly
4 yr	4 Yearly

Notes

1. The 'Maritime Role' includes, but is not limited to, all those aircrew who, during their posting/appointment, could be called upon to serve at, to or from sea with up to 3 months notice, and all shore-based SAR aircrew.

2. Drill applies when the multi-seat liferaft is not the primary aircraft liferaft.

3. Helicopter crews who fly with both single and multi-seat liferafts are to carry out the drills for both.

4. Ground parachute dragging training is subsumed into synthetic parachute training.

5. Training may be conducted at sea.

6. As far as possible initial training should be done at sea.

7. Subsequent training may be conducted in an Environmental Pool Trainer, that has been approved for use by Aviation Duty Holders and AM(MF), or, if not available, at sea.

8. Drill applies when helicopter crews fly with parachutes.

9. ►Aviation Duty Holder and AM(MF) Orders **should** detail safety procedures for Ground Control Station (GCS) evacuation, such as making safe the GCS and provision for a safe recovery of the RPAS.◄

ANNEX B - Removed

ANNEX C - Removed

ANNEX D

MEDICAL SCREENING QUESTIONNAIRE PRIOR TO "STASS" WET DRILLS

PART A To be completed by the individual at his own unit.

PERSONAL DETAILS

SURNAME: ……

INITIALS: ……..

RANK/RATE: ……

SERVICE NUMBER: ……..

Date of last aircrew/periodic medical examination: ……..

MEDICAL CATEGORY A..... L..... M..... E.....

PART B To be completed by the individual at his own unit.

PAST MEDICAL HISTORY

Have you ever suffered from any of the following:		tick **YES**	or **NO**
B1.	Any lung disorder or abnormality.	…..	…..
B2.	Any heart disorder.	…..	…..
B3.	Any nervous system disorder.	…..	…..
B4.	A fractured skull.	…..	…..
B5.	A penetrating chest injury.	…..	…..
B6.	A collapsed lung.	…..	…..
B7.	Asthma.	…..	…..
B8.	Any form of recurring wheezing.	…..	…..
B9.	Have you ever had an operation on the heart.	…..	…..
B 10.	Have you ever had an operation on the chest or lungs.	…..	…..

If the answers to questions B1 to B10 are all **NO** go to **PART D**.

If any of the answers to questions B1 to B10 are **YES** go to **Part C**.

PART C. To be completed by the individual's Medical Officer.

Note: Guidance for Medical Officers on fitness for Wet STASS training is available in BR1750A (Handbook of Naval Medical Standards) ►Chapter 12, Leaflet 12 – 05.◄ Specialist advice may be sought from the ►Senior Medical Officer (Diving Medicine) at the Institute of Naval Medicine.◄

Applicability and more detailed information is contained in ►2013DIN07- 094.◄

I consider ……..

To be FIT* / UNFIT* for WET STASS training.

Date: …….. Signature: …… Appointment: ……...

PART D. To be completed by the individual on the day of the WET STASS training at the Underwater Escape Trainer.

I certify that I am not suffering from asthma or any chest disease and that I am able to clear my ears easily and without discomfort.

Date: …… Signature: ……..

Note: If the individual is unable to certify Part D on the day of training, he is to be referred to the Principal Medical Officer RNAS Yeovilton.

PART E. To be completed by the Principal Medical Officer RNAS Yeovilton.

I consider …… to be FIT / UNFIT * for Wet STASS training.

Date: …… Signature: ……..

PMO*
DPMO*
MO1*
MO2*

* Delete as necessary.

RA 2310 - Role Specific Fixed Wing

Rationale *Aspects of Fixed Wing roles require discrete and specific regulation.*

Contents

Regulation 2310(1)

Supersonic Flight

2310(1) Supersonic flight **shall** be specifically approved when not for operations, training, tests and trials.

Acceptable Means of Compliance 2310(1)

Supersonic Flight

1. **Approval Process**. The prior approval of the MOD (ACAS) **should** be obtained for supersonic flights carried out for other purposes, e.g. demonstrations, or when flights do not conform to these regulations. Requests for such flights are to be addressed to CAS-AS Strat 1 (MIL: 9621 83202 – CIV: 0207 218 3202).

2. **Conduct and Positioning of Supersonic Flights in the UK Flight Information Region (FIR)**. In the UK FIR, all supersonic flights **should** be conducted over the sea. Aircraft Commanders **should** ensure their aircraft is at least 10 nautical miles out to sea and along a line of flight at least 20º divergent from the mean line of the coast. When the purpose of a dive manoeuvre is to achieve supersonic flight, the angle of dive **should** not exceed the minimum necessary. Supersonic flights with the aircraft pointing towards the land, turning or flying parallel to the coast **should** take place at least 35 nautical miles from the nearest coastline. Low-level supersonic flight **should** only take place if a radar/visual search is maintained to avoid the following by the margins stated: 3 nm from shipping and fixed or mobile oil and gas installations; 6 nm from civilian or military transport aircraft, helicopters, helicopter main routes and corridors. If more than one radar unit is controlling within the same airspace, close co-ordination **should** be effected before any supersonic runs take place. Aircraft commanders that know or suspect that they have infringed any of these criteria **should** follow the reporting procedure for Inadvertent Supersonic Flight, below.

3. **Recording of Supersonic Flights**. With the exception of operational missions that require supersonic flight, Commanders **should** notify the appropriate radar station of all planned supersonic flights in advance. Where supersonic flights do not conform to the pre-flight briefing, Aircraft Commanders **should** make a record of the details of the supersonic flight in the flight authorization record. Similarly, radar stations **should** maintain a permanent record of supersonic flights carried out under their control. The permanent record **should** contain the following details:

   a. Aircraft type.

   b. Time period during which supersonic flight conducted.

   c. Heading and speed of aircraft (where known).

Acceptable Means of Compliance 2310(1)

d. Position (area in the case of sustained supersonic flight).

e. Altitude and attitude (where known).

4. **Inadvertent Supersonic Flight**. If any Aircraft Commander knows or suspects that his aircraft has inadvertently made a supersonic flight that breaches this regulation, he **should** make a permanent record, as listed above, of the breach in the flight authorization record. In addition, it is the responsibility of his parent unit concerned to notify the appropriate Control and Reporting Centre or Control and Reporting Point, Senior Military Supervisor at LATCC (Mil) or Naval Radar Unit of the flight within 30 minutes of the aircraft's landing. The radar station **should** maintain a record of all such occurrences.

5. **Supersonic Flights outside the UK FIR**. Supersonic flight **should** only be carried out in accordance with host nation regulations.

Guidance Material 2310(1)

Supersonic Flight

6. **Routine Supersonic Flight**. Aircraft may routinely fly at supersonic speed during Practice Intercept sorties or when taking part in exercises or during authorized training. Routine supersonic flight in the approved operating area need not be recorded as directed above.

7. **Supersonic Flights outside the UK FIR**. Where there are no host nation regulations, these UK regulations must be used.

Regulation 2310(2)

Aerobatics

2310(2) Incorporated into RA2309(9).

Acceptable Means of Compliance 2310(2)

Aerobatics

8. Incorporated into RA2309(9).

Guidance Material 2310(2)

Aerobatics

9. Incorporated into RA2309(9).

Regulation 2310(3)

Spinning

2310(3) Intentional spinning **shall** be prohibited in all aircraft unless specifically authorized.

Acceptable Means of Compliance 2310(3)

Spinning

10. Intentional spinning **should** be permitted only where clearance is given in the Release to Service (RTS) for the aircraft as reflected in the Aircraft Document Set (ADS) or, for non-RTS flying operations the Military Flight Test Permit or Certificate of Usage.

11. If still spinning by the minimum heights given in the ADS or, for non-RTS flying operations, the Military Flight Test Permit or Certificate of Usage, or higher if stipulated in Aviation Duty Holders' and AM(MF) Orders, the aircraft **should** be abandoned.

Guidance Material 2310(3)

Spinning

12. Nil.

Regulation 2310(4)

Asymmetric Power

2310(4) Airborne practice and simulated asymmetric flying **shall** be specifically approved and authorized.

Acceptable Means of Compliance 2310(4)

Asymmetric Power

13. Aviation Duty Holders and AM(MF) **should** promulgate orders that apply to practice and simulated asymmetric flight and stipulate; the minimum height for each aircraft type; the frequency of training; weather limitations; and, operating conditions.

14. The number of staff authorized to supervise asymmetric flying **should** be kept to a minimum.

15. Asymmetric approaches and landings **should** be practised only in weather conditions within the handling competence of the individual pilot under training. Other operating criteria for asymmetric flying training **should** be in accordance with specific aircraft operating procedures.

16. Simulated engine failure on take-off below 500 ft above ground or sea level **should** only be carried out under the direction of a suitably qualified and authorized aircrew instructor.

Guidance Material 2310(4)

Asymmetric Power

17. Due to the element of risk attached to asymmetric flying training, asymmetric practice will be closely supervised; training will be regular and limited to the amount necessary to achieve the aim. The aim of practice and simulated asymmetric flying is to ensure that pilots are capable of making safe, competent and confident approaches and landings should an unplanned asymmetric situation arise.

18. For the purposes of this regulation, practice asymmetric flying means the actual shutdown of a power unit(s); simulated asymmetric flying means the use of 'idle' or 'feather' for a power unit(s). Furthermore in accordance with RA2305(3), any practice asymmetric flying is only permissible if the RTS allows.

19. Flight on practice and simulated asymmetric power must be conducted in such a manner that safe flight can be continued in the event of a real engine failure.

20. Full-stop landings and touch-and-go landings following simulated asymmetric approaches and touchdowns may be carried out providing that approval for the aircraft type has been granted by the appropriate Aviation Duty Holder or AM(MF).

Regulation 2310(5)

Single-Engine Aircraft Engine Shutdowns

2310(5) Engine shutdowns and re-lights in single-engine aircraft **shall not** be carried out in the air, except where authorized for flight tests and trials.

Acceptable Means of Compliance 2310(5)

Single-Engine Aircraft Engine Shutdowns

21. Engine shutdowns and relights **should** only be carried out in single-engine aircraft when part of an approved Flight Test Schedule or MOD trials programme.

Guidance Material 2310(5)

Single-Engine Aircraft Engine Shutdowns

22. This Regulation does not apply to self-launching motor gliders ►or Remotely Piloted Air Systems (RPAS) that can only recover by means of a parachute.◄

Regulation 2310(6)

Air to Air Refuelling (AAR)

2310(6) Incorporated into RA2309(10)

Acceptable Means of Compliance 2310(6)	**Air to Air Refuelling (AAR)** 23. Incorporated into RA2309(10)
Guidance Material 2310(6)	**Air to Air Refuelling (AAR)** 24. Incorporated into RA2309(10)
Regulation 2310(7)	**Electromagnetic and Cosmic Radiation** 2310(7) Incorporated into RA2309(11)
Acceptable Means of Compliance 2310(7)	**Electromagnetic and Cosmic Radiation** 25. Incorporated into RA 2309(11)
Guidance Material 2310(7)	**Electromagnetic and Cosmic Radiation** 26. Incorporated into RA2309(11)
Regulation 2310(8)	**Oxygen and Cabin Pressure** 2310(8) Incorporated into RA2309(12)
Acceptable Means of Compliance 2310(8)	**Oxygen and Cabin Pressure** 27. Incorporated into RA2309(12)
Guidance Material 2310(8)	**Oxygen and Cabin Pressure** 28. Incorporated into RA2309(12)
Regulation 2310(9)	**Altitude Limitations** 2310(9) Incorporated into RA2309(13)
Acceptable Means of Compliance 2310(9)	**Altitude Limitations** 29. Incorporated into RA2309(13)
Guidance Material 2310(9)	**Altitude Limitations** 30. Incorporated into RA2309(13)

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

RA 4050 - Continuing Airworthiness of Remotely Piloted Air Systems (RPAS)

Rationale

It is necessary to effectively maintain the airworthiness of an RPAS; however, in order to ensure that resources are appropriately focused, relative to the Risk to Life (RtL) that a system poses, the Continuing Airworthiness Engineering processes applied to a particular RPAS need to be tailored relative to its MAA endorsed Categorization.

Contents

Regulation 4050(1)

RPAS Maintenance Organizations

4050(1) Organizations maintaining RPAS **shall** ensure that they are maintained in accordance with (iaw) the regulatory requirements defined in RA 4000 to RA 4849 as appropriate.

Acceptable Means of Compliance 4050(1)

RPAS Maintenance Organizations

1. For RPAS categorized as Class II or III then:

   a. For those maintained by a Military Maintenance Organization (MMO) the Acceptable Means of Compliance (AMC) stated in RA 4000 to RA 4849 **should** be followed, noting that these RAs in turn refer to the Manual of Maintenance and Airworthiness Processes (MAP-01).

   b. For those maintained by a MAA Regulatory Publication (MRP) Part 145 Approved Maintenance Organization (AMO) the AMC stated in RA 4800 - 4825: MRP Part 145 **should** be followed.

2. For RPAS categorized as either Class I(b), I(c) or I(d) the AM(MF) in a Defence Contractor Flying Organization, or the Chief Air Engineer (CAE) to the Operating Duty Holder (ODH), may authorize deviation from the procedures detailed in the MAP-01, for the items listed below:

   a. Ground Handling (RA 4054[1] and MAP-01 Chapter 2.5).

   b. Engineering Authorizations (RA 4806(5)[2]; RA 4807(1)[3]; RA 4807(2), RA 4807(3), RA 4807(9), RA 4807(13); and MAP-01 Chapter 4.3[4]).

   c. Maintenance by non-engineering tradesmen (RA 4806(10)[2] and MAP-01 Chapter 4.3[4]).

   d. Tool Control (RA 4808[5] and MAP-01 Chapter 6.1[6]).

[1] RA 4054 Ground Handling of Aircraft.
[2] RA 4806 Personnel Requirements (MRP 145.A.30).
[3] RA 4807 Certifying Staff and Support Staff (MRP 145.A.35).
[4] MAP-01 Chapter 4.3 - Engineering Authorizations.
[5] RA 4808 Equipment Tools and Material (MRP145.A.40).
[6] MAP-01 Chapter 6.1 - Management of Hand Tools and Test and Measuring Equipment.

Acceptable Means of Compliance 4050(1)

e. Independent Inspections (RA 4815(2)[7] and MAP-01 Chapter 6.10[8]).

f. Aircraft Maintenance Documentation (RA 4813[9] and MAP-01 Chapters 7.1[10] and 7.2[11]).

Such deviations **should** be recorded in the Station/Ship/Unit Aviation Engineering Standing Orders (AESOs), Front Line Command Mid-Level Orders, or in the Defence Contractor Flying Organization's Operations Manual outlining the basis for judgement.

3. Flight Servicing **should not** be waived for RPAS.

Guidance Material 4050(1)

RPAS Maintenance Organizations

4. RPAS will be categorized iaw RA 1600[12].

5. For RPAS categorized as Class II or III it is expected that the system will be maintained iaw the policy and procedural requirements applicable to manned aircraft.

6. For RPAS categorized as Class I(b), I(c) or I(d) it is recognized that wholesale application of the processes detailed in the MAP-01 is neither proportionate nor effective. Consequently, for the specific areas detailed in Paragraph 2, although the requirement of the RAs is to be met, the AM(MF), or the CAE to the ODH, is able to authorize the use of alternative processes that achieve the same outcome.

7. For all RPAS[13] categories there may be ground-based elements of the system for which maintenance practices need not adhere to the MRP. These items will be specifically identified by the Type Airworthiness Authority (TAA) and recorded in the Air System Document Set (ADS) along with their appropriate maintenance procedures.

Regulation 4050(2)

Maintenance Management for RPAS

4050(2) For RPAS Categorized as II or III the Continuing Airworthiness Management Organization (CAMO) **shall** ensure that it is maintained by a MMO or AMO iaw RA 1005[14] - Competent Organizations and Responsibilities and the RA 4800 - 4825: MRP Part 145.

For RPAS Categorized as Class I(d) the CAE to the Delivery DH (DDH), or the Continuing Airworthiness post holder identified by the AM(MF), **shall** ensure that it is maintained by an MMO or AMO iaw RA 1005[14] - Competent Organizations and Responsibilities and the RA 4800 - 4825: MRP Part 145.

For RPAS categorized as Class I(b) or I(c), in lieu of an approval, the DDH or AM(MF) **shall** ensure that the maintenance organization implements a recognized quality management system.

[7] RA 4815 Maintenance Procedures and Safety & Quality Policy (MRP 145.A.65).
[8] MAP-01 Chapter 6.10 - Aircraft Independent Inspections.
[9] RA 4813 Maintenance Records (MRP 145.A.55).
[10] MAP-01 Chapter 7.1 - Certification of Aircraft Maintenance Documentation.
[11] MAP-01 Chapter 7.2 - Recording of Aircraft Maintenance.
[12] RA 1600 RPAS.
[13] As per RA1600 RPAS, the phrase "all RPAS" will refer to "all RPAS less those categorized as Class I(a)" throughout this RA.
[14] RA 1005 Competent Organizations and Responsibilities.

Acceptable Means of Compliance 4050(2)

Maintenance Management for RPAS

For RPAS categorized as Class I(d), II or III

8. For RPAS categorized as Class I(d), II or III then the MMO or AMO **should** follow AMC stated in RA 4800 - 4825: MRP Part 145.

For RPAS categorized as Class I(b) or I(c)

9. The maintenance organization maintaining RPAS categorized as Class I(b) or I(c) **should** implement a quality management system which is either:

a. Implemented iaw MAP-01 Chapter 15[15]; or,

b. Certified to comply with a recognised quality management system.

Guidance Material 4050(2)

Maintenance Management for RPAS

For RPAS categorized as Class I(d), II or III

10. Nil.

For RPAS categorized as Class I(b) or I(c)

11. Examples of recognised quality systems include ISO 9001, EN 9100, AS 9100, or AS 9110.

Regulation 4050(3)

Continuing Airworthiness Management of RPAS

4050(3) For RPAS categorized as Class II or III the DDH/AM(MF) **shall** ensure that the airworthiness of the Air System is managed by an approved CAMO iaw RA 4900 - 4956: MRP Part M Sub Part G.

For RPAS categorized as Class I(b), I(c) or I(d) operated in the Service Environment[16] the DDH CAE **shall** manage the Continuing Airworthiness of the Air System.

For RPAS categorized as Class I(b), I(c) or I(d) operated outside of the Service Environment the AM(MF) **shall** appoint a Suitably Qualified and Experienced Personnel (SQEP) individual to manage the Continuing Airworthiness of the Air System.

Acceptable Means of Compliance 4050(3)

Continuing Airworthiness Management of RPAS

For RPAS categorized as Class II or III

12. For CAMOs supporting Aviation DHs responsible for managing RPAS categorized as Class II or III, AMC detailed in RA4900 - 4956: MRP Part M Sub Part G **should** be followed.

13. For Defence Contractor Flying Organizations operating RPAS categorized as Class II or III then, iaw RA 1121[17], the AM(MF) will be supported by an approved

[15] MAP-01 Chapter 15 - Quality Assurance.
[16] As per MAA 02 Aircraft are deemed to operate in the Service Environment when there is a Release To Service (RTS) and an Aviation DH responsible for RtL.
[17] RA 1121 Air Safety Arrangements for Military Registration of Civil-Owned Aircraft not operated in the Service Environment.

Acceptable Means of Compliance 4050(3)

CAMO which **should** follow AMC stated in RA 4900 - 4956: MRP Part M Sub Part G; however, in derogation to RA 4945(2)[18], the CAM is not required to be a Crown Servant.

14. As per the conditions specified at RA 1121(5)[17], when an AM(MF) operates MRCOA RPAS outside of the Service Environment and if the duration of the activity is less than 6 months, then it may not require a CAMO, by agreement with Hd O&A MAA. In such cases the AM(MF) **should** make appropriate arrangements for the Continuing Airworthiness of his RPAS.

For RPAS categorized as Class I(b), I(c) or I(d) operated in the Service Environment

15. For RPAS categorized as Class I(b), I(c) or I(d) operated in the Service Environment, the CAE to the DDH **should**:

a. Develop a set of AESOs iaw MAP-01 Chapter 1.10.2 which details the organizations that provide maintenance support to the RPAS and defines the procedures to be followed.

b. Demonstrate adequate oversight of the maintenance activities undertaken on the RPAS within his area of responsibility through ensuring implementation of a quality system iaw MAP-01 Chapter 15[19], which will provide assurance to the Aviation DH of compliance with RA 4050(1). The audit programme **should** include an appropriate sample audit of the airworthiness of individual platforms in lieu of a MARC, see RA 4050(4) to a depth and scope endorsed by the Aviation DH. Records from such activity should be retained for 5 years after the aircraft has been permanently withdrawn from service.

For RPAS categorized as Class I(b), I(c) or I(d) operated outside of the Service Environment

16. For Defence Contractor Flying Organizations the post holder managing the Continuing Airworthiness of RPAS categorized as Class I(b), I(c) or I(d) **should** meet the following criteria:

a. Be a professionally registered engineer, either:

(1) IEng level where he is supervised by another professionally registered CEng; or,

(2) CEng level where he operates without supervision.

b. Have familiarity with the MRP 4000 series (Continuing Airworthiness Engineering).

c. Specifically for RPAS categorized as Class I(c) or I(d) have at least 4 years' relevant aviation experience.

17. For RPAS categorized as Class I(b), I(c) or I(d) operated outside the Service Environment, the individual appointed to manage the Continuing Airworthiness **should**:

a. Provide input to the organization's Operations Manual detailing the organizations that provide maintenance support to the RPAS and defining the procedures to be followed;

b. Demonstrate adequate oversight of the maintenance activities undertaken on the RPAS within his AoR through ensuring implementation of a quality system which meets the requirements of RA 4050(2). The audit programme **should** include an appropriate sample audit of the airworthiness of individual platforms in lieu of a MARC (see RA 4050(4)) to a depth and scope

[18] RA 4945 Personnel Requirements.
[19] MAP-01 Chapter 15 Quality Assurance.

Acceptable Means of Compliance 4050(3)

endorsed by the Aviation DH/AM(MF). Records from such activity should be retained for 5 years after the aircraft has been permanently withdrawn from service.

Guidance Material 4050(3)

Continuing Airworthiness Management of RPAS

For RPAS categorized as Class II or III

18. Nil.

For RPAS categorized as Class I(b), I(c) or I(d) operated both within and outside of the Service Environment

19. For RPAS categorized as Class I(b), I(c) or I(d), there is still a responsibility to maintain the integrity of such systems despite the fact that a CAMO need not be appointed. Consequently Continuing Airworthiness management practices will be applied where applicable and the CAE or individual appointed to manage the Continuing Airworthiness of RPAS may review the CAMO responsibilities defined in RA 4947[20], for reference. It is for the CAE, or the individual appointed by the AM(MF), to manage the Continuing Airworthiness of the RPAS, to implement quality systems and procedures and to provide assurance to their DDH / AM(MF). And while there is not a requirement to achieve an approval in their own right, their activity will be subject to oversight by the MAA through audit.

Regulation 4050(4)

MARC for RPAS

4050(4) For RPAS categorized as Class II or III, operated in the Service Environment, the DDH **shall** ensure that the RPA is operated with a valid MARC iaw RA 4970 - 4974: MRP Part M Sub Part I.

Acceptable Means of Compliance 4050(4)

MARC for RPAS

20. As detailed in RA 4970(2)[21] the depth and scope of the BMAR **should** be documented and referenced within Part 4 of the CAME and should stipulate which component parts of the RPAS are included.

21. For RPAS categorized as Class II or III, operated in the Service Environment, the CAMO **should** follow AMC detailed in RA 4970 - 4974: MRP Part M Sub Part I.

Guidance Material 4050(4)

MARC for RPAS

22. For RPAS categorized as Class I(b), I(c) or I(d) the CAE to the DDH, or the individual appointed to manage the Continuing Airworthiness of RPAS in a Defence Contractor Flying Organization, will implement a sample audit of the airworthiness of individual platforms in lieu of the MARC as stated in AMC to RA 4050(3), Paragraphs 15.b and 17.b.

[20] RA 4947 - Continuing Airworthiness Management: MRP Part M Sub Part G
[21] RA 4970 Baseline Military Airworthiness Review - MRP Part M Sub Part I.

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RA 5002 - Remotely Piloted Air Systems (RPAS) Design and Modification Engineering (DME) Regulations

Rationale *There is a requirement to define the responsibility and authority for design and modification of RPAS through either Service or contractor organizations.*

Contents

Regulation 5002(1)

Compliance with 5000 Series RAs

5002(1) The Type Airworthiness Authority (TAA) **shall** ensure that all RPAS[1] Design and Modifications are carried out in accordance with (iaw) the 5000 Series DME RAs.

Acceptable Means of Compliance 5002(1)

Compliance with 5000 Series RAs

1. Nil.

Guidance Material 5002(1)

Compliance with 5000 Series RAs

2. Where there is a difference between the regulation contained in this document and any other 5000 Series DME RAs this RA takes precedence for RPAS platforms.

3. The regulations listed in the contents section of this RA are adjusted to account for RPAS methods of design, construction, certification and most importantly, reduced Risk to Life (RtL). Hence this regulation must be followed for all classes of RPAS.

Regulation 5002(2)

Certification of Design

5002(2) For all RPAS, other than those identified below, the TAA **shall** comply with RA 5103[2].

For RPAS categorized as Class I(b) or I(c) that are Commercial Off-The-Shelf (COTS), the TAA **shall** ensure the intent of RA 5103[2] is achieved.

[1] As per RA 1600 – RPAS, the phrase “all RPAS” will refer to “all RPAS less those categorized as Class I(a)” throughout this RA.

Acceptable Means of Compliance 5002(2)

Certification of Design

4. For RPAS categorized as Class I(b) or I(c) that are COTS, any recognized design standards used during development of the platform **should** be recorded. If the RPAS is not designed to any recognized airworthiness standards, the onus is on the TAA to demonstrate how product integrity is achieved. This argument **should** be contained within the Equipment Safety Assessment.

5. For RPAS categorized as Class I(b) or I(c) that are not COTS, Appendix A1 or A2 of RA 5103[2] **should** be completed, but is only required to include as a minimum:

a. The RPA type.

b. A list of all relevant standards that were used during the design (ie any software design standards, European Aviation Safety Agency Certification Specifications, Joint Aviation Requirements, etc).

c. A statement regarding the testing or analysis performed to ensure the Software and Structural Integrity of the platform; reference **should** also be made to the Equipment Safety Assessment.

Guidance Material 5002(2)

Certification of Design

6. It is possible that a RPAS will not be designed to any recognized certification standards. This may be acceptable depending on the categorization of the RPAS, however, the onus is on the TAA to ensure that the RPAS is still safe to operate within the limitations of the RTS.

7. Development of a robust Air System Safety Case (SC) is critical for platforms that are not required to undergo a formal certification process, ie for RPAS categorized as Class I(b) or (1c). RA 1600[3] - Annex B provides further guidance on the requirements for platforms not undergoing formal certification, with a list of suggested criteria.

Regulation 5002(3)

Software Design Assurance

5002(3) The TAA **shall** ensure that all RPAS comply with the Software Design Assurance Level (DAL) requirements of Def Stan 00-970, Part 9, except for those RPAS categorized as Class I(b) or I(c) where the TAA **shall** demonstrate software assurance through completion of a hazard and risk analysis approach.

Acceptable Means of Compliance 5002(3)

Software Design Assurance

8. It is recognized that for RPAS categorized as Class I(b) or I(c), it may not be reasonably practicable to meet the Software DAL called out in Def Stan 00-970 Part 9. In such cases the software assurance strategy **should** be presented to the MAA to agree. The software assurance strategy **should** be used to develop the software argument in the Equipment Safety Assessment, giving particular attention to software items whose failure could lead to uncontrolled flight and/or a catastrophic loss.

Guidance Material 5002(3)

Software Design Assurance

9. Nil

[2] RA 5103 – Certification of Design
[3] RA 1600 – Remotely Piloted Air Systems (RPAS)

Regulation 5002(4)

Mass, CofG and Associated Data of RPA

5002(4) The TAA **shall** ensure that RA 5212[4] is complied with for all RPAS, except those categorized as Class I(b) or I(c).

The TAA **shall** ensure that a method is in place for maintaining the weight and balance of each individual RPA for RPAS categorized as Class I(c).

Acceptable Means of Compliance 5002(4)

Mass, CofG and Associated Data of RPA

10. For RPAS categorized as Class I(c), the TAA **should** develop and maintain a procedure in the Air System Document Set (ADS) for checking the weight and balance of the RPA.

Guidance Material 5002(4)

Mass, CofG and Associated Data of RPA

11. For RPAS categorized as Class I(c), it is common practice that the design enables operators to routinely exchange components for repair purposes. For some platforms, the weight is controlled by limiting the extent of repairs carried out. As such, the weight and balance for platforms within the Class I(c) category is traditionally checked after assembly, and/or prior to every flight.

12. The onus is on the TAA to ensure that effective weight and balance control measures are in place for the platform to ensure the weight and balance remain within limits.

13. For RPAS categorized as Class I(b), a process is not required for maintaining the weight and balance of the platform.

Regulation 5002(5)

Reporting of Mass for RPA Equipment

5002(5) The TAA **shall** ensure that RA 5205[5] is complied with for all RPAS, except those categorized as Class I(b) or I(c).

The TAA **shall** ensure that the mass of RPA equipment is recorded, listing all installed/removable equipment for RPAS categorized as Class I(c) prior to the RTS.

Acceptable Means of Compliance 5002(5)

Reporting of Mass for RPA Equipment

14. For RPAS categorized as Class I(c), the TAA **should** ensure that the mass of any installed equipment and systems is reported in the forms described in RA 5205[5] before the RTS of the RPAS. A single submission is acceptable.

Guidance Material 5002(5)

Reporting of Mass for RPA Equipment

15. For RPAS categorized as Class I(c), role fit equipment may not be applicable; however, there must still be a method for weight and balance to be easily checked by the operators prior to flight.

Regulation 5002(6)

Configuration Management – Project Team

5002(6) The TAA **shall** have a Configuration Management Plan in place for all items of materiel that may be subject to modification for all RPAS, except those categorized as Class I(b).

For RPAS categorized as Class I(c) the TAA **shall** have a tailored Configuration Management Plan.

[4] RA 5212 – Mass, C of G and Associated Data of Aircraft
[5] RA 5205 – Reporting of Mass for Aircraft Equipment

Acceptable Means of Compliance 5002(6)

Configuration Management – Project Team

16. For all RPAS, except those categorized as Class I(b), or I(c) the AMC in RA 5301[6] **should** be followed.

17. For RPAS categorized as Class I(c), a documented process for controlling the configuration of all items that would affect the Equipment Safety Assessment **should** be provided.

Guidance Material 5002(6)

Configuration Management – Project Team

18. For RPAS categorized as Class I(b) or I(c) the configuration management system may be proportional to the RtL that the RPAS presents.

19. For these reasons, the requirements outlined in RA 5301[6] are not mandated; however, for any item that may affect the Equipment Safety Assessment a documented process will be utilized.

Regulation 5002(7)

Design and Certification of RPA Engines[7]

5002(7) For all RPAS, except those categorized as Class I(b), or I(c), the TAA **shall** comply with RA 5601[8].

For RPAS categorized as Class I(b) or I(c), the TAA **shall** ensure an evaluation process is carried out for the engine, and is outlined in the Equipment Safety Assessment iaw RA 1220(2)[9].

Acceptable Means of Compliance 5002(7)

Design and Certification of RPA Engines

20. For RPAS categorized as Class I(b) or I(c):

a. Where RA 5601[8] cannot be complied with, an evaluation process **should** be conducted on the engine to demonstrate that an appropriate level of safety can be achieved. The evaluation **should** form part of the Equipment Safety Assessment prepared iaw RA 1220(2)[9].

b. For COTS engines, any recognized design standards and qualification evidence used during development of the platform **should** be recorded. If the engine is not designed to any recognized airworthiness standards the onus is on the TAA to reference how product integrity is achieved. This argument **should** be contained within the Equipment Safety Assessment.

Guidance Material 5002(7)

Design and Certification of RPA Engines

21. For RPAS categorized as Class I(b) or I(c), it is possible that an engine will not be designed to any recognized certification standards and have limited qualification compliance reports. The onus is on the TAA to ensure that the engine is still safe to operate within the limitations of the RTS.

22. Development of a robust Equipment Safety Assessment is critical for engines that are not required to undergo a formal certification process. An evaluation process will be conducted on the engine and, if applicable, its associated control, monitoring, fuel and cooling systems, to demonstrate that an appropriate level of safety can be achieved that will meet the Design Safety Target. RA 1600[3] provides further guidance on the requirements for platforms not undergoing formal certification, with a list of suggested criteria to be covered in Annex B.

[6] RA 5301 – Control of Designs
[7] The term “Engine” is used throughout this RA to describe all Propulsion devices that could be used in RPAS designs including; Gas Turbine Engines, Internal Combustion Engines, Electric Motors, Rockets, etc.
[8] RA 5601 – Design and Certification of Aircraft Engines
[9] RA 1220 – Project Team Airworthiness and Safety

Regulation 5002(8)

Mass and CofG Data of RPA Engines and Jet Pipes

5002(8) The TAA **shall** comply with RA 5607[10] for all RPAS, except those categorized as Class I(b), or I(c).

The TAA **shall** ensure that a method is in place for maintaining the weight and balance of each individual RPA for RPAS categorized as Class I(c).

Acceptable Means of Compliance 5002(8)

Mass and CofG Data of RPA Engines and Jet Pipes

23. For RPAS categorized as Class I(c), the TAA **should** ensure there is a procedure for checking the weight and balance of the RPA engines and jet pipes, if applicable, prior to flight.

Guidance Material 5002(8)

Mass and CofG Data of RPA Engines and Jet Pipes

24. For RPAS categorized as Class I(b) or I(c), it is common that the design enables operators to routinely exchange components, including engines, between individual platforms. As such, the weight and balance for platforms within the Class I(b) or I(c) category is traditionally checked after assembly, and/or prior to every flight.

25. The onus is on the TAA to ensure that effective weight and balance control measures are in place for the platform to ensure the weight and balance remains within limits.

26. For RPAS categorized as Class I(b), a process is not required for maintaining the weight and balance of the RPA engines and jet pipes.

Regulation 5002(9)

Production Procedures for RPA Engines and Associated Equipment

5002(9) The TAA **shall** comply with RA 5615[11] for Engine Production Procedures for all RPAS, except those categorized as Class I(b), I(c) or I(d).

Acceptable Means of Compliance 5002(9)

Production Procedures for RPA Engines and Associated Equipment

27. For RPAS categorized as Class II or III, AMC to RA 5615(1)[11] and AMC to RA 5615(2)[11] **should** be followed.

Guidance Material 5002(9)

Production Procedures for RPA Engines and Associated Equipment

28. For RPAS categorized as Class II or III, refer to GM to RA 5615(1)[11] and GM to RA 5615(2)[11]

29. For RPAS categorized as Class I(b), I(c) or I(d), there is no requirement to comply with RA 5615[11].

Regulation 5002(10)

RPAS Integrity Management

5002(10) The TAA **shall** ensure that all RPAS, with the exception of Class I(b), are managed to ensure acceptable and demonstrable levels of Structural, System and Propulsion Integrity.

[10] RA 5607 – Mass and C of G Data of Aircraft Engines and Jet Pipes
[11] RA 5615 – Production Procedures for Engines and Associated Equipment

Acceptable Means of Compliance 5002(10)

RPAS Integrity Management

30. The plan for Integrity Management of the RPAS **should** be presented to the MAA by the TAA. Subject to the assessment carried out as part of the Equipment Safety Assessment for the RPAS, which recognizes the potential outcome of loss of Continuing Airworthiness, the TAA **should** apply the principles of the RA 5700: Integrity Management series, to ensure airworthiness is maintained through the life of the RPAS.

31. For RPAS categorized as Class I(d), II or III, the TAA **should** follow the Establish, Sustain, Validate, Recover, Exploit (ESVRE) approach for Integrity Management as outlined in RA 5720(1-6)[12], RA 5721(1-6)[13], and RA 5722(1-6)[14].

32. For RPAS categorized as Class I(c), a tailored Integrity Management approach **should** be carried out by the TAA.

Guidance Material 5002(10)

RPAS Integrity Management

33. For RPAS categorized as Class II or III the requirements for Integrity Management are no different from those for manned aircraft.

34. For RPAS categorized as Class I(d), the requirements for Integrity Management are no different than manned aircraft with the exception of the requirement for Operational Loads Measurement / Operational Data Recording (OLM/ODR) programmes. These programmes are implemented on the platform at the discretion of the TAA. When determining whether to implement an OLM programme, the TAA ought to consider the impact that fatigue may pose on the airframe given its forecasted life span, and whether the usage is sufficiently limited by flight control and any self-protection systems so that flight outside the scope of the Design Usage Spectrum (DUS) articulated in the Statement of Operating Intent (SOI) is prevented.

35. For RPAS categorized as Class I(c) the TAA may chose to amalgamate Structural, System and Propulsion Integrity as an alternative to managing the ESVRE activities and Integrity Working Groups (IWG) of these specialties individually. The complexity of the Air System will determine whether it is more economical for the TAA to group them together or follow a traditional approach for Integrity Management. It is therefore acceptable for the TAA to run combined IWGs.

36. For RPAS categorized as Class I(c), the TAA may decide not to convene a Propulsion Integrity Working Group when the engine(s) are not considered a distinct system. In this case Propulsion Integrity will fall under System Integrity.

37. Annex A Table 1 lists the minimum requirements for Platform Integrity Management for RPAS categorized as Class I(c).

38. For RPAS categorized as Class I(b), specific Integrity Management activity is not required.

Regulation 5002(11)

RPAS Ageing Aircraft Audit

5002(11) The TAA **shall** ensure that consideration is given to the effects of degradation and the interaction of apparently unrelated ageing processes for all RPAS.

[12] RA 5720 – Structural Integrity Management
[13] RA 5721 – System Integrity Management
[14] RA 5722 – Propulsion Integrity Management

Acceptable Means of Compliance 5002(11)

RPAS Ageing Aircraft Audit

39. All RPAS, except those categorized as Class I(b), I(c) or I(d), **should** be subjected to an Ageing Aircraft Audit (AAA) iaw RA 5723[15], to give confidence that airworthiness risks are at least tolerable and As Low As Reasonably Practicable (ALARP), as the fleet ages and regulatory requirements evolve. This evaluation **should** consider all elements of the Air System which includes the Remote Pilot Station.

40. For all RPAS categorized as Class I(c) or I(d), sufficient proof **should** be obtained by the TAA to ensure that degradation and the interaction of apparently unrelated ageing processes are accounted for and that any associated risks are being mitigated appropriately.

Guidance Material 5002(11)

RPAS Ageing Aircraft Audit

41. All RPAS with an anticipated service life of less than 6 years are exempt from the requirements of an Ageing Aircraft Audit.

42. The risk to airworthiness due to the ageing of aircraft in service is partly mitigated by Integrity Management iaw RA 5720[12], RA 5721[13] and RA 5722[14]. However, the unpredictable nature of degradation and the interaction of apparently unrelated ageing processes are often found only by an additional rigorous periodic audit of trend data, procedures and the RPAS's physical condition.

43. For RPAS categorized as Class II or III, the requirements are no different to those applied to manned aircraft. However for RPAS categorized as Class I(c) or I(d), the Air System may have inherent design characteristics which would reduce the requirement for demonstrable proof of system integrity as the Air System ages (ie components that are inspected after every flight and replaced on condition, solid foam construction with no hidden critical structure, etc).

44. For Class I(c) or I(d) RPAS, there is still a requirement to adequately assess any risks, implications, and milestones for re-evaluation. SME input may be required for RPAS structure, aircraft systems, propulsion systems and any RPA service history trend analysis (if applicable).

[15] RA 5723 – Ageing Aircraft Audit

ANNEX A

Tailored Integrity Management Class I(c) RPAS

Table 1 – Tailored Integrity Management Class I(c) RPAS

Platform Integrity Class I(c)
In preference to separate IM as required by RAs 5720[12], 5721[13] and 5722[14] the TAA may assure IM via a tailored whole platform approach. A combined IM approach will ensure the intent of the individual RAs is met and it is expected that this is delivered via a suitable management framework such as ESVRE. The whole platform approach will also include as a minimum: **Establish** – A tailored Platform Integrity Strategy Document (ISD) and SOI. All elements of the RPAS that contribute to safe operation including ground control stations will be included within the IM strategy. **Sustain** – A framework that includes: an Integrity Management Plan and Integrity Management Working Groups that will provide Continuing Airworthiness for all elements of the air system. A system must be in place to determine and control RPA mass, CofG, and mass distribution. **Validate** – Annual SOIU review extended to every 2 years, OLM/ODR programmes are not required where the RPAS usage can be shown to be sufficiently limited by flight control or similar self-protection systems such that flight outside the scope of the (DUS) articulated in the SOI is prevented. **Recover** – Component failures will be recorded with enough fidelity to permit a fleet-wide assessment of structural health. If the fleet is experiencing repeated failures which have potential to result in platform loss, this must be documented and an appropriate management strategy implemented. Reviews of component lifing will be carried out, particularly where components that do not have individual lifing records may be moved between RPA and may exceed their original cleared life. **Exploit** – Undertake structural Hazard and Accident analysis in the event of airworthiness risks arising from Structural Integrity concerns.