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

## RA 1601 – Uncrewed Air Systems Open A1 sub-category (Fly 'Over' People)

#### **Rationale**

There is a requirement to determine and apply an appropriate regulatory framework to Uncrewed Air Systems (UAS) to ensure they are safe to operate and are being operated safely. Failure to appropriately address UAS specific Hazards could lead to an increased Risk to Life (RtL). This regulatory framework will be proportionate to the UAS Category and its physical attributes<sup>1</sup>. This Regulatory Article (RA) defines the regulatory framework for those UAS operating in the Open A1 sub-category. The regulatory framework is Structured to specifically permit appropriate operating freedom to 'non-traditional' aviation units (who are the prevalent users of UAS in the Open A1 sub-category).

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#### **Applicability**

### Applicability of this RA

- 1. Operations within the Open A1 sub-category are those to be conducted with UAS² that:
  - a. Have the following mandatory requirements:
    - (1) Have a Maximum Take Off Weight of less than 250 g,
    - (2) Are operated within Visual Line Of Sight (VLOS)<sup>3, 4</sup> of the Remote Pilot (RP)<sup>5</sup>,
    - (3) Are not flown at a Height greater than 120 m (400 ft),
    - (4) Have any maximum speed,
    - (5) Are capable of being operated safely over Uninvolved Persons but not flight over Areas of high population density,
    - (6) Are capable of being operated safely over Uninvolved Persons, and over Congested Areas, but not over Areas of high population density,
    - (7) Are registered on the UK Military Aircraft Register (MAR) by type<sup>6</sup>,
    - (8) Have a Military Aircraft Registration Number and unit identifier displayed on the main fuselage,

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<sup>&</sup>lt;sup>1</sup> For definitions of UAS Categories, UAS sub-categories, and UAS physical attributes (eg Sub 250 g, Sub 4 kg, etc), refer to RA 1600 – Uncrewed Air Systems Categorization.

<sup>&</sup>lt;sup>2</sup> Unless operating under the derogations requested and conditions set out in an approved Special Purpose Clearance (SPC).

<sup>&</sup>lt;sup>3</sup> UAS Categorized as Open A1 may be operated Beyond Visual Line Of Sight when operating within buildings, vessels, and structures.

<sup>&</sup>lt;sup>4</sup> Certain demands may necessitate operations beyond the limitations covered by extant Letter of Endorsed Categorization (LEC). In these cases, an additional RA 1600 Annex B Appendix 2 or equivalent Contractor Flying Approved Organization Scheme (Basic UAS) (CFAOS (BU)) paperwork will need to be submitted, for the additional permissions beyond the baseline LEC.
<sup>5</sup> In 'follow-me' mode (the Uncrewed Aircraft (UA) will automatically follow the Command Unit), the UA may be flown up to a maximum

of In 'follow-me' mode (the Uncrewed Aircraft (UA) will automatically follow the Command Unit), the UA may be flown up to a maximum distance of 50 m from the RP, even if this means that the UA is no longer VLOS.

<sup>&</sup>lt;sup>6</sup> For UAS that will be operated within the Open A1 sub-category, UK MAR registration is applied for within the Categorization Submission, and registration is inherent in the issuing of a LEC. Refer to RA 1600 – Uncrewed Air Systems Categorization; and RA 1161 – Military Registration of Air Systems Operating within the Defence Air Environment.

### **Applicability**

- (9) Operate under the Defence Air Environment (DAE) Operating Framework<sup>7</sup> and be assigned to a DAE Operating Category<sup>8</sup>, and
- (10) Carry a UK / EU conformity marking of C0<sup>9</sup> or be designed to similar standards.
- b. Have the following optional requirements:
  - (1) Are capable of Swarming,
  - (2) If conducting tethered operations; Adhere to noise limits, Height limits, and requirements for remote identification and geo-awareness Systems and additional requirements,
  - (3) Are capable of being armed (only where an SPC has been endorsed by the MAA),
  - (4) Are capable of carrying / transporting dangerous Cargo<sup>10, 11</sup>.
  - (5) Are capable of Dropping of materiel, and
  - (6) Are capable of autonomous operations, with procedures covering the activities the RP is not directly controlling (including unplanned emergency conditions such as Lost link profiles).
- 2. Unless detailed further in the LEC or CFAOS (BU)<sup>12</sup> Approval, only those MAA Regulatory Publication (MRP) documents detailed in this RA, RA 1600, and applicable Regulatory Instructions and Regulatory Notices, are applicable to UAS operating in Open A1 sub-category.
- 3. CFAOS (BU) organizations must also comply with RA 1031<sup>12</sup>.
- 4. UAS publications are likely to include:
  - a. The RA 1600 Annex B Categorization Safety Checklist for the UAS (MOD organizations).
  - b. The Contractor Flying Organization Exposition (Basic UAS) (CFOE (BU)) (non-MOD organizations).
  - c. Manufacturer's User or Operating Manual.
  - d. Specific Orders or Instructions from the UAS Responsible Officers (RO).
  - e. The CFAOS (BU) Operations Manual from the UAS Accountable Manager (AM).
  - f. Local orders such as those published by a Head of Establishment (HoE) or Head of Unit.
- Open A1 sub-category UAS operations are not required to be supported by a:
  - a. Aviation Duty Holder;
  - b. Accountable Manager (Military Flying);
  - c. Type Airworthiness Authority;
  - d. Continuing Airworthiness Management Organization;
  - e. Chief Air Engineer;
  - f. Capability Owner;
  - g. Senior Operator;
  - Flight Operations Post Holder;

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<sup>&</sup>lt;sup>7</sup> Refer to RA 1160 – The Defence Air Environment Operating Framework.

<sup>&</sup>lt;sup>8</sup> The DAE Operating Category relates to the ownership and Safety governance of the Air System, whereas the UAS Category relates to the regulatory framework which is set by the MAA according to the Risk posed by the UAS and the manner in which it is operated.

<sup>9</sup> Refer to Commission Delegated Regulation (EU) 2020/1058 and UK Regulation (EU) 2019/945.

<sup>&</sup>lt;sup>10</sup> Refer to AAP-06 – The North Atlantic Treaty Organization (NATO) Glossary of Terms and Definitions (English and French).

<sup>&</sup>lt;sup>11</sup> For example (non-exhaustive list): Explosives, radioactive material, flammable liquids, dangerous or volatile chemicals, strong acids, compressed gases, biological agents, poisons.

<sup>&</sup>lt;sup>12</sup> Refer to RA 1031 – Contractor Flying Approved Organization Scheme (Basic Uncrewed Air Systems).

### **Applicability**

- i. Sponsor;
- j. Senior Responsible Owner.
- 6. This Regulation does not cover Test and Evaluation (T&E) activity. UAS applicants wishing to operate in a manner or Configuration not supported by RA 1600<sup>13</sup> and RA 1601 (ie T&E) will be subject to RA 2370<sup>14</sup> and other MRP requirements. Discussion with the MAA<sup>15</sup> will be required in order to confirm the applicable Regulations.
- 7. The endorsed RA 1600 Annex B Categorization Safety Checklist (MOD organizations) or the CFAOS (BU) Approval (non-MOD organizations) will satisfy the requirement for an Air System Safety Case (ASSC) (An ASSC provides an evidenced and coherent argument that a system is safe to operate and is being operated safely).

## Regulation 1601(1)

### Responsibilities

1601(1) Organizations operating UAS in the Open A1 sub-category **shall** comply with the requirements of RA 1600 and RA 1601.

# Acceptable Means of Compliance 1601(1)

### Responsibilities

- 8. MOD organizations responsible for operating UAS in the Open A1 sub-category **should** ensure operations are in the MOD Interest<sup>7</sup>.
- MOD organizations responsible for operating UAS should either:
  - a. Nominate a UAS RO (minimum OF2 or equivalent); or
  - b. Ensure that operations are carried out by an organization appropriately approved in accordance with (iaw) the CFAOS (BU).
- 10. Non-MOD organizations operating military registered UAS in the Open A1 subcategory **should**:
  - a. Be appropriately approved iaw the CFAOS (BU).
  - b. Nominate a UAS AM iaw RA 1031<sup>12</sup>.
- 11. UAS organizations considering operating from MOD establishments or aviation capable HM / MOD Ships **should** ensure the MOD establishments' or aviation capable HM / MOD Ships' HoE has complied with RA 1010 and RA 1026<sup>16</sup>.

### Guidance Material 1601(1)

#### Responsibilities

12. Not all potential RPs will have experience flying UAS; to gain sufficient experience, it is expected that organizations will provide appropriate training packages.

## Regulation 1601(2)

Uncrewed Air System Responsible Officer and Uncrewed Air System Accountable Manager Responsibilities

1601(2) UAS in the Open A1 sub-category **shall** be operated under the authority of a UAS RO / UAS AM and supported by appropriate persons.

<sup>&</sup>lt;sup>13</sup> Refer to RA 1600 – Uncrewed Air Systems Categorization.

<sup>&</sup>lt;sup>14</sup> Refer to RA 2370 – Test and Evaluation.

<sup>&</sup>lt;sup>15</sup> Contact via <u>DSA-MAA-MRPEnquiries@mod.gov.uk</u>.

<sup>&</sup>lt;sup>16</sup> Refer to RA 1010 - Head of Establishment Aviation Responsibilities and Aviation Duty Holder / Accountable Manager (Military Flying) Establishment Responsibilities; and RA 1026 – Aerodrome Operator and Aerodrome Supervisor (Recreational Flying) Roles and Responsibilities.

# Acceptable Means of Compliance 1601(2)

## Uncrewed Air System Responsible Officer and Uncrewed Air System Accountable Manager Responsibilities

- 13. UAS ROs / UAS AMs **should** ensure prior to operation of UAS in the Open A1 sub-category:
  - a. MOD organizations hold an appropriate MAA UAS LEC.
  - b. Non-MOD organizations hold an appropriate CFAOS (BU) Approval.
- 14. UAS ROs and UAS AMs should:
  - a. Be responsible and Accountable for the operation of UAS within their Area of Responsibility (AoR).
  - b. Ensure UAS Occurrences are reported, investigated, and recorded<sup>17, 18</sup>.

Landings, or terminal phase manoeuvres, consistent with planned operations, incurring damage or destruction, will not normally be considered as Air Safety reportable Occurrences unless the UAS RO / UAS AM determines that there may be a wider Safety interest. Notwithstanding this derogation, UAS ROs and UAS AMs has to ensure that any significant deviation from the intended UAS behaviour, response, or UA flight path is reported.

- c. Ensure there are local procedures detailing the process for the transfer of Air Safety arrangements and general conditions of transfer (explicitly handover requirements, and requiring both the dispatching and receiving organizations to be responsible for compliance with the directed conditions of transfer)<sup>19</sup>.
- d. Detail in Orders the operating limitations and regulatory requirements applicable to operations in their AoR.
- e. Ensure UAS operating in the Open A1 sub-category are not:
  - (1) Operated over open-air assemblies of uninvolved people where in the event of UA failure, collision with uninvolved people is probable.
  - (2) Operated higher than 120 m (400 ft) above the surface (land or sea).
  - (3) Operated in a restricted area<sup>20</sup> (eg flight restriction zone of a protected Aerodrome<sup>21</sup>) unless in receipt of appropriate permission from the Airspace Controlling Authority.
- f. Ensure the requirement for a UAS SPC has been identified when a UAS operating in the Open A1 sub-category requires to be operated outside the bounds of its LEC.
- g. Ensure UAS SPCs (which are authorized by the MAA and issued to the UAS RO / UAS AM) are invoked when the RtL associated with its usage is greater than the Risk identified within the Open A1 LEC<sup>13</sup>.
- h. Supplement the original Categorization Submission, when applying for a UAS SPC, for the UAS with relevant details including a record of their judgement that the benefits of operating the UAS with a UAS SPC outweigh any increased RtL and submit it to the MAA iaw the RA 1600 Categorization submission process<sup>13</sup>.
- i. Ensure suitable Lost link, and Command and Control, procedures are implemented to maintain safe flight (or safe termination), safe separation from other Aircraft, and to enable Aircraft recovery (if possible). In the event of an

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<sup>&</sup>lt;sup>17</sup> Refer to RA 1410 – Occurrence Reporting and Management.

<sup>&</sup>lt;sup>18</sup> Refer to the Manual of Aircraft Post Crash and Incident Management, Chapter 1: The Aircraft Post Crash Incident Management (APCIM) Task, paragraph 8: Applicability.

<sup>&</sup>lt;sup>9</sup> Explicitly the transfer of Responsibility of Air Systems in line with the RA 1164 requirements.

<sup>&</sup>lt;sup>20</sup> Defined as: "Airspace of defined dimensions over the land areas or territorial waters of a State within which the flight of aircraft is restricted in accordance with certain specified conditions". Sourced from: UK Civil Aviation Authority (CAA) <u>Publication</u> (CAP) 722D.

<sup>&</sup>lt;sup>21</sup> Details of UK Aerodromes that fall into the 'protected' category can be found within the <u>NATS eAIS Package</u>. For Government Aerodromes see the <u>UK Mil AIP</u>.

# Acceptable Means of Compliance 1601(2)

emergency in the Command Unit that requires abandonment, or the loss of return feed data link that precludes safe control, Lost link procedures **should** be followed (if applicable).

- j. Produce orders or instructions detailing actions in the event that verbal communication becomes impossible (eg intercom failure or suspected incapacitation).
- k. Ensure that Risks to RPs, operating personnel, other organization / MOD personnel, and the general public through the operation of UAS are acceptable and cease operations if not.
- Hold appropriate Terms of Reference (ToR).
- m. Follow the intent of RA 2335<sup>22</sup>, for UAS operators working up for, or conducting, UAS flying at a Flying Display, Display Flying, Display Parachuting, Role Demonstration or Flypast event.
- n. Ensure that RPs are appropriately trained (iaw JSP 822<sup>23</sup>) and Competent.
- o. Ensure that RPs are medically fit to operate the categorized UAS<sup>24</sup>.
- p. Specify a Suitably Qualified and Experienced Person to award UAS flying privileges.

#### 15. UAS ROs should:

- a. Ensure that UAS are operated and maintained in line with the RA 1600 Annex B Categorization Safety Checklist, Manufacturer's User or Operating Manual, RA 1601(4), and LEC.
- b. Attend an MAA UAS RO briefing day<sup>25</sup> prior to commencement of UAS operations if required to do so by the MAA<sup>26</sup>.
- c. Ensure that UAS operations within another sovereign nation's territorial Airspace are conducted either:
  - (1) For operations conducted with the nation's consent, iaw relevant local, national, and international legal requirements, and satisfy diplomatic clearance requirements<sup>27, 28</sup>, or
  - (2) For operations conducted without the nation's consent (ie conducted lawfully under the Law of Armed Conflict, UN Security Council resolution or other legal mandate), outside Controlled Airspace<sup>29</sup>; unless the Controlled Airspace has been created or assigned for the purposes of the Operation.

#### 16. UAS AMs **should**:

- a. Ensure that UAS are operated and maintained in line with the CFAOS (BU) Operations Manual, Manufacturer's User or Operating Manual, RA 1601(4) and CFAOS (BU) Approval.
- b. Attend an MAA UAS AM briefing day<sup>25</sup> prior to commencement of UAS operations if required to do so by the MAA<sup>30</sup>.
- c. Ensure that UAS operations within another sovereign nation's territorial Airspace and with that nation's consent are conducted iaw relevant local,

<sup>&</sup>lt;sup>22</sup> Refer to RA 2335 – Flying Displays, Display Flying, Display Parachuting, Role Demonstrations and Flypasts.

<sup>&</sup>lt;sup>23</sup> Refer to JSP 822: Defence Direction and Guidance for Training and Education.

<sup>&</sup>lt;sup>24</sup> The baseline minimum Joint Medical Employment Standard for Military RPs of Open A1 Category UAS is A-4. There is no baseline minimum Medical Employment Standard for Civilian RPs of Open A1 Category UAS. There are no Initial or Periodic Medical Examination requirements (both Military and Civilian) to operate UAS in the Open Category and S1 sub-category. However, these baseline requirements may be further restricted via the LEC and / or the endorsed RA 1600 Annex B Categorization Safety Checklist.
<sup>25</sup> Refer to RA 1440 – Air Safety Training.

<sup>&</sup>lt;sup>26</sup> This requirement will be reviewed by the MAA during the categorization process; and any requirement / dispensation articulated in the LEC.

<sup>&</sup>lt;sup>27</sup> Refer to AP1158 – Approval and Diplomatic Clearance for Flights to Destinations Abroad.

<sup>&</sup>lt;sup>28</sup> Refer to RA 2305 – Supervision of Flying.

<sup>&</sup>lt;sup>29</sup> Refer to MAA02 – Military Aviation Authority Master Glossary.

<sup>&</sup>lt;sup>30</sup> This requirement will be reviewed by the MAA during the CFAOS (BU) Approval process; and any requirement / dispensation articulated in the Approval.

# Acceptable Means of Compliance 1601(2)

national, and international legal requirements and satisfy diplomatic clearance requirements<sup>27, 28</sup>.

### Guidance Material 1601(2)

## Uncrewed Air System Responsible Officer and Uncrewed Air System Accountable Manager Responsibilities

- 17. UAS ROs and UAS AMs may waive the requirement for an Occurrence Safety Investigation (OSI) down to a Local Occurrence Investigation (LOI) for an Accident where the loss is consistent with the intended concept of operating use of the UAS. Ultimately it is for the UAS RO / UAS AM 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.
- 18. When operating with reduced visibility (eg at Night, sandstorm, etc) over or in proximity to uninvolved people, the UAS RO / UAS AM will need to ensure the ability to operate safely (eg Night Vision Devices, etc).
- 19. The requirement to Authorize operations in the Open A1 sub-category is not mandated; however, UAS ROs / UAS AMs may elect to implement an Authorization process to formalize and account for any tasking conducted<sup>31</sup>.
- 20. When Segregated Airspace is used as a mitigation for mid-air collision. UAS ROs / UAS AMs will detail the procedures to be followed to ensure that the UAS remains within the Segregated Airspace (this might include restrictions on approaching the boundaries of allocated airspace or use of independent flight termination Systems)<sup>32</sup>.
- 21. A UAS RO may be required to employ Open A1 sub-category UAS outside limitations contained within their LEC, when there is an unplanned or unexpected operational imperative to do so<sup>33</sup>. When such situations arise, the UAS RO (or their representative when the UAS RO is not deployed) needs to inform the operational commander<sup>34</sup> of the increased Risk associated with operating outside of the LEC. Although the urgency of a given situation may preclude formal process, a UAS RO needs to demonstrate in retrospect a Risk analysis suitable to the context. There needs to be an assessment of the impact on third-parties (for example crewed aviation or civilian population in the area)<sup>35</sup>. The operational commander needs to agree to accept the Risk and record the decision to do so. Operations outside of the LEC have to cease immediately once the operational requirement has been met.
- 22. UAS SPCs are situation dependant and bound by time (length of Approval period) and airspace in which the operation will be conducted. They are not an alternative to long-term compliance.
- 23. A UAS SPC is comparable to a Specific S2 sub-category and Certified Category Operational Emergency Clearance (OEC) and will only be used for flight under the following circumstances:
  - a. In conditions of actual or potential hostile enemy action, or;
  - b. In other conditions of operational imperative, to include training for actual or planned operations, when enabled by the UAS RO.
- 24. The UAS RO will ensure that a clear explanation of the Risks involved, and related operating instructions to support a UAS SPC are incorporated into the Categorization Submission.

<sup>&</sup>lt;sup>31</sup> If UAS ROs choose to implement the Authorization process, they are advised to use the principles of RA 2306 – Authorization of Flights

<sup>&</sup>lt;sup>32</sup> If operating on a Defence Training Estate it is the RP's Responsibility to check Range Standing Orders for the area to be utilized to ensure compliance with the Airspace Controlling Authority.

<sup>&</sup>lt;sup>33</sup> Where Safety, Environmental Protection or operational imperatives demand, the Regulations may be deviated from provided that a convincing case can be offered in retrospect.

<sup>&</sup>lt;sup>34</sup> The empowered individual at the time with tactical awareness of the current operation or task.

<sup>&</sup>lt;sup>35</sup> Bounded by the Laws of Armed Conflict, superior command direction, Rules of Engagement and RtL to own forces.

### Guidance Material 1601(2)

- 25. The UAS RO will ensure that the authority required for a UAS SPC to be enabled, guidance on the Risk involved, and related operating instructions are specified in appropriate orders.
- 26. UAS ROs and UAS AMs must ensure compliance with UK Civil Aviation Authority Safety Notice Number: SN-2025/004<sup>36</sup>.

## Regulation 1601(3)

### **Remote Pilot Responsibilities**

1601(3) RPs operating UAS in the Open A1 sub-category **shall** be qualified and Competent.

# Acceptable Means of Compliance 1601(3)

### **Remote Pilot Responsibilities**

- 27. RPs should:
  - a. Maintain a level of Competence appropriate to the tasks being conducted.
  - b. Be familiar with all publications, processes and orders required to safely operate the UAS.
  - c. Be fully conversant with either the RA 1600<sup>13</sup> Annex B Categorization Safety Checklist (MOD organizations) or CFAOS (BU) Operations Manual (non-MOD organizations), and local Orders.
  - d. Be responsible for the safe operation of the UAS and not present undue Risk or Hazard to other airspace users or any person, vessel, vehicle or Structure.
  - e. Record UAS operations via:
    - (1) The Centralised Aviation Data Service flight planning service (provided by BAE Systems Information) to help reduce the Risk of collision with other Aircraft and physical Hazards (eg overhead wires), and
    - (2) Notice to Aviation (NOTAMs).
  - f. Adhere to:
    - (1) Orders promulgated by the UAS RO or UAS AM.
    - (2) The UAS Manufacturer's User or Operating Manual.
    - (3) The operating parameters and procedures detailed in:
      - (a) The RA 1600<sup>13</sup> Annex B Categorization Safety Checklist and LEC (MOD organizations) or;
      - (b) The CFAOS (BU) Operations Manual and CFOE (BU) (non-MOD organizations).
  - g. Conduct Flight Planning and Risk Assessments iaw the most restrictive of Orders and adhere to the following operating limitations:
    - (1) Operated within VLOS of the RP.
    - (2) Operated whilst maintaining an ability to determine the UA's orientation<sup>37</sup>.
    - (3) Any conditions stipulated in the LEC (MOD organizations) or CFAOS (BU) Approval (non-MOD organizations).
  - h. Ensure that when it is necessary to hand over control of a UAS, a formal instruction to take control and to accept control is made. In some cases (eg during instruction) it is necessary to take control in the first instance this has to

 $<sup>^{\</sup>rm 36}$  Refer to SN-2025/004 – UAS Software and Firmware Updates.

<sup>&</sup>lt;sup>37</sup> In 'follow-me' mode (the UA will automatically follow the Command Unit), the UA may be flown up to a maximum distance of 50 m from the RP, even if this means that the UA is no longer VLOS.

### Acceptable Means of Compliance 1601(3)

also be formally declared and accepted. Formal statements of 'I have control' and 'You have control' has to be made and acknowledged as appropriate.

28. When a planned UA sortie necessitates the handing over of control of the UA, the associated RPs **should** plan the timings and other requirements in advance of the sortie.

### Guidance Material 1601(3)

### **Remote Pilot Responsibilities**

29. RPs will be appropriately trained and Competent. RPs are required to understand and be fully conversant with all appropriate publications and RA 1601(3), to ensure that their UAS are safe to operate and are being operated safely.

## Regulation 1601(4)

### **Safe Operation and Limitations**

1601(4) Withdrawn – Incorporated into RA 1601(1), (2) and (3).

# Acceptable Means of Compliance 1601(4)

### **Safe Operation and Limitations**

30. Withdrawn – Incorporated into RA 1601(1), (2) and (3).

### Guidance Material 1601(4)

### Safe Operation and Limitations

31. Withdrawn – Incorporated into RA 1601(1), (2) and (3).