

UK Regulation (EU) 2019/947

UAS Regulation

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UAS Regulation

Consolidated Regulation, Acceptable Means of Compliance, Guidance Material and Certification Specifications to UK Regulation (EU) 2019/947 (as amended)

List of Revisions

Published	Reason for publication
December 2022	First issue, incorporating CAA ORS9 Decision No. 16 adopting AMC and GM to UK Regulation (EU) 2019/947

Disclaimer

This version is published by the Civil Aviation Authority in order to provide a consolidated and sequential presentation of current regulations with the related acceptable means of compliance (AMC) and guidance material (GM), as well as certification specifications (CS) as appropriate.

It has been prepared by combining the UK Government published regulations with the adopted AMC, GM and CS, made and issued by CAA under Official Records Series 9 decisions in accordance with Article 76 of the UK Basic Regulation.

There may be a period of time between the regulations and AMC, GM and CS being updated and the amendment to this consolidated version. Users must bear in mind that this is an unofficial version of the legislation, AMC, GM and CS. The authoritative versions (which Courts of Law will refer to) are:

(i) the King's Printer's Edition of Statutory Instruments available at www.legislation.gov.uk; and

(ii) Official Record Series 9 decisions published by the CAA available at <https://publicapps.caa.co.uk/>.

Note from the Editor

The content of this document is arranged as follows: the cover regulation (recitals and articles) of the implementing rule (IR) appear first, then the IR annex points, followed by the related acceptable means of compliance (AMC) and guidance material (GM) paragraph(s).

In case of certification specifications (CS), a CS paragraph is followed by the related AMC paragraph.

All references to EU Regulations referenced in this text are to be read as the UK law bearing that title or number, being EU retained law as retained (and amended by UK domestic law) pursuant to the European Union (Withdrawal) Act 2018

All elements (i.e. cover regulation, IRs, CS, AMC and GM) are colour-coded and can be identified according to the illustration below.

Cover Regulation

Implementing Rule

Certification Specification

Acceptable Means of Compliance

Guidance Material

An ellipsis in square brackets [...] indicates that text has been intentionally left out, such as the result of an earlier amendment to the regulation, AMC, GM or CS.

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List of Abbreviations

This list of abbreviations is included to explain terms referred to throughout this AMC and GM. A comprehensive list of abbreviations, and definitions, can be found in CAP 722D, which draws together a consolidated list of definitions from various regulatory sources, including this list.

List of abbreviations used in this document

Abbreviation	Meaning
AGL	Above Ground Level
AIP	Aeronautical Information Publication
AMC	Acceptable Means of Compliance
ANO 2016	Air Navigation Order 2016
ANSP	Air Navigation Service Provider
AO	Airspace Observer
ATC	Air Traffic Control
ATS	Air Traffic Service
BRLOS	Beyond Radio Line of Sight
BVLOS	Beyond Visual Line of Sight
C2	Command and Control
CU	Command Unit
DAA	Detect and Avoid
ECCAIRS	European Coordination Centre for Accident and Incident Reporting Systems
GM	Guidance Material
GNSS	Global Navigation Satellite System
HMI	Human-Machine Interface
LUC	Light Unmanned Aircraft System Operator Certificate
MOR	Mandatory Occurrence Report
MTOM	Maximum Take-Off Mass
OA	Operational Authorisation

Abbreviation	Meaning
OC	Operating Certificate
OM	Operations Manual
OSC	Operating Safety Case
PDRA	Predefined Risk Assessment
RAE	Recognised Assessment Entity
RF	Radio Frequency
RLOS	Radio Line of Sight
RP	Remote Pilot
RT	Radiotelephony
TAF	Terminal Area Forecast
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System
VLOS	Visual Line of Sight

UK Regulation (EU) 2019/947

UK Regulation (EU) 2019/947 of 24 May 2019, as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018, on the rules and procedures for the operation of unmanned aircraft.

Preamble

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 216/2008 and (EC) No 552/2004 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91, and in particular Article 57 thereof,

Whereas:

(1) Unmanned aircraft, irrespective of their mass, can operate within the same Single European Sky airspace, alongside manned aircraft, whether airplanes or helicopters.

(2) As for manned aviation, a uniform implementation of and compliance with rules and procedures should apply to operators, including remote pilots, of unmanned aircraft and unmanned aircraft system ('UAS'), as well as for the operations of such unmanned aircraft and unmanned aircraft system.

(3) Considering the specific characteristics of UAS operations, they should be as safe as those in manned aviation.

(4) Technologies for unmanned aircraft allow a wide range of possible operations. Requirements related to the airworthiness, the organisations, the persons involved in the operation of UAS and unmanned aircraft operations should be set out in order to ensure safety for people on the ground and other airspace users during the operations of unmanned aircraft.

(5) The rules and procedures applicable to UAS operations should be proportionate to the nature and risk of the operation or activity and adapted to the operational characteristics of the unmanned aircraft concerned and the characteristics of the area of operations, such as the population density, surface characteristics, and the presence of buildings.

(6) The risk level criteria as well as other criteria should be used to establish three categories of operations: the 'open', 'specific' and 'certified' categories.

(7) Proportionate risks mitigation requirements should be applicable to UAS operations according to the level of risk involved, the operational characteristics of the unmanned aircraft concerned and the characteristics of the area of operation.

(8) Operations in the 'open' category, which should cover operations that present the lowest risks, should not require UAS that are subject to standard aeronautical compliance procedures, but should be conducted using the UAS classes that are defined in Commission Delegated Regulation (EU) 2019/945.

(9) Operations in the 'specific' category should cover other types of operations presenting a higher risk and for which a thorough risk assessment should be conducted to indicate which requirements are necessary to keep the operation safe.

(10) A system of declaration by an operator should facilitate the enforcement of this Regulation in case of low risk operations conducted in the 'specific' category for which a standard scenario has been defined with detailed mitigation measures.

(11) Operations in the 'certified' category should, as a principle, be subject to rules on certification of the operator, and the licensing of remote pilots, in addition to the certification of the aircraft pursuant to Delegated Regulation (EU) 2019/945.

(12) Whilst mandatory for the 'certified category', for the 'specific' category a certificate delivered by the competent authorities for the operation of an unmanned aircraft, as well as for the personnel, including remote pilots and organisations involved in those activities, or for the aircraft pursuant to Delegated Regulation (EU) 2019/945 could also be required.

(13) Rules and procedures should be established for the marking and identification of unmanned aircraft and for the registration of operators of unmanned aircraft or certified unmanned aircraft.

(14) Operators of unmanned aircraft should be registered where they operate an unmanned aircraft which, in case of impact, can transfer, to a human, a kinetic energy above 80 Joules or the operation of which presents risks to privacy, protection of personal data, security or the environment.

(15) Studies have demonstrated that unmanned aircraft with a take-off mass of 250 g or more would present risks to security and therefore UAS operators of such unmanned aircraft should be required to register themselves when operating such aircraft in the 'open' category.

(16) Considering the risks to privacy and protection of personal data, operators of unmanned aircraft should be registered if they operate an unmanned aircraft which is equipped with a sensor able to capture personal data. However, this should not be the case when the unmanned aircraft is considered to be a toy within the meaning of Directive 2009/48/EC of the European Parliament and of the Council on the safety of toys.

(17) The information about registration of certified unmanned aircraft and of operators of unmanned aircraft that are subject to a registration requirement should be stored in digital, harmonised, interoperable national registration systems, allowing competent authorities to access and exchange that information. The mechanisms to ensure the interoperability of the national registers in this Regulation should be without prejudice to the rules applicable to the future repository referred to in Article 74 of Regulation (EU) 2018/1139.

(18) In accordance with paragraph 8 of Article 56 of Regulation (EU) 2018/1139, this Regulation is without prejudice to the possibility for Member States to lay down national rules to make subject to certain conditions the operations of unmanned aircraft for reasons falling outside the scope of Regulation (EU) 2018/1139, including public security or protection of privacy and personal data in accordance with the Union law.

(19) National registration systems should comply with the applicable Union and national law on privacy and processing of personal data and the information stored in those registrations systems should be easily accessible.

(20) UAS operators and remote pilots should ensure that they are adequately informed about applicable Union and national rules relating to the intended operations, in particular with regard to safety, privacy, data protection, liability, insurance, security and environmental protection.

(21) Some areas, such as hospitals, gatherings of people, installations and facilities like penal institutions or industrial plants, top-level and higher-level government authorities, nature conservation areas or certain items of transport infrastructure, can be particularly sensitive to some or all types of UAS operations. This should be without prejudice to the

possibility for Member States to lay down national rules to make subject to certain conditions the operations of unmanned aircraft for reasons falling outside the scope of this Regulation, including environmental protection, public security or protection of privacy and personal data in accordance with the Union law.

(22) Unmanned aircraft noise and emissions should be minimised as far as possible taking into account the operating conditions and various specific characteristics of individual Member States, such as the population density, where noise and emissions are of concern. In order to facilitate the societal acceptance of UAS operations, Delegated Regulation (EU) 2019/945 includes maximum level of noise for unmanned aircraft operated close to people in the ‘open’ category. In the ‘specific’ category there is a requirement for the operator to develop guidelines for its remote pilots so that all operations are flown in a manner that minimises nuisances to people and animals.

(23) Current national certificates should be adapted to certificates complying with the requirements of this Regulation.

(24) In order to ensure the proper implementation of this Regulation, appropriate transitional measures should be established. In particular, Member States and stakeholders should have sufficient time to adapt their procedures to the new regulatory framework before this Regulation applies.

(25) The new regulatory framework for UAS operations should be without prejudice to the applicable environmental and nature protection obligations otherwise stemming from national or Union law.

(26) While the ‘U-space’ system including the infrastructure, services and procedures to guarantee safe UAS operations and supporting their integration into the aviation system is in development, this Regulation should already include requirements for the implementation of three foundations of the U-space system, namely registration, geo-awareness and remote identification, which will need to be further completed.

(27) Since model aircraft are considered as UAS and given the good safety level demonstrated by model aircraft operations in clubs and associations, there should be a seamless transition from the different national systems to the new Union regulatory framework, so that model aircraft clubs and associations can continue to operate as they do today, as well as taking into account existing best practices in the Member States.

(28) In addition, considering the good level of safety achieved by aircraft of class C4 as provided in Annex to this Regulation, low risk operations of such aircraft should be allowed to be conducted in the ‘open’ category. Such aircraft, often used by model aircraft operators, are comparatively simpler than other classes of unmanned aircraft and should therefore not be subject to disproportionate technical requirements.

(29) The measures provided for in this Regulation are in accordance with the opinion of the committee established in accordance with Article 127 of Regulation (EU) 2018/1139,

HAS ADOPTED THIS REGULATION:

art. 1 Subject matter

This Regulation lays down detailed provisions for the operation of unmanned aircraft systems as well as for personnel, including remote pilots and organisations involved in those operations.

art. 2 Definitions

For the purposes of this Regulation, the definitions in Regulation (EU) 2018/1139 apply.

The following definitions also apply:

(1) ‘unmanned aircraft system’ (‘UAS’) means an unmanned aircraft and the equipment to control it remotely;

(2) ‘unmanned aircraft system operator’ (‘UAS operator’) means any legal or natural person operating or intending to operate one or more UAS;

(3) ‘assemblies of people’ means gatherings where persons are unable to move away due to the density of the people present;

(4) ‘UAS geographical zone’ means a portion of airspace established by the Secretary of State that facilitates, restricts or excludes UAS operations in order to address risks pertaining to safety, privacy, protection of personal data, security or the environment, arising from UAS operations;

(5) ‘robustness’ means the property of mitigation measures resulting from combining the safety gain provided by the mitigation measures and the level of assurance and integrity that the safety gain has been achieved;

[...]

(7) ‘visual line of sight operation’ (‘VLOS’) means a type of UAS operation in which, the remote pilot is able to maintain continuous unaided visual contact with the unmanned aircraft, allowing the remote pilot to control the flight path of the unmanned aircraft in relation to other aircraft, people and obstacles for the purpose of avoiding collisions;

(8) ‘beyond visual line of sight operation’ (‘BVLOS’) means a type of UAS operation which is not conducted in VLOS;

(9) 'light UAS operator certificate' ('LUC') means a certificate issued to a UAS operator by the CAA as set out in part C of the Annex;

(10) 'model aircraft club or association' means an organisation legally established in the United Kingdom for the purpose of conducting leisure flights, air displays, sporting activities or competition activities using UAS;

(11) 'dangerous goods' means articles or substances, which are capable of posing a hazard to health, safety, property or the environment in the case of an incident or accident, that the unmanned aircraft is carrying as its payload, including in particular:

- (a) explosives (mass explosion hazard, blast projection hazard, minor blast hazard, major fire hazard, blasting agents, extremely insensitive explosives);
- (b) gases (flammable gas, non-flammable gas, poisonous gas, oxygen, inhalation hazard);
- (c) flammable liquids (flammable liquids; combustible, fuel oil, gasoline);
- (d) flammable solids (flammable solids, spontaneously combustible solids, dangerous when wet);
- (e) oxidising agents and organic peroxides;
- (f) toxic and infectious substances (poison, biohazard);
- (g) radioactive substances;
- (h) corrosive substances;

(12) 'payload' means instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is installed in or attached to the aircraft and is not used or intended to be used in operating or controlling an aircraft in flight, and is not part of an airframe, engine, or propeller;

(13) 'direct remote identification' means a system that ensures the local broadcast of information about a unmanned aircraft in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft;

(14) 'follow-me mode' means a mode of operation of a UAS where the unmanned aircraft constantly follows the remote pilot within a predetermined radius;

(15) 'geo-awareness' means a function that, based on the data provided by the CAA, detects a potential breach of airspace limitations and alerts the remote pilots so that they can take immediate and effective action to prevent that breach;

(16) 'privately built UAS' means a UAS assembled or manufactured for the builder's own use, not including UAS assembled from sets of parts placed on the market as a single ready-to-assemble kit;

(17) 'autonomous operation' means an operation during which an unmanned aircraft operates without the remote pilot being able to intervene;

(18) 'uninvolved persons' means persons who are not participating in the UAS operation or who are not aware of the instructions and safety precautions given by the UAS operator;

(19) 'making available on the market' means any supply of a product for distribution, consumption or use on the [...] market in the course of a commercial activity, whether in exchange of payment or free of charge;

[...]

(21) 'controlled ground area' means the ground area where the UAS is operated and within which the UAS operator can ensure that only involved persons are present;

(22) 'maximum take-off mass' ('MTOM') means the maximum Unmanned Aircraft mass, including payload and fuel, as defined by the manufacturer or the builder, at which the Unmanned Aircraft can be operated;

(23) 'unmanned sailplane' means an unmanned aircraft that is supported in flight by the dynamic reaction of the air against its fixed lifting surfaces, the free flight of which does not depend on an engine. It may be equipped with an engine to be used in case of emergency;

(24) 'unmanned aircraft observer' means a person, positioned alongside the remote pilot, who, by unaided visual observation of the unmanned aircraft, assists the remote pilot in keeping the unmanned aircraft in VLOS and safely conducting the flight;

(25) 'airspace observer' means a person who assists the remote pilot by performing unaided visual scanning of the airspace in which the unmanned aircraft is operating for any potential hazard in the air;

(26) 'command unit' ('CU') means the equipment or system of equipment to control unmanned aircraft remotely as defined in point 32 of Article 3 of Regulation (EU) 2018/1139 which supports the control or the monitoring of the unmanned aircraft during any phase of flight, with the exception of any infrastructure supporting the command and control (C2) link service;

(27) 'C2 link service' means a communication service supplied by a third party, providing command and control between the unmanned aircraft and the CU;

[...]

(34) 'night' means the hours between the end of evening civil twilight and the beginning of morning civil twilight as defined in Implementing Regulation (EU) No 923/2012;

(35) 'CAA' means the Civil Aviation Authority.

GM1 Article 2 Definitions

CAA ORS9 Decision No. 16

This Article defines a number of terms that are used within UK Regulation (EU) 2019/947.

The definitions appear in the order that they appear in the regulation, rather than being listed alphabetically.

Definitions that are published in:

- Regulation (EU) 2018/1139 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 (Basic Regulation), hereafter referred to as UK Regulation (EU) 2018/1139; or
- Regulation (EU) 2019/945 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 (UAS Delegated Regulation), hereafter referred to as UK Regulation (EU) 2019/945

are not replicated in this Article.

GM1 Article 2(3) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF 'ASSEMBLIES OF PEOPLE'

Assemblies of people have been defined by the ability of people to move around freely, and therefore move out of the way of an out-of-control UA.

There are no strict numbers defined above which a group of people would turn into an assembly of people as different situations would result in different conclusions. An assembly must be evaluated qualitatively, based on the ability of people within that group to move away from any risk posed by the UAS operation.

Qualitative examples of assemblies of people are:

- a) sport, cultural, religious or political events;
- b) music festivals and concerts;

- c) marches and rallies;
- d) parties, carnivals and fêtes.

GM1 Article 2(4) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF ‘UAS GEOGRAPHICAL ZONE’

The term UAS Geographical Zone does not include UAS airspace restrictions established under other regulations, such as the Air Navigation Order (ANO). A UAS Geographical Zone is an airspace restriction, established under Article 15.

AMC1 Article 2(7) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF ‘VISUAL LINE OF SIGHT OPERATION’- ‘UNAIDED VISUAL CONTACT’

‘Unaided’, in this context means without the use of any other equipment, such as binoculars, telescopes, cameras or any other such equipment.

This does not include corrective lenses, which may be worn.

Note:

Provision is made in Article 4(1)(d), and UAS.OPEN.060(4), for an UA to be flown in the Open category, beyond the visual line of sight of the Remote Pilot (RP) (due to the RP using ‘follow-me’ mode, or when making use of an UA Observer and FPV equipment).

Further guidance material on the use of FPV equipment can be found in GM1 UAS.OPEN.060(4).

DEFINITION OF ‘VISUAL LINE OF SIGHT OPERATION’- ‘CONTROL THE VISUAL FLIGHT PATH’

In order to control the visual flight path of the UA, it must be kept within a suitable distance of the RP such that they can monitor the aircraft’s position, orientation and the surrounding airspace at all times.

GM1 Article 2(7) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF ‘VISUAL LINE OF SIGHT OPERATION’- ‘CONTROL THE VISUAL FLIGHT PATH’

Being able to control the visual flight path of the UA means keeping it within a suitable distance of the RP, such that the RP can maintain control of the flight path of the UA, to avoid a collision with other aircraft, people, obstacles or the ground. This distance depends on a number of factors, including:

- The eyesight of the RP;
- The size of the UA;
- The visual conspicuity of the UA (colour, and contrast of the UA against the backdrop from the viewpoint of the RP);
- Any navigation lighting on board the UA;
- The weather conditions (fog, sun-glare etc);
- Terrain and any other obstacles that may obscure the view of the UA from the RP;
- Whether the operation is during the hours of daylight, or night. Although there are not specific limitations on operating at night, the visual conspicuity of the UA and ambient lighting, may affect the distance to which the UA may be flown from the RP.

This distance will likely vary on each flight depending on these factors, and the RP should be able to identify at what point VLOS can no longer be maintained.

Just because the UA is still visible (for example, a dot in the sky), this does not mean that it meets the definition of VLOS. A RP must be able to visually determine the aircraft's orientation at all times. While this may potentially be aided by navigation lights, the sole use of telemetry to indicate UA orientation to the RP is not considered as acceptable.

GM1 Article 2(16) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF 'PRIVATELY BUILT'

Any UA which is designed and built by an individual or organisation for their own use, and which is not class marked in accordance with UK Regulation (EU) 2019/945, is defined as privately built.

GM1 Article 2(17) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF 'AUTONOMOUS OPERATION'

The implementation of a pre-programmed emergency procedure; for example, the automatic RTH function due to the loss of C2, does not constitute an autonomous operation.

An autonomous operation should not be confused with an automatic or automated operation, which refers to an operation following pre-programmed instructions that the UAS executes whilst the RP is still able to intervene in the flight.

GM1 Article 2(18) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF ‘UNINVOLVED PERSONS’

The primary focus for UAS operations is the protection of people that are not a part of the operation (i.e., third parties). Within the UAS regulations, they are referred to as ‘uninvolved persons’.

The regulation sets out that ‘uninvolved persons’ means an individual, or group of individuals, who either:

- are not, in any way, participating in the UAS Operation; or
- have not received clear instructions and safety precautions from the RP, the UAS Operator or a person nominated by the UAS Operator, to follow throughout the operation and in the event the UAS exhibits any unplanned behaviour.

A person is considered to be ‘participating’ in the operation, if they are the UAS Operator, or acting on behalf of the UAS Operator, for example, the RP, or another member of the flight or supporting ground crew.

GM1 Article 2(22) Definitions

CAA ORS9 Decision No. 16

DEFINITION OF ‘MAXIMUM TAKE-OFF MASS (MTOM)’

The MTOM includes all the elements on board the UA, including the motors, propellers, electronic equipment and antennas, batteries /fuel, oil and all other fluids and the payload, including sensors and their ancillary equipment.

Privately built UA, and some off the shelf UA do not have a MTOM defined. In this case, the mass of the aircraft at the time of take-off should be used instead, when interpreting the term ‘MTOM’ within the regulation.

Although the UAS Regulations refer to ‘maximum take-off mass’ (MTOM) throughout, this term creates some confusion when referring to home-built or other non-class marked UA where an MTOM has not been defined by the manufacturer.

Take-off Mass (Article 22)

The term ‘take-off mass’ is also used when referring to non-class marked aircraft, but only within one article (Article 22 – transitional arrangements) and the term is not specifically defined.

For these aircraft, any reference to ‘take-off mass should be taken to mean the mass of the UA at the point of take-off for that particular flight.

art. 3 Categories of UAS operations

UAS operations shall be performed in the ‘open’, ‘specific’ or ‘certified’ category defined respectively in Articles 4, 5 and 6, subject to the following conditions:

- (a) UAS operations in the ‘open’ category shall not be subject to any prior operational authorisation [...] before the operation takes place;
- (b) UAS operations in the ‘specific’ category shall require an operational authorisation issued by the CAA pursuant to Article 12 or an authorisation received in accordance with Article 16 [...];
- (c) UAS operations in the ‘certified’ category shall require the certification of the UAS pursuant to Delegated Regulation (EU) 2019/945 and the certification of the operator and, where applicable, the licensing of the remote pilot.

GM1 Article 3 Categories of UAS Operations

CAA ORS9 Decision No. 16

BOUNDARIES BETWEEN THE CATEGORIES OF UAS OPERATIONS

a) Boundary between Open and Specific

A UAS operation is not in the Open category when at least one of the general criteria listed in Article 4 of the UAS Regulation is not met (e.g., when operating beyond visual line of sight (BVLOS)) or when the detailed criteria for a subcategory are not met (e.g. operating a 10 kg UA close to people when subcategory A2 is limited to 4 kg UA).

During the course of a Specific category flight, the UA may be flown in such a manner that it enters the Open category. The RP may not actively decide which category they are flying in, this is purely a function of the operational, and technical characteristics of the operation.

The UAS Operator and RP must comply with the relevant responsibilities throughout the flight at all times. The RP and UAS Operator should comply with the Specific Category requirements, as detailed within the Operational Authorisation, for their operation, throughout the operation.

For example, the requirement to maintain a flying log-book is a requirement of an OA when operating within the Specific category. If a portion of the flight takes place within the Open category, the Remote Pilot is not expected to only log the portion of the flight in the Specific category, they should log the entire flight.

b) Boundary between Specific and Certified

Article 6 of the UK Regulation (EU) 2019/947 and Article 40 of UK Regulation (EU) 2019/945 define the boundary between the Specific and the Certified category. The first article defines the boundary from an operational perspective, while the second one defines the technical characteristics of the UA; they should be read together.

UAS operations must be carried out within the Certified category when they:

- are conducted over assemblies of people with a UA that has characteristic dimensions of 3m or more; or
- involve the transport of people; or
- involve the carriage of dangerous goods that may result in a high risk for third parties in the event of an accident.

In addition, a UAS operation is deemed within the Certified category when, based on the safety risk assessment as detailed in Article 11, the competent authority considers that the safety risk cannot be mitigated adequately without it being operated within the Certified category.

art. 4 'Open' category of UAS operations

1. Operations shall be classified as UAS operations in the 'open' category only where the following requirements are met:

- (a) the UAS belongs to one of the classes set out in Delegated Regulation (EU) 2019/945 or is privately built or meets the conditions defined in Article 20;
- (b) the unmanned aircraft has a maximum take-off mass of less than 25 kg;
- (c) the remote pilot ensures that the unmanned aircraft is kept at a safe distance from people and that it is not flown over assemblies of people;
- (d) the remote pilot keeps the unmanned aircraft in VLOS at all times except when flying in follow-me mode or when using an unmanned aircraft observer as specified in Part A of the Annex;
- (e) during flight, the unmanned aircraft is maintained within 120 metres from the closest point of the surface of the earth, except when overflying an obstacle, as specified in Part A of the Annex

(f) during flight, the unmanned aircraft does not carry dangerous goods and does not drop any material;

2. UAS operations in the 'open' category shall be divided in three sub-categories in accordance with the requirements set out in Part A of the Annex.

GM1 Article 4(1)(d) Open Category UAS Operations

CAA ORS9 Decision No. 16

VLOS

In general, the UA must be kept within VLOS of the RP at all times, however provision is made in Article 4, which permits the UA to not be within VLOS of the RP when making use of a UA Observer.

A UA Observer may be used within the Open category, to assist the RP with keeping the UA in VLOS. Further information on the UA Observer may be found in section GM1 UAS.OPEN.060(4).

GM1 Article 4(1)(e) Open Category UAS Operations

CAA ORS9 Decision No. 16

MAXIMUM HEIGHT

Where maximum vertical height is described within the regulation as 120m this may also be approximated to 400ft, for the purpose of this document.

Height, in the context of this document, for most UAS operations refers to the geometric height of the UA above the ground.

In some more complex cases, barometric altitude measurement may be used. In this case, it is vital to understand the differences between geometric and barometric measurements.

AMC1 Article 4(1)(f) Open Category Operations

CAA ORS9 Decision No. 16

DROPPING OF MATERIAL

For the purpose of this article, the term 'dropping of material' shall be taken to also include 'projecting' and 'lowering' of articles, whilst in flight.

art. 5 'Specific' category of UAS operations

1. Where one of the requirements laid down in Article 4 or in Part A of the Annex is not met, a UAS operator shall be required to obtain an operational authorisation pursuant to Article 12 from the CAA .
2. When applying to the CAA for an operational authorisation pursuant Article 12, the operator shall perform a risk assessment in accordance with Article 11 and submit it together with the application, including adequate mitigating measures.
3. In accordance with point UAS.SPEC.040 laid down in Part B of the Annex, the CAA shall issue an operational authorisation, if it considers that the operational risks are adequately mitigated in accordance with Article 12.
4. The CAA shall specify whether the operational authorisation concerns:
 - (a) the approval of a single operation or a number of operations specified in time or location(s) or both. The operational authorisation shall include the associated precise list of mitigating measures;
 - (b) the approval of an LUC, in accordance with part C of the Annex.
5. Where the UAS operator submits a declaration to the competent authority of the Member State of registration in accordance with point UAS.SPEC.020 laid down in Part B of the Annex for an operation complying with a standard scenario set out in Appendix 1 to that Annex, the UAS operator shall not be required to obtain an operational authorisation in accordance with paragraphs 1 to 4 of this Article and the procedure laid down in paragraph 5 of Article 12 shall apply. The UAS operator shall use the declaration referred to in Appendix 2 to that Annex.
6. An operational authorisation [...] shall not be required for:
 - (a) UAS operators holding an LUC with appropriate privileges in accordance with point UAS.LUC.060 of the Annex;
 - (b) operations conducted in the framework of model aircraft clubs and associations that have received an authorisation in accordance with Article 16.

art. 6 'Certified' category of UAS operations

1. Operations shall be classified as UAS operations in the 'certified' category only where the following requirements are met:
 - (a) the UAS is certified pursuant to points (a), (b) and (c) of paragraph 1 of Article 40 of Delegated Regulation (EU) 2019/945; and
 - (b) the operation is conducted in any of the following conditions:

- i. over assemblies of people;
- ii. involves the transport of people;
- iii. involves the carriage of dangerous goods, that may result in high risk for third parties in case of accident.

2. In addition, UAS operations shall be classified as UAS operations in the 'certified' category where the CAA, based on the risk assessment provided for in Article 11, considers that the risk of the operation cannot be adequately mitigated without the certification of the UAS and of the UAS operator and, where applicable, without the licensing of the remote pilot.

GM1 Article 6 Certified Category of UAS Operations

CAA ORS9 Decision No. 16

UAS OPERATIONS IN THE CERTIFIED CATEGORY

Article 6 should be read alongside UK Regulation (EU) 2019/945 Article 40.

Article 6 addresses UAS operations and UK Regulation (EU) 2019/945 Article 40 addresses the UAS itself. This separation was necessary to comply with UK Regulation (EU) 2018/1138 (the Basic Regulation), which sets out that the requirements for UAS operations and registration are in UK Regulation (EU) 2019/947, and that the technical requirements for UAS are in UK Regulation (EU) 2019/945. The reading of the two articles results in the following:

- a) the transport of people is always in the Certified category. The UAS must be certified in accordance with Article 40 and the transport of people is one of the UAS operations identified in Article 6 as being in the Certified category;
- b) flying over assemblies of people with a UA that has a characteristic dimension of less than 3m may be carried out in the Specific category unless one of the conditions outlined within 'GM1 Article 3 Categories of UAS operations (b)' is met; and
- c) the transport of dangerous goods is in the Certified category if, following an accident, it would pose a high risk to third parties.

In addition, a UAS operation is deemed within the Certified category when, based on the safety risk assessment as detailed in Article 11, the competent authority considers that the safety risk cannot be mitigated adequately without it being operated within the Certified category.

AMC1 Article 6(1)(b)(iii) Certified Category of Operations

CAA ORS9 Decision No. 16

CARRIAGE OF DANGEROUS GOODS

The carriage of dangerous goods must be carried out within the Certified category if there is a high safety risk to third parties following an accident.

Note:

The operation may be carried out within the Specific category if this safety risk is mitigated sufficiently. This may be achieved with the use of a crash protected container or by adjusting the scope/location/nature of the operation, or by a combination of both.

art. 7 Rules and procedures for the operation of UAS

1. UAS operations in the 'open' category shall comply with the operational limitations set out in Part A of the Annex.
2. UAS operations in the 'specific' category shall comply with the operational limitations set out in the operational authorisation as referred to in Article 12 or the authorisation as referred to in Article 16 [...]. This paragraph shall not apply where the UAS operator holds an LUC with appropriate privileges. UAS operations in the 'specific' category shall be subject to the applicable operational requirements laid down in Commission Implementing Regulation (EU) No 923/2012.
3. UAS operations in the 'certified' category shall be subject to the applicable operational requirements laid down in Implementing Regulation (EU) No 923/2012 and Commission Regulations (EU) No 965/2012 and (EU) No 1332/2011.

AMC1 Article 7(2) Rules and Procedures for the Operation of UAS

CAA ORS9 Decision No. 16

STANDARDISED EUROPEAN RULES OF THE AIR

Article 7(2), states that "UAS operations in the 'Specific' category shall be subject to the applicable operational requirements laid down in UK (EU) Commission Implementing Regulation No 923/2012".

This text refers to the Standardised European Rules of the Air (SERA).

Not all requirements within SERA are relevant to UAS in the Specific category. UAS Operators should consider the requirements listed below and their relevance to the intended operation, and incorporate the requirements of those within their Operations

Manual (OM), as procedures, as necessary. The inclusion of such procedures within the OM, as with any other procedures, will make them mandatory for the UAS Operator to follow.

The CAA may apply any additional applicable requirements of Regulation 923/2012 to operations via Operational Authorisations (OA) as conditions and limitations, depending on the operation and the result of the risk assessment process.

The table below sets out some applicable operational requirements from SERA and their applicability to UAS Operations in the Specific category.

Further information on the SERA requirements listed below can be found within Regulation (EU) 923/2012 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 hereafter referred to as UK Regulation (EU) 923/2012, and its associated AMC/GM.

Item	Description	Applicability
SERA.2020 - Psychoactive Substances	Requirement not to undertake a function critical to safety of aviation when under the influence of any psychoactive substance, which impairs human performance, and not to engage in any problematic use of such substances.	All Specific category UAS Operations
SERA.3101 - Negligence	Requirement to not operate an aircraft in a negligent or reckless manner, so as to endanger life or property.	All Specific category UAS Operations.
SERA.3145 – Prohibited and Restricted Areas	Requirement not to fly within a Prohibited or Restricted area, unless in accordance with the conditions of the area.	All Specific category UAS Operations.
SERA.3205 - Proximity	Requirement to not operate an aircraft in such proximity to other aircraft as to create a collision hazard.	All Specific category UAS Operations.
SERA.3135 - Formation Flights	Certain requirements to follow when flying within a formation, and to not fly in a formation unless pre-arranged with each pilot.	As required- for example, certain BVLOS operations with multiple aircraft.
SERA.3201 - Collision Avoidance	Explanation that nothing within SERA relieves the pilot from the responsibility to take collision avoidance action.	As required- for example, certain BVLOS operations.
SERA.3210 -	Requirements on the right of way between certain	As required- for

Item	Description	Applicability
Right of way	types of aircraft, and manoeuvres that must be taken to avoid collisions.	example, certain BVLOS operations.
SERA.3215 - Lighting	Certain requirements for aircraft lighting.	As required- for example, certain BVLOS operations.
SERA.3401 - Time	Certain requirements on the use of coordinated universal time (UTC).	As required- for example, certain BVLOS operations.
SERA Section 4- Flight Plans	Certain requirements on the use of flight plans.	As required- for example, certain BVLOS operations.
SERA.6005 (b) – Operations within a TMZ	Requirement to carry and operate a transponder when operating within a Transponder Mandatory Zone.	As required- for example, certain BVLOS operations.

art. 8 Rules and procedures for the competency of remote pilots

1. Remote pilots operating UAS in the ‘open’ category shall comply with the competency requirements set in Part A of the Annex.
2. Remote pilots operating UAS in the ‘specific’ category shall comply with the competency requirements set out in the operational authorisation by the CAA[...] as defined by the LUC and shall have at least the following competencies:
 - (a) ability to apply operational procedures (normal, contingency and emergency procedures, flight planning, pre-flight and post-flight inspections);
 - (b) ability to manage aeronautical communication;
 - (c) manage the unmanned aircraft flight path and automation;
 - (d) leadership, teamwork and self-management;
 - (e) problem solving and decision-making;
 - (f) situational awareness;
 - (g) workload management;
 - (h) coordination or handover, as applicable.

3. Remote pilots operating in the framework of model aircraft clubs or associations shall comply with the minimum competency requirements defined in the authorisation granted in accordance with Article 16.

AMC1 Article 8 Remote Pilot Competence

CAA ORS9 Decision No. 16

SPECIFIC CATEGORY REMOTE PILOT COMPETENCE

The necessary level of pilot competence will be identified by the UAS Operator, as set out under Article 11(5)(f), in accordance with UAS.SPEC.050(1)(d)(i).

In order to demonstrate pilot competence for Specific category VLOS operations a RP must hold a UK General VLOS Certificate (GVC) GVC, as a minimum.

The UAS Operator may identify further qualifications that the RP must have, within the risk assessment process.

'NQE full recommendations' are a previous version of the GVC course, and although no longer issued, some RPs may still hold these qualifications. These qualifications have been superseded by the GVC, and as such the CAA will no longer recognise them after 01 January 2024; until this date, the CAA will recognise their use for operations under an existing OA. Any UAS Operator applying for a new OA, will need to select an alternative pilot competence qualification, such as the GVC.

UAS Operators conducting more complex operations, who's RPs may hold other qualifications, must ensure that their RPs have a full understanding of the applicable UAS regulations. This may be achieved by either ensuring they hold a valid GVC, or by carrying out internal training. UAS Operators who chose to carry out internal training, must ensure the theoretical knowledge syllabus described later in this AMC, is followed.

Note:

Other qualifications with the same name (i.e. GVC) issued outside the UK, are not automatically recognised by the CAA. Any such qualifications that are recognised as equivalent to the UK GVC, will be promulgated separately to this document.

GENERAL VLOS CERTIFICATE

In order to qualify for the issue of a GVC, a RP must:

- Have completed the Open category online training material (AMC1UAS.OPEN.20(4)(b) & UASOPEN.040(3) & UASOPEN.0302(a); and
- Complete the Open category online assessment, and have obtained a Flyer ID; and

- Complete the necessary theoretical knowledge training; and
- Complete the necessary practical training in order to pass the practical flight test; and
- Have an OM, that can be provided for the practical flight test; and
- Complete the theoretical knowledge examination; and
- Complete the practical flying test

The theoretical knowledge examination and the practical flying test shall take place at a Recognised Assessment Entity (RAE).

On successful completion of the above elements, the RAE may issue the candidate with a General VLOS Certificate.

The format of this certificate, shall follow this template:



Note:

The CAA will provide RAEs with full versions of these templates for use.

THEORETICAL KNOWLEDGE EXAMINATION

The examination will comprise a minimum of 40 questions, which cover the syllabus sufficiently, as set out in the syllabus below.

The questions may be multiple choice, with a choice of no fewer than 4 answer options. Questions may also be long answer questions.

The examination may be electronic, or paper based, but must be closed book format (i.e. without reference to external material). The pass mark shall be no less than 75%. The duration of the exam is to be agreed between the RAE and the CAA.

If a candidate is re-sitting the examination, they shall answer a different set of questions.

THEORETICAL KNOWLEDGE SYLLABUS

Subject	Areas to be covered
Air Law / Responsibilities	<p>Terminology</p> <p>The UAS Regulation Package</p> <ul style="list-style-type: none"> Overall principles UAS operating categories Specific Requirements The Air Navigation Order <p>General overview</p> <ul style="list-style-type: none"> Responsibilities – UAS Operator, RP Avoidance of collisions ('See and Avoid', i.e. Visual Line of Sight principles) <p>Other Regulation</p> <ul style="list-style-type: none"> Incident and accident reporting and investigation: Mandatory Occurrence Reporting (MOR) & European Coordination Centre for Accident and Incident Reporting Systems (ECCAIRS) Portal, Air Accident Investigation Branch (AAIB) notification Airprox reporting Investigation handling/ assistance <p>Insurance</p> <ul style="list-style-type: none"> aircraft and third-party liability (EU785/ 2004 compliance)
UAS Airspace Operating Principles	<p>Airspace overview</p> <ul style="list-style-type: none"> Flight Information Regions (FIR) Airspace classifications Differing considerations, controlled airspace Flight Restriction Zone (FRZ), Aerodrome Traffic Zone (ATZ), gliding/ parachuting/ microlight sites etc Danger Areas, Prohibited Areas, Restricted Areas Temporary Airspace Reservations <p>Obtaining information/approvals</p> <ul style="list-style-type: none"> UK Aeronautical Information Publication (AIP)

Subject	Areas to be covered
	<p>Aeronautical Information Circulars (AICs)</p> <p>Notices to Airmen (NOTAMs)</p> <p>Permission and ENSF process</p> <p>Whom to contact</p> <p>UAS Operations</p> <p>Visual Line of Sight (VLOS)</p>
<p>Airmanship and Aviation Safety</p>	<p>Good airmanship principles</p> <p>Aircraft safe to operate</p> <p>RP fit to operate aircraft</p> <p>Proper planning and preparation</p> <p>Hazard identification</p> <p>Flight Safety</p> <p>Avoiding collisions</p> <p>‘See and Avoid’ with respect to manned aircraft and other air users</p> <p>Perception</p> <p>Distance, height and speed awareness</p> <p>Planning, go/ no go decisions</p> <p>Overflight of people, crowds and gatherings</p> <p>Congested area operations</p> <p>Flights at night</p> <p>Operational mitigations for ground and air risks</p> <p>RP logbooks and Technical log books</p>
<p>Human Performance Limitations</p>	<p>Medical fitness</p> <p>Crew health precautions</p> <p>Alcohol, drugs, medication</p> <p>Medical restrictions</p> <p>Fatigue</p>

Subject	Areas to be covered
	<p>Flight duration/ flight workload</p> <p>Time of flight</p> <p>Working hours</p> <p>Effects of weather</p> <p>Outdoor, remote and lone working</p> <p>Crew/colleague management</p> <p>Depth perception</p> <p>Blind spot</p> <p>Scan technique</p> <p>Decision process</p> <p>Public/ third parties</p> <p>Stress/ pressure from ‘customers’</p>
<p>Meteorology</p>	<p>Introduction to obtaining and interpreting weather information</p> <p>Weather reporting resources</p> <p>Reports, forecasts and meteorological conventions appropriate for typical UAS flight operations</p> <p>Local weather assessments</p> <p>Effects of weather on the UA</p> <p>Wind – urban effects, gradients, masking, turbulence</p> <p>Temperature – precipitation, icing, turbulence</p> <p>Visibility factors</p> <p>Clouds – Cumulonimbus (CB) hazards (including lightning)</p>
<p>Navigation / Charts</p>	<p>Basic map reading (OS) – 1:50,000 and 1:25,000</p> <p>Aviation charts – 1:500,000 and 1:250,000</p> <p>Interpretation</p> <p>Specialised charts (e.g. London helicopter routes)</p> <p>Understanding of basic terms</p> <p>Aeronautical units of measurement (Ft, km, Nm)</p>

Subject	Areas to be covered
	Elevation, Altitude and height measurement GPS principles How it works and limitations
UAS General Knowledge	Basic principles of flight Fixed-wing, rotary wing and multi-rotor Command and Control (C2) Datalink frequencies/ spectrum Manual intervention/ override Flight control modes Limitations Operational envelope Stability Mass and MTOM Centre of gravity Effect of payload on flight Operating guides Flight procedures/ basic drills Emergencies ¹ Maintenance of system Scheduled maintenance and repairs Security of aircraft/ attached items Manufacturer's recommendations Assessment - 'safe to be flown?' Technical mitigations For ground and air risks
Operator Responsibilities	UAS Operator Responsibilities, as set out in the regulation and AMC/GM

¹See "GM1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot" on page 94

Subject	Areas to be covered
	Development of operational procedures Development of an OM
Operating Procedures	Pre-planning Consideration of intended task Site assessment Establishing a safe operating environment Hazard identification & risk assessment Mitigating measures Site owner’s permission Situational awareness Location Airspace Aerodromes Obstructions Public right of way Communications Operating alone Liaison with Air Traffic Control Operating with other air users Pre-flight Pre-flight checklist Security of attachments/ payload Airworthiness Failsafe check Battery condition Weather In Flight In-flight monitoring

Subject	Areas to be covered
	<p>Fuel/ battery status</p> <p>Visual Line of Sight</p> <p>Emergency actions: (Emergency Response Plan), loss of control/ flyaway, malfunctions¹</p> <p>Deconfliction/ separation</p> <p>Designated landing area not clear</p> <p>Post-flight</p> <p>Post-flight actions - debrief/ logging of flight details</p> <p>Post-flight maintenance</p> <p>Security</p> <p>Public access to aircraft and control</p> <p>Other security considerations</p>

PRACTICAL FLYING TEST

The practical test element assesses whether the RP can safely undertake a range of VLOS operations whilst adhering to a set of procedures in the OM. The test will be conducted against the OM produced by the candidate. This can either be developed by the candidate themselves, or by the UAS Operator (if separate to the RP).

The RAE staff responsible for the assessment tasks will have adequate knowledge and competence of the operations of the type of UA that is to be flown during the test. The person responsible for conducting the practical flight assessment may also offer suitable training to the student prior to conducting the assessment.

The practical flying test will be conducted outdoors and at a location that is suitable for conducting the test (i.e. of suitable dimensions, volume and airspace class).

The RAE will include practical demonstrations of manoeuvres, relevant to the candidate's OM, that display the RP's ability to safely position and control the aircraft. Manoeuvres may be demonstrated individually, or as part of a more generalised operating scenario; they must be clearly described and illustrated within the RAE's application documentation and will be subject to assessment for suitability during the approval process.

¹See "GM1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot" on page 94

The RAE will define the pass/fail criteria for the practical flight test assessment. As a guide, the criteria should consist of a combination of:

- ‘Minor’ errors – cumulative up to a maximum of 7, at which point the test is failed;
- ‘Major’ errors – cumulative up to a maximum of 3, at which point the test is failed;
- ‘Safety’ errors – any single safety error will result in an automatic failure.

The practical test must be summarised in a written report that details the test scenario that was used, the manoeuvres undertaken and an assessment of the examinee’s performance for each ‘section’ of the test, along with guidance on areas for improvement where applicable. Reports must also contain details of the examinee, the assessor, any additional personnel involved and the date and location of the test.

A record of each practical assessment must be retained by the RAE for a minimum of 5 years.

PRACTICAL FLYING TEST ASSESSMENT CRITERIA

Subject	Areas to be covered
Pre-Flight Actions	<p>Mission planning (to include meteorological checks), airspace considerations, and site risk-assessment</p> <p>Identify the objectives of the intended operation</p> <p>Ensure that the defined operational volume and relevant buffers (e.g. ground risk buffer) are suitable for the intended operation</p> <p>Identify any obstacles in the operational volume that could hinder the intended operation</p> <p>Consider whether the air flow may be affected by topography or by obstacles in the operational volume</p> <p>Consider any external factors that may affect the flight, and assess their impact on the operation</p> <p>Review the relevant airspace information (including on UAS geographical zones) that can have an impact on the intended operation</p> <p>Confirm that the UAS is suitable for the intended operation</p> <p>Ensure that the selected payload is compatible with the UAS being used for the operation</p> <p>Determine the measures necessary to comply with the limitations</p>

Subject	Areas to be covered
	<p>and conditions applicable to the operational volume and ground risk buffer for the intended operation in accordance with the OM procedures for the relevant scenario</p> <p>Identify and, where necessary, implement the procedures to operate in FRZs or controlled airspace, including a protocol to communicate with ATC and obtain clearance and instructions</p> <p>Confirm that all the necessary documents for the intended operation are on site</p> <p>Ensure all participants are sufficiently briefed on the details of the planned operation</p> <p>Aircraft pre-flight inspection and set-up (including flight controller modes and power-source hazards)</p> <p>Assess the general condition of the UAS in accordance with the procedures contained within the OM and manufacturer's instructions</p> <p>Ensure the set-up procedures are completed correctly in accordance with the manufacturer's instructions</p> <p>Ensure that all the removable components of the UAS are properly secured</p> <p>Make sure that the UAS software configurations are compatible/ up to date</p> <p>Check that the UAS instruments are calibrated appropriately, as required by the intended operation</p> <p>Identify any fault, damage or configuration that may compromise the intended operation</p> <p>Ensure the propulsion energy level (e.g. battery life, or other fuel supply) is sufficient for the intended operation</p> <p>Confirm that the flight termination system of the UAS and its triggering system are compliant</p> <p>Check the correct functioning of the C2 link</p> <p>Activate the geo-awareness system and upload the information to it (if geo-awareness system is available)</p> <p>Set the height, speed and distance limitation systems (if available)</p>

Subject	Areas to be covered
	<p>Set the direct remote identification system (if fitted)</p> <p>'Pre-take-off verbal briefing' given by the examinee stating the basic actions to be taken in the event of an aircraft emergency or if a mid-air collision hazard arises during the flight</p>
In Flight Procedures	<p>Maintain an effective look-out and keep the aircraft within Visual Line of Sight (VLOS) at all times</p> <p>Maintain situational awareness, particularly with respect to:</p> <ul style="list-style-type: none"> o Location of the aircraft in relation to other airspace users o Meteorological conditions o Obstacles, terrain and uninvolved persons <p>Perform accurate and controlled flight manoeuvres at representative heights and distances (including flight in manual/ non-GNSS assisted mode or equivalent where fitted)</p> <p>Take-off procedures;</p> <p>Perform after take-off/functionality checks</p> <p>Hover in position (Multirotor/ Helicopter/ VTOL FW only)</p> <p>Transition from hover into forward flight (Multirotor/ Helicopter/ VTOL FW)</p> <ul style="list-style-type: none"> o Climb and descent to/ from level flight o Turns in level flight o Speed control in level flight o Transition from forward flight into hover (Multirotor/ Helicopter/ VTOL FW) o Precision manoeuvring in hover (Multirotor/ Helicopter/ VTOL FW) o Approach and landing o Actions following failure of a motor/ propulsion system (according to aircraft type)¹ o Evasive action (manoeuvres) to avoid collisions

¹See "GM1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot" on page 94

Subject	Areas to be covered
	<ul style="list-style-type: none"> o Real-time monitoring of aircraft status and endurance limitations <p>Flight under abnormal conditions</p> <ul style="list-style-type: none"> Display continuous awareness of, and consideration for, the safety of third parties on the ground Deal correctly with a partial or complete loss of power to the Unmanned Aircraft System (UAS) while ensuring the safety of any third parties Manage the UA's flight path in abnormal situations Manage a situation when the UAS positioning equipment is impaired Manage a situation where an uninvolved person enters the zone of operation and take appropriate measures to maintain safety React to, and take the appropriate corrective action for, a situation where the UA is likely to exceed the limits of the intended operating area Take the appropriate action for a situation when another aircraft approaches the operating area and is in conflict with the UA Demonstrate the recovery method following a deliberate (simulated) loss of the C2 Link. In place of any rotary wing 'return to home' function, fixed-wing aircraft may demonstrate an equivalent procedure that results in a suitably automated, low-impact descent and landing. When demonstrating this function, the student must also demonstrate how collisions will be avoided
Post-flight Actions	<ul style="list-style-type: none"> Shut down and secure/make safe the UAS Post-flight inspection and recording of any relevant data relating to the general condition of the UAS (its systems, components and power-sources), controller functionality and crew fatigue Conduct a debriefing of the operation with all relevant personnel Identify situations where an occurrence report may be necessary and complete the required occurrence report

art. 9 Minimum age for remote pilots

Repealed

art. 9A Regulations

Repealed

art. 10 Rules and procedures for the airworthiness of UAS

Unless privately-built, or used for operations referred to in Article 16, or meeting the conditions defined in Article 20, UAS used in operations set out in this Regulation shall comply with the technical requirements and rules and procedures for the airworthiness defined in the delegated acts adopted pursuant to Article 58 of Regulation (EU) 2018/1139.

art. 11 Rules for conducting an operational risk assessment

1. An operational risk assessment shall:

- (a) describe the characteristics of the UAS operation;
- (b) propose adequate operational safety objectives;
- (c) identify the risks of the operation on the ground and in the air considering all of the below:
 - i. the extent to which third parties or property on the ground could be endangered by the activity;
 - ii. the complexity, performance and operational characteristics of the unmanned aircraft involved;
 - iii. the purpose of the flight, the type of UAS, the probability of collision with other aircraft and class of airspace used;
 - iv. the type, scale, and complexity of the UAS operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person;
 - v. the extent to which the persons affected by the risks involved in the UAS operation are able to assess and exercise control over those risks.
- (d) identify a range of possible risk mitigating measures;
- (e) determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.

2. The description of the UAS operation shall include at least the following:

- (a) the nature of the activities performed;

(b) the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume where the operation will take place and which airspace volume is kept as necessary risk buffers, including the operational requirements for geographical zones;

(c) the complexity of the operation, in particular which planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;

(d) the technical features of the UAS, including its performance in view of the conditions of the planned operation and, where applicable, its registration number;

(e) the competence of the personnel for conducting the operation including their composition, role, responsibilities, training and recent experience.

3. The assessment shall propose a target level of safety, which shall be equivalent to the safety level in manned aviation, in view of the specific characteristics of UAS operation.

4. The identification of the risks shall include the determination of all of the below:

(a) the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:

- i. VLOS or BVLOS;
- ii. population density of the overflown areas;
- iii. flying over an assembly of people;
- iv. the dimension characteristics of the unmanned aircraft;

(b) the unmitigated air risk of the operation taking into account all of the below:

- i. the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;
- ii. the class of the airspace;
- iii. the impact on other air traffic and air traffic management (ATM) and in particular:
 - the altitude of the operation;
 - controlled versus uncontrolled airspace;
 - aerodrome versus non-aerodrome environment;
 - airspace over urban versus rural environment;

— separation from other traffic.

5. The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:

- (a) containment measures for people on the ground;
- (b) strategic operational limitations to the UAS operation, in particular:
 - i. restricting the geographical volumes where the operation takes place;
 - ii. restricting the duration or schedule of the time slot in which the operation takes place;
- (c) strategic mitigation by [...] flight rules or [...] airspace structure and services;
- (d) capability to cope with possible adverse operating conditions;
- (e) organisation factors such as operational and maintenance procedures elaborated by the UAS operator and maintenance procedures compliant with the manufacturer's user manual;
- (f) the level of competency and expertise of the personnel involved in the safety of the flight;
- (g) the risk of human error in the application of the operational procedures;
- (h) the design features and performance of the UAS in particular:
 - i. the availability of means to mitigate risks of collision;
 - ii. the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;
 - iii. the design of the UAS to recognised standards and the fail-safe design.

6. The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe.

GM1 to Article 11 Rules for Conducting an Operational Risk Assessment

CAA ORS9 Decision No. 16

The CAA is currently adapting the previously published AMC for Article 11. Until this is complete, and adopted as AMC/ GM to Article 11, then UAS Operators should continue to use CAP 722A for guidance when producing a risk assessment.

GM2 to Article 11 Rules for Conducting an Operational Risk Assessment

CAA ORS9 Decision No. 16

Predefined Risk Assessment

When a UAS Operator applies for an OA, they must submit a risk assessment as required by Article 11 of the IR. This may be conducted using the methodology as described in "GM1 to Article 11 Rules for Conducting an Operational Risk Assessment" on the previous page.

Alternatively, a UAS Operator may submit a request for an OA based on the mitigations and provisions described within a Predefined Risk Assessment (PDRA), as published by the CAA. In the case of a PDRA, the CAA has conducted a risk assessment that is compliant with Article 11.

A PDRA significantly reduces the administrative burden on both the operator and the CAA for simple, repeatable type operations. A UAS Operator provides a 'shortened' application to the CAA based on a series of requirements covering topics such as RP competency, OM contents, etc. Accompanying any PDRA based authorisation will be a set of prescriptive conditions an operator must comply with. These conditions form part of the risk mitigation measures identified by the CAA during the creation of a given PDRA.

The CAA will publish PDRAs separately to this AMC/ GM. Operators wishing to make use of PDRAs should use the relevant PDRA to complete the necessary parts of the OM. Completion of the risk assessment part of the OM (Volume 3) is not required, as this has already been carried out. Full instructions on how to make use of a PDRA, and what to submit to the CAA, can be found within CAP 722H.

Note:

A PDRA only addresses safety risk; consequently, additional limitations and provisions might exist within an operation such as security, privacy, environmental protection, the use of the radio frequency (RF) spectrum, etc. It is for the operator to identify and mitigate against non-safety risks.

art. 12 Authorising operations in the 'specific' category

1. The CAA shall evaluate the risk assessment and the robustness of the mitigating measures that the UAS operator proposes to keep the UAS operation safe in all phases of flight.
2. The CAA shall grant an operational authorisation when the evaluation concludes that:
 - (a) the operational safety objectives take account of the risks of the operation;

(b) the combination of mitigation measures concerning the operational conditions to perform the operations, the competence of the personnel involved and the technical features of the unmanned aircraft, are adequate and sufficiently robust to keep the operation safe in view of the identified ground and air risks;

(c) the UAS operator has provided a statement confirming that the intended operation complies with any applicable [...] rules relating to it, in particular, with regard to privacy, data protection, liability, insurance, security and environmental protection.

3. When the operation is not deemed sufficiently safe, the CAA shall inform the applicant accordingly, giving reasons for its refusal to issue the operational authorisation.

4. The operational authorisation granted by the CAA shall detail:

(a) the scope of the authorisation;

(b) the 'specific' conditions that shall apply:

i. to the UAS operation and the operational limitations;

ii. to the required competency of the UAS operator and, where applicable, of the remote pilots;

iii. to the technical features of the UAS, including the certification of the UAS, if applicable;

(c) the following information:

i. the registration number of the UAS operator and the technical features of the UAS;

ii. a reference to the operational risk assessment developed by the UAS operator;

iii. the operational limitations and conditions of the operation;

iv. the mitigation measures that the UAS operator has to apply;

v. the location(s) where the operation is authorised to take place [...];

vi. all documents and records relevant for the type of operation and the type of events that should be reported in addition to those defined in Regulation (EU) No 376/2014 of the European Parliament and of the Council.

[...]

art. 13 Cross-border operations or operations outside the state of registration

Repealed

art. 14 Registration of UAS operators and certified UAS

1. The CAA shall establish and maintain accurate registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or environment.
2. The registration systems for UAS operators shall provide the fields for introducing and exchanging the following information:
 - (a) the full name and the date of birth for natural persons and the name and their identification number for legal persons;
 - (b) the address of UAS operators;
 - (c) their email address and telephone number;
 - (d) an insurance policy number for UAS if required by an enactment ;
 - (e) the confirmation by legal persons of the following statement: ‘All personnel directly involved in the operations are competent to perform their tasks, and the UAS will be operated only by remote pilots with the appropriate level of competency’;
 - (f) operational authorisations and LUCs held [...].
3. The registration systems for unmanned aircraft whose design is subject to certification shall provide the fields for introducing and exchanging the following information:
 - (a) manufacturer’s name;
 - (b) manufacturer’s designation of the unmanned aircraft;
 - (c) unmanned aircraft’s serial number;
 - (d) full name, address, email address and telephone number of the natural or legal person under whose name the unmanned aircraft is registered.

[...]
5. Subject to paragraph 5A, UAS operators shall register themselves:
 - (a) when operating within the ‘open’ category any of the following unmanned aircraft:

i. with a MTOM of 250 g or more, or, which in the case of an impact can transfer to a human kinetic energy above 80 Joules;

ii. that is equipped with a sensor able to capture personal data, unless it complies with the Toys (Safety) Regulations 2011 .

(b) when operating within the ‘specific’ category an unmanned aircraft of any mass.

5A. Paragraph 5 does not apply to UAS operations performed with a small control line model aircraft:

(a) in the ‘open’ category;

(b) in the ‘specific’ category in accordance with an authorisation received under Article 16.

6. UAS operators shall register themselves with the CAA and ensure that their registration information is accurate. [...] The CAA shall issue a unique digital registration number for UAS operators and for the UAS that require registration, allowing their individual identification. [...]

7. The owner of an unmanned aircraft whose design is subject to certification shall register the unmanned aircraft. The nationality and registration mark of an unmanned aircraft shall be established in line with ICAO Annex 7. [...]

8. The UAS operators shall display their registration number on every unmanned aircraft meeting the conditions described in paragraph 5.

9. In addition to the data defined in point (2) the CAA may collect additional identity information from the UAS operators.

10. In this Article, “small control line model aircraft” means a fixed-wing unmanned aircraft having a MTOM of not more than 7.5 kg and which is flown within limits imposed by a restraining device of not more than 25 metres in length which attaches the aircraft to the surface or to a person on the surface.

GM1 to Article 14(1) Registration of UAS Operators and Certified UAS

CAA ORS9 Decision No. 16

ACCURACY OF THE REGISTRATION SYSTEMS

UAS Operators, when registering themselves or their certified UAS, are required to provide accurate information and update the registration data when it changes.

The CAA will keep this registration data accurate within the Registration database.

An example of data that may change over time includes the UAS Operator address, email address, telephone number, and name by proof of deed poll.

UAS Operators, especially those conducting UAS operations for leisure, may decide to fly their UAS only for a short period; therefore, it is possible that even if the database of the registration system contains many registered UAS Operators, only some of them are active.

The CAA defines a duration period for the validity of 1 year, for the registration of all UAS Operators. If the UAS Operator does not renew their registration, it will expire. The CAA may also decide to suspend or revoke the registration number if the UAS Operator's conduct justifies such a measure.

UAS Operators have the ability to request to deactivate their registration if they no longer wish to have it active, this feature allows the CAA to improve level of accuracy of active operators in the database.

GM1 Article 14 (5)(a)(ii) Registration of UAS Operators and Certified UAS

CAA ORS9 Decision No. 16

Article 14(5)(a)(ii) Sensor able to capture personal data

In relation to the registration of UAS Operators under this article, the capture of images or other data solely for the use of controlling or monitoring the aircraft is not considered to be applicable to the meaning of 'a sensor able to capture personal data'.

For example, a camera used solely for the purpose of first-person view flying (when accompanied by a UA Observer), that is not recording, is not considered a sensor able to capture personal data.

GM1 Article 14(5A) Registration of Small Control Line Model Aircraft

CAA ORS9 Decision No. 16

Small control line model aircraft are attached via a restraining device to the ground, or to a person, via a cable, or series of cables. As such, the need to identify the RP and operator via an Operator ID is not required, as the RP will either be attached to the aircraft by these cables or will be in the immediate vicinity of the aircraft, if it is fixed to the ground.

Control of the aircraft is maintained by manoeuvring the control cables, which manipulate the control surfaces in order to maintain control of the aircraft.

AMC1 Article 14(6) Registration of UAS Operators and Certified UAS

CAA ORS9 Decision No. 16

UAS OPERATOR REGISTRATION NUMBER

The unique UAS Operator digital registration number that is issued by the CAA consists of seventeen (17) alphanumeric in total split into 3 sections, arranged as follows:

- (1) the first three alphanumeric (upper-case only) shall be 'GBR' corresponding to the ISO 3166 Alpha-3 code;
- (2) The characters 'OP', which is a fixed field, meaning 'Operator'; and
- (3) Twelve randomly generated characters that consist of alphanumeric (upper-case) characters, with the exception of the following characters: A, E, I, O, U, 1 and 0.

AMC1 Article 14(8) Registration of UAS Operators and Certified UAS

CAA ORS9 Decision No. 16

DISPLAY OF REGISTRATION INFORMATION

UAS Operators must display their registration number (known as an 'Operator ID') on every UA that they operate within the Open and Specific categories.

- a) The Operator ID must be displayed in a manner that ensures it is readable when the UA is on the ground, without the need to use any special devices other than corrective spectacles or lenses.
- b) The Operator ID must be:
 - i. clear and in block capitals taller than 3mm
 - ii. secure and safe from damage
 - iii. on the main body of the aircraft
- c) If the size of the UA does not allow the Operator ID to be clearly displayed externally, or the UA is a model aircraft that represents a real manned aircraft where an external marking would spoil the realism of the representation, a marking inside the UA, in a compartment that can be accessed easily and without the need for any tools is acceptable.

In addition to the compulsory printed Operator ID, a further QR code (quick response code) may also be used. This may link to the CAA registration check service, on the CAA website.

UA whose design is subject to certification are required to be registered in accordance with Annex IX of UK Regulation (EU) 2018/1139 (and Articles 24 to 32 of ANO 2016 unless they are flying under an exemption). Once the CAA has processed the application, the aircraft will be issued with a registration ID consisting of five characters

starting 'G-' (e.g., G-ABCD) and the details will be entered into the Aircraft Register. The registration must be displayed permanently on the aircraft in accordance with Article 32 of the ANO.

GM1 Article 14(8) Registration of UAS Operators and Certified UAS

CAA ORS9 Decision No. 16

DISPLAY OF REGISTRATION INFORMATION

The purpose of displaying the registration ID ('Operator ID') on the UA, is to enable the operator to be linked to the individual UA, either in order to re-unite them should the UA become lost, or for enforcement purposes.

For this reason, it is not appropriate to expect a third party to be able to access the Operator ID within a compartment in the UA using specialist tools, or to have access to a QR code scanner. As such, the Operator ID must be displayed fully, on the outside, or within an easy to access internal compartment.

AMC1 Article 14 (10)- Small Control Line Model Aircraft Definition

CAA ORS9 Decision No. 16

The restraining device must be of a sufficient strength to secure the aircraft safely to a point on the ground, either fixed, or to the RP, taking into account the force exerted on the restraining device, from the mass of the aircraft and the acceleration experienced during flight.

art. 15 Operational conditions for UAS geographical zones

1. The Secretary of State may make regulations for the purpose of designating UAS geographical zones for safety, security, privacy or environmental reasons. The regulations may:

- (a) prohibit certain or all UAS operations, request particular conditions for certain or all UAS operations or require a prior flight authorisation for certain or all UAS operations;
- (b) subject UAS operations to specified environmental standards;
- (c) allow access to certain UAS classes only;
- (d) allow access only to UAS equipped with certain technical features, in particular remote identification systems or geo awareness systems.

2. The Secretary of State may by regulations designate certain geographical zones in which UAS operations are exempt from one or more of the 'open' category requirements.

3. When pursuant to paragraphs 1 or 2 Member States define UAS geographical zones, for geo awareness purposes they shall ensure that the information on the UAS geographical zones, including their period of validity, is made publicly available in a common unique digital format.
4. Regulations made under this Article are to be made by statutory instrument.

GM1 Article 15 Operational Conditions for UAS Geographical Zones

CAA ORS9 Decision No. 16

Availability of UAS Geographical Zone data

Information on permanent airspace restrictions which affect the operation of UAS are notified within the AIP (Section ENR 5.1), and all permanent restrictions which impact UAS can be accessed via a downloadable file contained within the AIS website.

art. 16 UAS operations in the framework of model aircraft clubs and associations

1. Upon request by a model aircraft club or association, the CAA may issue an authorisation for UAS operations in the framework of model aircraft clubs and associations.
2. The authorisation referred to in paragraph 1 shall be issued in accordance with any of the following:
[...]
(b) established procedures, organisational structure and management system of the model aircraft club or association, ensuring that:
 - i. remote pilots operating in the framework of model aircraft clubs or associations are informed of the conditions and limitations defined in the authorisation issued by the CAA ;
 - ii. remote pilots operating in the framework of model aircraft clubs or associations are assisted in achieving the minimum competency required to operate the UAS safely and in accordance with the conditions and limitations defined in the authorisation;

iii. the model aircraft club or association takes appropriate action when informed that a remote pilot operating in the framework of model aircraft clubs or associations does not comply with the conditions and limitations defined in the authorisation, and, if necessary, inform the CAA ;

iv. the model aircraft club or association provides, upon request from the CAA , documentation required for oversight and monitoring purposes.

3. The authorisation referred to in paragraph 1 shall specify the conditions under which operations in the framework of the model aircraft clubs or associations may be conducted [...].

4. The CAA may, after consultation with the Secretary of State, enable model aircraft clubs and associations to register their members into the registration systems established in accordance with Article 14 on their behalf. If this is not the case, the members of model aircraft clubs and associations shall register themselves in accordance with "art. 14 Registration of UAS operators and certified UAS" on page 52.

GM1 Article 16 - UAS Operations in the Framework of Model Aircraft Clubs and Associations

CAA ORS9 Decision No. 16

AMC and GM for Article 16 can be found in Annex B to this document.

[art. 17 Designation of the competent authority](#)

Repealed

[art. 18 Responsibilities of the CAA](#)

The CAA shall be responsible for:

- (a) enforcing this Regulation;
- (b) issuing, suspending or revoking certificates of UAS operators and licenses of remote pilots operating within the 'certified' category of UAS operations;
- (c) issuing remote pilots with a proof of completion of an online theoretical knowledge examination according to points UAS.OPEN.020 and UAS.OPEN.040 of the Annex and issuing, amending, suspending, limiting or revoking certificates of competency of remote pilots according to point UAS.OPEN.030 of the Annex;

- (d) issuing, amending, suspending, limiting or revoking operational authorisations and LUCs [...], which are required to carry out UAS operations in the 'specific' category of UAS operations;
- (e) keeping documents, records and reports concerning UAS operational authorisations, [...] certificates of competency of the remote pilots and LUCs;
- [...]
- (h) developing a risk-based oversight system for:
- i. UAS operators that [...] hold an operational authorisation or an LUC;
 - ii. model clubs and associations that hold an authorisation referred to in Article 16;
- (i) for operations other than those in the 'open' category, establishing audit planning based on the risk profile, compliance level and the safety performance of UAS operators who [...] hold a certificate issued by the CAA ;
- (j) for operations other than those in the 'open' category, carrying out inspections with regard to UAS operators who [...] hold a certificate issued by the CAA inspecting UAS and ensuring that UAS operators and remote pilots comply with this Regulation;
- (k) implementing a system to detect and examine incidents of non-compliance by UAS operators operating in the 'open' or 'specific' categories and reported in accordance with paragraph 2 of Article 19;
- (l) providing UAS operators with information and guidance that promotes the safety of UAS operations;
- (m) establishing and maintaining registration systems for UAS whose design is subject to certification and for UAS operators whose operation may present a risk to safety, security, privacy, and protection of personal data or the environment.

art. 19 Safety information

1. The CAA and market surveillance and control authorities referred to in Article 36 of Delegated Regulation (EU) 2019/945 shall cooperate on safety matters and establish procedures for the efficient exchange of safety information.
2. Each UAS operator shall report to the CAA on any safety-related occurrence and exchange information regarding its UAS in compliance with Regulation (EU) No 376/2014.

3. The CAA shall collect, analyse and publish safety information concerning UAS operations [...].

4. Upon receiving any of the information referred to in paragraphs 1 or 2, the CAA shall take the necessary measures to address any safety issues on the best available evidence and analysis, taking into account interdependencies between the different domains of aviation safety, and between aviation safety, cyber security and other technical domains of aviation regulation.

5. Where the CAA takes measures in accordance with paragraph 4, it shall immediately notify all relevant interested parties and organisations that need to comply with those measures in accordance with Regulation (EU) 2018/1139 and its implementing acts.

AMC1 Article 19(2) Safety Information

CAA ORS9 Decision No. 16

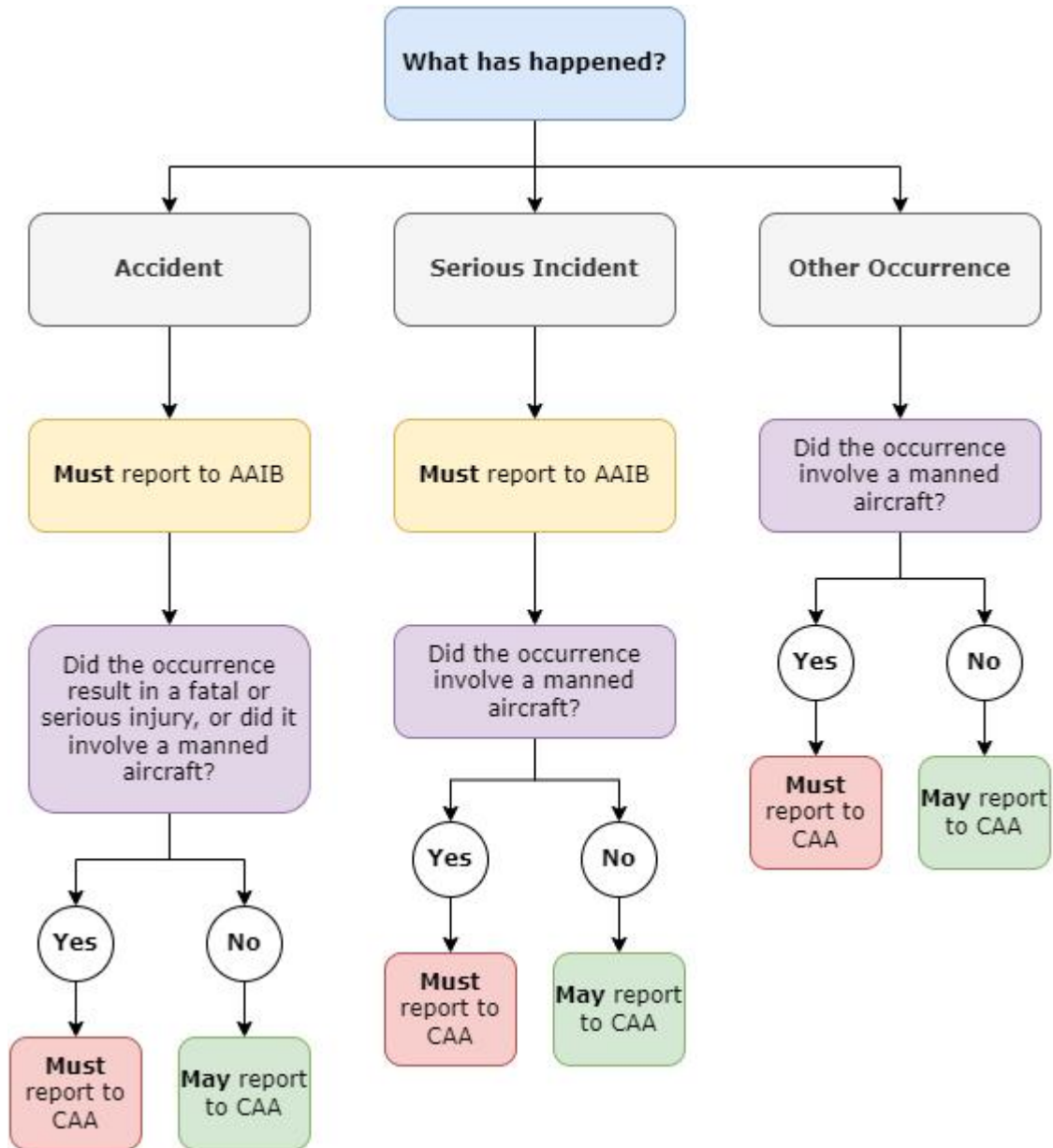
OCCURENCE REPORTING - CAA

Occurrence reports must be submitted through the Mandatory Occurrence Reporting (MOR) process, using the ECCAIRS portal, which can be found [here](https://aviationreporting.eu) (<https://aviationreporting.eu>). When making a report, UAS Operators should also include their registration number (Operator ID), and state whether an OA is held. Further guidance can be found in CAP1496.

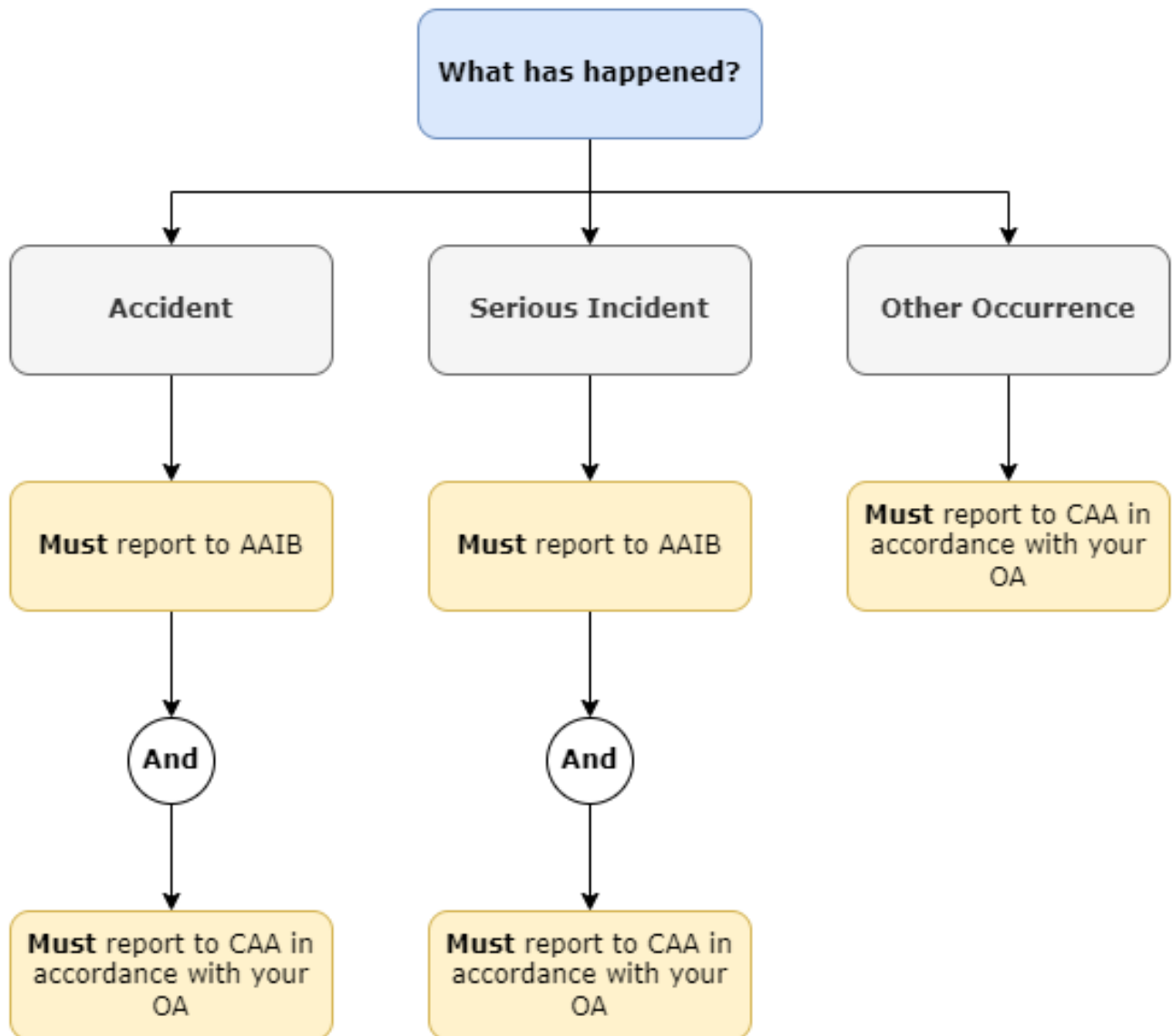
Consideration should also be given to supplementary safety reporting channels, for example:

- Confidential Human Factors Incident Reporting Programme (<https://chirp.co.uk/aviation/>).

OPEN CATEGORY REPORTING REQUIREMENTS



SPECIFIC CATEGORY REPORTING REQUIREMENTS



GM1 Article 19(2) Safety Information

CAA ORS9 Decision No. 16

USE OF THE ECCAIRS PORTAL

Reporting to the CAA should take place via the ECCAIRS portal (AMC1 Article 19(2), above).

It should be noted that when selecting the UK, within this system, it explains that the user is reporting as an ICAO state, and not under Regulation (EU) 376/2014. This is because the UK has left the EU, and so reports are made under Regulation (EU) 376/2014 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018, hereafter referred to as UK Regulation (EU) 376/2014, rather than the European version of that regulation.

OCCURRENCE REPORTING - CAA

According to UK Regulation (EU) 376/2014, occurrences shall be reported when they refer to a condition which endangers, or which if not corrected or addressed would endanger an aircraft, its occupants, any other person, equipment or installation affecting aircraft operations.

Obligations to report apply in accordance with UK Regulation (EU) 376/2014, Article 3(2). This limits the mandatory reporting of UA occurrences to those that involve a fatal or serious injury or involve a manned aircraft. Other occurrences may be reported voluntarily.

Occurrence reporting systems are not established to attribute blame or liability.

Occurrence reporting systems are established to learn from occurrences, improve aviation safety and prevent recurrence.

The purpose of occurrence reporting is to improve aviation safety by ensuring that relevant safety information is reported, collected, stored, protected, exchanged, disseminated and analysed. Organisations and individuals with a good air safety culture will report effectively and consistently. Every occurrence report is an opportunity to identify root causes and prevent them contributing to accidents where people are harmed.

The safe operation of UAS is as important as that of manned aircraft. Injuries to third parties, or damage to property, can be just as severe. Proper investigation of each accident, serious incident or other occurrence is necessary to identify causal factors and to prevent repetition. Similarly, the sharing of safety related information via good reporting is critical in reducing the number of future occurrences.

REPORTING TO THE AAIB

Reporting requirements to the AAIB are set out under a different regulation. Further guidance on how to report to the AAIB can be found on their website.

art. 20 Particular provisions concerning the use of certain UAS in the 'open' category

SI 2022 No. 1235 (in force 23 December 2022)

UAS [...] which do not comply with Delegated Regulation (EU) 2019/945 and which are not privately-built are allowed to continue to be operated under the following conditions, when they have been placed on the market before ~~1 January 2023~~ **1 January 2026**:

- (a) in subcategory A1 as defined in Part A of the Annex, provided that the unmanned aircraft has a maximum take-off mass of less than 250 g, including its payload;

(b) in subcategory A3 as defined in Part A of the Annex, provided that the unmanned aircraft has a maximum take-off mass of less than 25 kg, including its fuel and payload.

[Editor's note: SI 2022 No. 1235 section 11(2) states "In Article 20 (particular provisions concerning the use of certain UAS in the 'open' category), for "1 January 2023" substitute "1 January 2026". This comes into force on 23 December 2022.]

art. 21 Adaptation of authorisations and certificates

SI 2022 No. 1235 (in force 23 December 2022)

~~1. Authorisations granted to UAS operators and certificates of remote pilot competency or equivalent documentation, issued on the basis of national law, shall remain valid until 1 January 2022.~~

~~2. By 1 January 2022 the CAA shall convert its existing certificates of remote pilot competency and its UAS operator authorisations, or equivalent documentation, including those issued until that date, in accordance with this Regulation.~~

[...]

[Editor's note: SI 2022 No. 1235 section 11(3) states "Omit Article 21 (adaptation of authorisations and certificates). This comes into force on 23 December 2022.]

art. 22 Transitional Provisions

SI 2022 No. 1235 (in force 23 December 2022)

Without prejudice to Article 20 ~~before 1 January 2026~~, the use of UAS in the 'open' category which do not comply with the requirements of Parts 1 to 5 of the Annex to Commission Delegated Regulation (EU) 2019/945 shall be allowed ~~for a transitional period of 30 months starting one year after the date of entry into force of this Regulation~~, subject to the following conditions:

(a) unmanned aircraft with a take-off mass of less than 500 g are operated within the operational requirements set out in points UAS.OPEN.020(1) of Part A of the Annex by a remote pilot having competency level [at least equivalent to the level in point UAS.OPEN.030(2) of Part A of the Annex] ;

(b) unmanned aircraft with a take-off mass of less than 2 kg is operated by keeping a minimum horizontal distance of 50 meters from people and the remote pilots have a competency level at least equivalent to the one set out in point UAS.OPEN.030 (2) of Part A of the Annex;

(c) unmanned aircraft with a take-off mass of less than 25 kg is operated within the operational requirements set out in point UAS.OPEN.040(1) and (2) and the remote pilots have a competency level at least equivalent to the one set out in point UAS.OPEN.020(4)(b) of Part A of the Annex.

[Editor's note: SI 2022 No. 1235 section 11(4) states "In Article 22 (further provisions concerning the use of certain UAS in the 'open' category)— (a) after "Article 20," insert "before 1 January 2026"; (b) omit "for a transitional period of 30 months starting one year after the date of entry into force of this Regulation". This comes into force on 23 December 2022.]

GM1 Article 22 Take-Off Mass

CAA ORS9 Decision No. 16

TAKE-OFF MASS

Further information on the term 'take-off mass' can be found in "GM1 Article 2(22) Definitions" on page 26.

art. 23 Entry into force and application

1. This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union. It shall apply from 31 December 2020.
 2. Paragraph 5 of Article 5 and point (1)(l) of point UAS.SPEC.050 shall apply from 2 December 2021;
 3. Point (2)(g) of point UAS.OPEN.060 shall apply from 1 July 2022.
- [...]
5. Paragraph 3 of Article 15 shall apply from 1 January 2022.

Signatures

[...]

Done at Brussels, 24 May 2019.

For the Commission

The President

Jean-Claude Juncker

Annex to UK Regulation (EU) 2019/947

UAS OPERATIONS IN THE 'OPEN' AND 'SPECIFIC' CATEGORIES

Part A UAS OPERATIONS IN THE 'OPEN' CATEGORY

UAS.OPEN.010 General provisions

(1) The category of UAS 'open' operations is divided into three subcategories A1, A2 and A3, on the basis of operational limitations, requirements for the remote pilot and technical requirements for UAS.

(2) Where the UAS operation involves the flight of the unmanned aircraft starting from a natural elevation in the terrain or over terrain with natural elevations, the unmanned aircraft shall be maintained within 120 metres from the closest point of the surface of the earth. The measurement of distances shall be adapted accordingly to the geographical characteristics of the terrain, such as plains, hills, mountains.

(3) When flying an unmanned aircraft within a horizontal distance of 50 metres from an artificial obstacle taller than 105 metres, the maximum height of the UAS operation may be increased up to 15 metres above the height of the obstacle at the request of the entity responsible for the obstacle.

(4) By way of derogation from point (2), unmanned sailplanes with a MTOM, including payload, of less than 10 kg, may be flown at a distance in excess of 120 metres from the closest point of the surface of the earth, provided that the unmanned sailplane is not flown at a height greater than 120 metres above the remote pilot at any time.

GM1 UAS.OPEN.010(4) General Provisions

CAA ORS9 Decision No. 16

OPERATIONS WITH UNMANNED SAILPLANES

This provision was included to allow model gliders to continue to operate along slopes. Strictly applying the 120 metres distance from the closest point of the surface of the earth would have had disproportionate consequences. These operations have been conducted successfully for decades. Two measures have been put in place to reduce the risk:

- a) A MTOM limited to 10 kg to reduce the consequences of an impact. 10 kg covers the vast majority of gliders in operation.
- b) The maximum height above the RP is limited to 120 m, which reduces the air risk.

GM1 UAS.OPEN.010 General Provisions

CAA ORS9 Decision No. 16

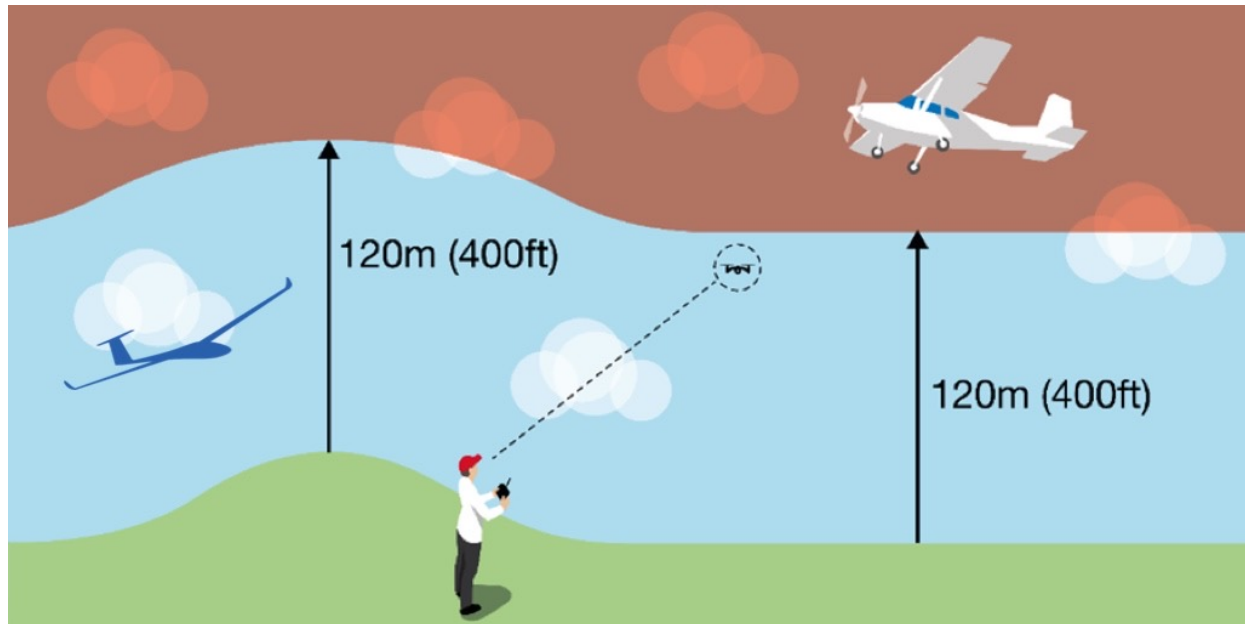
MAXIMUM HEIGHT

The RP must ensure that the UA is kept at a distance less than 120m (approximated to 400 ft for the purpose of this document) from the terrain. This is not a 'vertical height', but a geometric distance between the UA and the closest point of the surface of the Earth.

In most cases, this distance will be measured as a GPS height, rather than barometric height. Where a barometric measured height is used, the effects of atmospheric pressure and temperature on the measurement of height, should be understood.

This height limit applies from the surface of the Earth, and not from an elevated point on a structure or building.

The picture below shows how the maximum height that the UA may reach changes according to the topography of the terrain. In addition, if the flight is being conducted within a geographical zone with a lower maximum height or altitude (as defined in the associated restrictions of the geographical zone), the RP must ensure that the UA always complies with those limitations.



The entity responsible for an artificial obstacle, referred to in point UAS.OPEN.010(3), must explicitly grant the UAS Operator permission to conduct an operation close to the obstacle, e.g., a building, or antenna.

UAS.OPEN.020 UAS operations in subcategory A1

UAS operations in subcategory A1 shall comply with all of the following conditions:

(1) for unmanned aircraft referred to in point (5)(d), be conducted in such a way that a remote pilot of the unmanned aircraft does not overfly assemblies of people and reasonably expects that no uninvolved person will be overflown. In the event of unexpected overflight of uninvolved persons, the remote pilot shall reduce as much as possible the time during which the unmanned aircraft overflies those persons;

(2) in the case of an unmanned aircraft referred to in points (5)(a), (5)(b) and (5)(c), be conducted in such a way that the remote pilot of the unmanned aircraft may overfly uninvolved persons, but shall never overfly assemblies of people;

(3) by way of derogation from point (d) of paragraph 1 of Article 4, be conducted, when the follow-me mode is active, up to a distance of 50 metres from the remote pilot;

(4) be performed by a remote pilot who:

(a) is familiar with manufacturer's instructions provided by the manufacturer of the UAS;

(b) in the case of an unmanned aircraft class C1, as defined in Part 2 of the Annex to Delegated Regulation (EU) 2019/945, has completed an online training course followed by completing successfully an online theoretical knowledge examination

provided by the CAA achieving at least 75% of the overall marks. The examination shall comprise 40 multiple-choice questions distributed appropriately across the following subjects:

- (i) air safety;
- (ii) airspace restrictions;
- (iii) aviation regulation;
- (iv) human performance limitations;
- (v) operational procedures;
- (vi) UAS general knowledge;
- (vii) privacy and data protection;
- (viii) insurance;
- (ix) security.

(5) be performed with an unmanned aircraft that:

- (a) has an MTOM, including payload, of less than 250 g and a maximum operating speed of less than 19 m/s, in the case of a privately built UAS; or
- (b) meets the requirements defined in point (a) of Article 20;
- (c) is marked as class C0 and complies with the requirements of that class, as defined in Part 1 of the Annex to Delegated Regulation (EU) 2019/945; or
- (d) is marked as class C1 and complies with the requirements of that class, as defined in Part 2 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification system and geo-awareness function.

AMC1 UAS.OPEN.020(1) and (2) UAS Operations in Subcategory A1

CAA ORS9 Decision No. 16

OPERATIONAL LIMITATIONS IN SUBCATEGORY A1

As a principle, the rules prohibit overflying assemblies of people. There is a distinction between class C1/C0 UAS and privately built UAS with MTOM of less than 250 g.

- a) For UAS flying under the 'A1 Transitional' provisions of Article 22(a): Before starting the UAS operation, the RP must assess the area and must reasonably expect that no uninvolved person will be overflown. This evaluation must be

made taking into account the configuration of the site of operation (e.g., the existence of roads, streets, pedestrian or bicycle paths), the ability to secure the site, and the time of the day. In case of an unexpected overflight, the RP must reduce as much as possible the duration of the overflight, for example, by flying the UAS in such a way that the distance between the UA and the uninvolved people increases, or by positioning the UAS over a place where there are no uninvolved people.

b) Non-class marked UAS with MTOM less than 250g, or privately built UAS with MTOM less than 250 g: These UAS may fly over uninvolved people (but not over assemblies of people) however, flight over uninvolved people should be avoided whenever possible, and extreme caution should still be used.

Uninvolved people should only be overflown when absolutely necessary, to achieve the aim of the flight and should be minimised as much as possible.

When flying in an area with uninvolved people, the RP should allow for a ground safety buffer to prevent accidental overflight in the event of loss of propulsion, by using the 1:1 rule. The RP must be aware of their responsibilities as set out in UAS.OPEN.060(2)(d), and in GM1 UAS.OPEN.060(2)(d), with regard to maintaining control of the UA.

The operational limitations above, in relation to the overflying of uninvolved people, do not apply to uninvolved people inside buildings. The RP is ultimately responsible for maintaining safe horizontal distances including from uninvolved people entering and exiting buildings. This includes consideration for open areas such balconies and roofs.

AMC1 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3) UAS Operations in Subcategories A1, A2 and A3

CAA ORS9 Decision No. 16

COMPLETION OF OPEN CATEGORY ONLINE TRAINING

The 'Flyer ID' online training course and test must be completed by RPs of UA with a mass of 250g or more, i.e.

- A2 subcategory- all UA (note- in the A2 subcategory, an additional qualification must also be held- see AMC1 UAS.OPEN.030(2)(c).
- A3 subcategory- all UA.

The RP must complete the training course and test provided by the CAA Drone and Model Aircraft Registration System (DMARES) (<https://register-drones.caa.co.uk/>).

In certain circumstances, where provision is included within a model aircraft association Article 16 Authorisation, RPs may complete a model aircraft association training course and test instead of the CAA DMARES test. Following completion of this test, the CAA will

issue the RP with a 'Flyer ID' number, which is equivalent to the completion of the CAA DMARES Flyer ID test. In this instance the RP does not need to undertake the CAA DMARES Flyer ID test, a RP may only hold one Flyer ID.

AMC2 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3) UAS Operations in Subcategories A1, A2 and A3

CAA ORS9 Decision No. 16

PROOF OF COMPLETION OF OPEN CATEGORY ONLINE TRAINING

Upon receipt of proof of a RP passing the online theoretical examination, the CAA will provide the following proof of completion to the RP. The proof may be provided in electronic form

The certificate will contain the following two elements:

(1) The identifier provided by the CAA (the 'Flyer ID'). The identifier has the following format:

NNN-RP-XXXXXXXXXXXX

Where:

- i. NNN is the ISO 3166 Alpha-3 code of the country issuing the certificate (GBR);
- ii. RP is a fixed field, meaning RP; and
- iii. XXXXXXXXXXXXX are 12 alphanumeric characters (upper-case only) with the exception of the following characters: A, E, I, O, U, 1 and 0 defined by the CAA.

As an example: (GBR-RP-9WM5CGTWGC37); and

(2) QR code providing a link to the UK Flying drones and model aircraft web page where the information related to the RP is stored. Through the 'RP identifier' ('Flyer ID Number') information related to the Open category competence of the RP can be retrieved by the RP.

UNITED KINGDOM
Drone and model aircraft
Proof of completion of online training

Flyer ID
GBR-RP-9WM5CGTWGC37

First name: ADAM
Last name: TEST
Expiry date: 9 December 2026

A1 & A3
OPEN
SUB
CATEGORY

UK Civil Aviation Authority

register-drones.caa.co.uk

SCAN ME

AMC1 UAS.OPEN.020(5)(c) and (d), UAS.OPEN.030(3) and UAS.OPEN.040(4)(c), (d) and (e) UAS Operations in Subcategories A1, A2 and A3

CAA ORS9 Decision No. 16

MODIFICATION OF A UAS WITH A CLASS MARK

See GM1 Article 2(16).

[UAS.OPEN.030 UAS operations in subcategory A2](#)

UAS operations in subcategory A2 shall comply with all of the following conditions:

(1) be conducted in such a way that the unmanned aircraft does not overfly uninvolved persons and the UAS operations take place at a safe horizontal distance of at least 30 metres from them; the remote pilot may reduce the horizontal safety distance down to a minimum of 5 metres from an uninvolved person when operating an unmanned aircraft with an active low speed mode function and after evaluation of the situation regarding:

- (a) weather conditions,
- (b) performance of the unmanned aircraft,
- (c) segregation of the overflow area.

(2) be performed by a remote pilot who is familiar with manufacturer's instructions provided by the manufacturer of the UAS and holds a certificate of remote pilot competency issued by the CAA or an entity designated by the CAA. This certificate shall be obtained after complying with all of the following conditions and in the order indicated:

- (a) completing an online training course and passed the online theoretical knowledge examination as referred to in point (4)(b) of point UAS.OPEN.020;
- (b) completing a self-practical training in the operating conditions of the subcategory A3 set out in points (1) and (2) of point UAS.OPEN.040;
- (c) declaring the completion of the self-practical training defined in point (b) and passing an additional theoretical knowledge examination provided by the CAA or an entity designated by the CAA achieving at least 75% of the overall marks. The examination shall comprise at least 30 multiple-choice questions aimed at assessing the remote pilot's knowledge of the technical and operational mitigations for ground risk, distributed appropriately across the following subjects:
 - (i) meteorology;
 - (ii) UAS flight performance;
 - (iii) technical and operational mitigations for ground risk.

(3) be performed with an unmanned aircraft which is marked as class C2 and complies with the requirements of that class, as defined in Part 3 of the Annex to Delegated Regulation (EU) 2019/945, and is operated with active and updated direct remote identification system and geo-awareness function.

AMC1 UAS.OPEN.030(1) UAS Operations in Subcategory A2

CAA ORS9 Decision No. 16

SAFE HORIZONTAL DISTANCE FROM UNINVOLVED PERSONS

(a) The horizontal distance of the UA from uninvolved persons is defined as the distance between the points where the UA would hit the ground in the event of a vertical fall and the position of the uninvolved persons.

(b) The safe horizontal distance of the UA from uninvolved persons is variable and is dependent on the performance and characteristics of the UAS involved, the weather conditions and the segregation of the overflowed area. The RP is ultimately responsible for the determination of this distance however, the distance from uninvolved persons must always be greater than 30m.:

(c) The horizontal distances described above do not apply to uninvolved people inside buildings. The RP is ultimately responsible for maintaining safe horizontal distances including from uninvolved people entering and exiting buildings. This includes consideration for open areas such as balconies and roofs.

Article 22 gives provision for some non-class marked UA to be operated within the A2 subcategory but limits the minimum horizontal distance from uninvolved people to 50m.

AMC1 UAS.OPEN.030(2)(b) and (c) UAS Operations in Subcategory A2

CAA ORS9 Decision No. 16

REMOTE PILOT CERTIFICATE OF COMPETENCY

After verification that the applicant:

- Has Passed the online theoretical knowledge examination; and
- Has completed and declared the self-practical training; and
- Has passed the additional theoretical knowledge examination provided by the competent authority or by an entity recognised by the competent authority,

The CAA, or an entity designated by the CAA, will provide a certificate of competency to the RP.



The certificate has the following elements:

(1) The identifier provided by the CAA (Flyer ID) has the following format:

GBR-RP-XXXXXXXXXXXX

Where:

1. GBR is the ISO 3166 Alpha-3 code of the Great Britain;
2. RP is a fixed field meaning Remote Pilot; and

3. XXXXXXXXXXXX are 12 alphanumeric characters that form the unique identifier.

AMC2 UAS.OPEN.030(2)(b) UAS Operations in Subcategory A2

CAA ORS9 Decision No. 16

PRACTICAL SELF-TRAINING

(a) The aim of the practical self-training is to ensure that the RP can demonstrate at all times the ability to:

- (1) operate the UAS within its limitations;
- (2) complete all manoeuvres with smoothness and accuracy;
- (3) exercise good judgment and airmanship;
- (4) apply their theoretical knowledge; and
- (5) maintain control of the UA at all times in such a manner that the successful outcome of a procedure or manoeuvre is assured.

(b) The RP must complete the practical self-training with a UAS that features the same flight characteristics (e.g. fixed wing, rotorcraft), control scheme (manual or automated, human machine interface) and a similar weight as the UAS intended for use in the UAS operation. This implies the use of a UA with an MTOM of less than 4 kg and bearing the Class 2 marking after the transition period defined in Article 22 has ended.

(c) If a UAS with both manual and automated control functions is used, the practical self-training must be performed with both control functions. If this UAS has multiple automated features, the RP must demonstrate proficiency with each automated feature.

(d) The practical self-training must contain at least flying exercises covering take-off or launch and landing or recovery, precision flight manoeuvres remaining in a given airspace volume, hovering in all orientations, or loitering around positions when applicable. In addition, the RP must exercise procedures for abnormal situations (e.g., a return-to-home function, if available), as stipulated in the user's manual provided by the manufacturer.

(e) This must be completed prior to taking the test described in AMC1 UAS.OPEN.030(2)(c). This practical training must be completed within the confines of the A1 or A3 subcategory, and may be completed at either a RAE, or by the individual.

PRACTICAL COMPETENCIES FOR PRACTICAL SELF-TRAINING

When executing the practical self-training, RPs should perform as many flights as they deem necessary to gain a reasonable level of knowledge and the skills to operate the UAS safely.

The following list of practical competencies must be considered:

(a) Preparation of the UAS operation:

(1) make sure that the:

- (i) chosen payload is compatible with the UAS used for the flight;
- (ii) operating area is suitable for the intended operation; and
- (iii) UAS meets the technical requirements of any geographical zone that is being flown within;

(2) define the area of operation in which the intended operation takes place in accordance with UAS.OPEN.040;

(3) define the area of operation considering the characteristics of the UAS;

(4) identify the limitations published for any relevant geographical zone (e.g., FRZs around aerodromes, Prohibited, Restricted or Danger areas, etc), and if needed, seek authorisation by the entity responsible for such zones;

(5) identify any obstacles and the potential presence of uninvolved persons in the area of operation that could hinder the intended UAS operation; and

(6) check the current meteorological conditions and the forecast for the time planned for the operation.

(b) Preparation for the flight:

(1) assess the general condition of the UAS and ensure that the configuration of the UAS complies with the instructions provided by the manufacturer in the user's manual;

(2) ensure that all removable components of the UA are properly secured;

(3) make sure that the software installed on the UAS and in the command unit is the latest version published by the UAS manufacturer;

(4) calibrate the instruments on board the UA, if required;

(5) identify possible conditions that may jeopardise the safety of the intended UAS operation;

(6) check the status of the battery and make sure it is sufficient for the intended UAS operation;

(7) update the geo-awareness system; and

(8) set the height limitation system, if required.

(c) Flight under normal conditions:

(1) using the procedures provided by the manufacturer in the user's manual, familiarise with how to:

i. take off (or launch)

ii. carry out a stable flight:

iii. hover in case of multicopter UA;

iv. perform coordinated large turns;

v. perform coordinated tight turns;

vi. perform straight flight at a constant altitude;

vii. change direction, height and speed;

viii. follow a path;

ix. return of the UA towards the RP after the UA has been placed at a distance that no longer allows its orientation to be distinguished, in case of multicopter UA;

x. perform horizontal flight at different speed (critical high speed or critical low speed), in case of fixed wing UA;

xi. keep the UA outside any relevant airspace restrictions, unless holding an authorisation to enter;

xii. use some external references to assess the distance and height of the UA;

xiii. perform return to home procedure — automatic or manual;

xiv. land (or recovery); and

xv. perform landing procedure and missed approach in case of fixed wing UA; and

(2) maintain a sufficient separation from obstacles;

(d) Flight under abnormal conditions, where an abnormal condition is one which involves the use of additional procedures to continue the flight safely:

- (1) manage the UAS flight path in abnormal situations;
- (2) manage a situation where the UAS positioning equipment is impaired;
- (3) manage a situation of incursion of a person into the area of operation, and take appropriate measures to maintain safety;
- (4) manage the exit from the operating area as defined during the flight preparation;
- (5) manage the incursion of a manned aircraft into/ near to the area of operation;
- (6) manage the incursion of another UAS into the area of operation;
- (7) deal with a situation of a loss of attitude or position control generated by external phenomena such as Electromagnetic Interference (EMI);
- (8) resume manual control if fitted on the UAS, when automatic systems render the situation dangerous; and
- (9) carry out the loss of C2 link procedure.

(e) Briefing, debriefing and feedback:

- (1) conduct a review of the UAS operation; and
- (2) identify situations when an occurrence report is necessary and complete the occurrence report.

AMC1 UAS.OPEN.030(2)(c) Additional A2 Online Test

CAA ORS9 Decision No. 16

DECLARATION OF COMPLETION OF SELF-PRACTICAL TRAINING

The applicant shall declare that they have completed the self-practical training, described in "AMC1 UAS.OPEN.030(2)(b) and (c) UAS Operations in Subcategory A2" on page 74 and "AMC2 UAS.OPEN.030(2)(b) UAS Operations in Subcategory A2" on page 75. This declaration shall be made in writing to the RAE that the applicant has chosen to attend, for completion of the training course described below.

The applicant shall provide evidence as part of their declaration to the RAE confirming that the self-practical training has been completed, by means of a flight log, to demonstrate that flight time has been recorded, during the self-practical training.

AMC2 UAS.OPEN.030(2)(c) Additional A2 Online Test

CAA ORS9 Decision No. 16

PASS AN ADDITIONAL THEORY TEST

The additional theory test shall be completed at an RAE.

The examination may be electronic, or paper based, but must be 'closed book' – i.e. without reference to other material, other than that specifically referred to within a question (i.e. charts/maps).

The examination shall comprise a minimum of 30 multiple choice questions and is to be 75 minutes in duration. The pass mark shall be at least 75%.

A candidate with a recognised disability or additional needs will be granted an additional 15 minutes to complete the examination upon request.

If, following a failure of a previous attempt, an examination is being repeated, the student must sit a different set of questions to that used previously.

A Flyer ID must be held prior to commencing the additional theory test (see AMC1 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3)).

Following completion of the self-practical training, declaration to the RAE and completion of the additional theory test, the RAE shall issue the applicant with a certificate- the 'A2 Certificate of Competence'.

Note:

The CAA will issue RAEs with copies of templates to be used.

QUESTIONS TO BE DISTRIBUTED ACROSS THE FOLLOWING SUBJECTS

The questions shall be comprised from the following topics:

Subject	Areas to be Covered
Meteorology	<ul style="list-style-type: none"> - Introduction to obtaining and interpreting weather information - Weather reporting resources - Reports, forecasts and meteorological conventions appropriate for typical UAS flight operations - Local weather assessments - Effects of weather on the UA - Wind – urban effects, gradients, masking, turbulence - Temperature – precipitation, icing, turbulence

Subject	Areas to be Covered
	<ul style="list-style-type: none"> - Visibility factors - Clouds – Cumulonimbus (CB) hazards (including lightning) - IP43 (International Protection) IEC/EN 60529 standards with regard to water ingress
UAS Flight Performance	<p>Typical operational envelope of a rotorcraft, fixed wing and hybrid configurations</p> <ul style="list-style-type: none"> - Basic principles of flight <p>Operating guides</p> <ul style="list-style-type: none"> - Flight procedures/basic drills - Emergencies¹ <p>Maintenance of system</p> <ul style="list-style-type: none"> - Scheduled and repairs - Manufacturer’s recommendations - Assessment ‘safe to be flown?’ <p>Mass and balance and centre of gravity (CG)</p> <ul style="list-style-type: none"> - Consideration of the overall balance when attaching gimbals, payloads - Understand meaning of MTOM - Security of the payload - Payload characteristics – how differences can affect the stability of a flight - CG – differences between different types of UA <p>Batteries</p> <ul style="list-style-type: none"> - Understand the terminology used for batteries (e.g. memory effect, capacity, c-rate) - Differences in battery types - Understand how a battery functions (e.g. charging, usage, danger, storage)

¹See GM1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot.

Subject	Areas to be Covered
	<ul style="list-style-type: none"> - Battery safety - how to help prevent potential unsafe conditions
UAS Operating Principles	<p>UAS operations</p> <ul style="list-style-type: none"> - Visual Line of Sight (VLOS) - Avoiding collisions – ‘See and Avoid’ - Decision process - Stress/pressure from ‘customers’ - Occurrence reporting and investigation <p>Congested area operations</p> <ul style="list-style-type: none"> - Planning and preparation - Hazard identification - Overflight of people - Public/third parties – crowds and gatherings <p>Medical fitness</p> <ul style="list-style-type: none"> - Crew health precautions - Alcohol, drugs, medication, medical restrictions - Fatigue <ul style="list-style-type: none"> o Flight duration/flight workload o Outdoors and lone working <p>Technical and operational mitigations for ground risk</p> <p>Low speed mode function</p> <p>Evaluating distance from people</p> <p>1:1 rule</p>

GM1 UAS.OPEN.030(1) UAS Operations in Subcategory A2

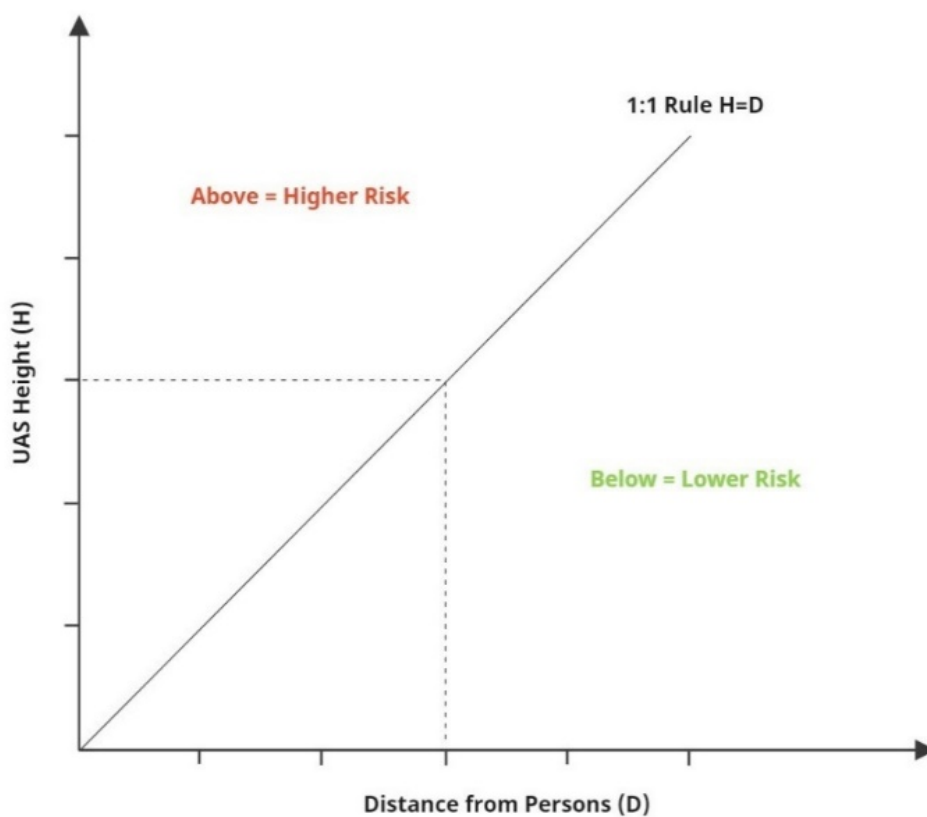
CAA ORS9 Decision No. 16

OPERATIONS IN SUBCATGORY A2

Subcategory A2 addresses operations during which flying close to people is intended for a significant portion of the flight. The minimum horizontal distance from uninvolved people is 30m. The RP is also required to have successfully passed an additional examination (known as the A2 CofC) in order to fly in sub-category A2.

The 1:1 'rule'

The '1:1 rule' is a principle which can be used to identify when the minimum separation distance from uninvolved people may need to be increased, and by how much. It is based on the relationship between the UA's height and its distance from the uninvolved person (the 1:1 line).



The horizontal separation between the UA and uninvolved people should not be less than the height of the aircraft. The higher the aircraft, the further it will travel should it suffer a catastrophic failure, and therefore the higher the likelihood of it colliding with uninvolved people, and so the separation distance must be increased (or the height reduced). This is so that, in the event of a propulsion failure, the UA is not likely to fall in an area with uninvolved people present.

RPs should aim to maintain a horizontal separation distance that is greater than, or equal to, the aircraft's height, using the same units of measurement.

Operations where the aircraft's height is greater than the separation distance (i.e. above the 1:1 line) should be avoided or kept to the absolute minimum time necessary, due to the increased risk.

GM1 UAS.OPEN.030(2)(a) UAS Operations in Subcategory A2

CAA ORS9 Decision No. 16

COMPLETION OF A1/A3 REMOTE PILOT COMPETENCE

See AMC1 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3) UAS operations in subcategories A1, A2 and A3.

GM1 UAS.OPEN.030(2)(c) Additional A2 Online Test

CAA ORS9 Decision No. 16

DECLARATION OF COMPLETION OF SELF-PRACTICAL TRAINING

No specific minimum flight time is set out in regulation, in order to demonstrate completion of the self-practical training. When the applicant declares that they have completed the training, they must demonstrate that they have undertaken the flight time, that they declare they have undertaken during this self-practical training.

GM1 UAS.OPEN.030(3) UAS Operations in Subcategory A2

CAA ORS9 Decision No. 16

MODIFICATION OF A UAS WITH A CLASS MARK

See "GM1 Article 2(16) Definitions" on page 25.

UAS.OPEN.040 UAS operations in subcategory A3

UAS operations in subcategory A3 shall comply with all of the following conditions:

- (1) be conducted in an area where the remote pilot reasonably expects that no uninvolved person will be endangered within the range where the unmanned aircraft is flown during the entire time of the UAS operation;
- (2) be conducted at a safe horizontal distance of at least 150 metres from residential, commercial, industrial or recreational areas;
- (3) be performed by a remote pilot who is familiar with manufacturer's instructions provided by the manufacturer of the UAS and who has completed an online training course and passed an online theoretical knowledge examination as defined in point (4) of point UAS.OPEN.020;
- (4) be performed with an unmanned aircraft that:

- (a) has an MTOM, including payload, of less than 25 kg, in the case of a privately built UAS, or
- (b) meets the requirements defined in point (b) of Article 20;
- (c) is marked as class C2 and complies with the requirements of that class, as defined in Part 3 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification system and geo-awareness function or;
- (d) is marked as class C3 and complies with the requirements of that class, as defined in Part 4 of the Annex to Delegated Regulation (EU) 2019/945 and is operated with active and updated direct remote identification system and geo-awareness function; or
- (e) is marked as class C4 and complies with the requirements of that class, as defined in Part 5 of the Annex to Delegated Regulation (EU) 2019/945.

AMC1 UAS.OPEN.040(1) Operations in Subcategory A3

CAA ORS9 Decision No. 16

ENDANGERMENT OF UNINVOLVED PEOPLE

If an uninvolved person enters the area of the UAS operation, the RP must, where necessary, adjust the operation to ensure the safety of the uninvolved person and discontinue the operation if the safety of the UAS operation cannot be ensured.

GM1 UAS.OPEN.040(1) Operations in Subcategory A3

CAA ORS9 Decision No. 16

SAFE DISTANCE FROM UNINVOLVED PEOPLE

The safe distance of the UA from uninvolved persons is variable and is heavily dependent on the performance and characteristics of the UAS involved, the weather conditions and the segregation of the overflowed area. The RP is ultimately responsible for the determination of this distance.

It is advised that, as a general rule, a 50m horizontal separation distance from uninvolved people is used as a method to comply with the requirement to ensure the safety of uninvolved people. This minimum distance may need to be increased based on other factors, such as kinetic energy, controllability, height and other such factors.

Uninvolved people should only be overflowed when absolutely necessary, to achieve the aim of the flight and must be minimised as much as possible.

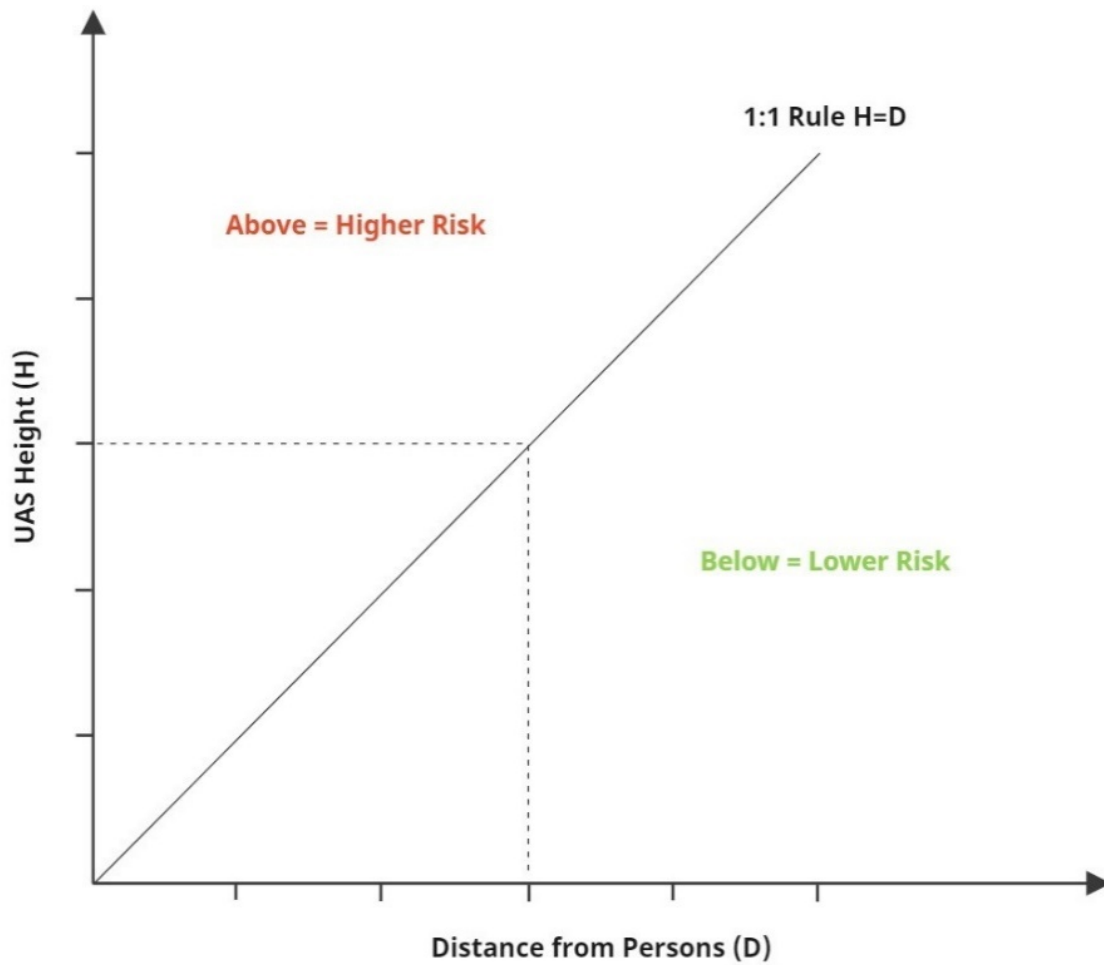
When flying above uninvolved people, some horizontal separation should be maintained. The necessary horizontal separation depends on factors, such as wind direction, trajectory of the UA and height of the UA.

The RP must be aware of their responsibilities as set out in "UAS.OPEN.060 Responsibilities of the remote pilot" on page 90 (2)(d), and in "GM1 UAS.OPEN.060(2) (d) Responsibilities of the Remote Pilot" on page 96, with regard to maintaining control of the UA.

The 1:1 rule:

The '1:1 rule' is a principle which can be used to identify when the minimum separation distance from uninvolved people may need to be increased, and by how much. It is based on the relationship between the UA's height and its distance from the uninvolved person (the 1:1 line).

The horizontal separation between the UA and uninvolved people should not be less than the height of the aircraft. The higher the aircraft, the further it will travel should it suffer a catastrophic failure, and therefore the higher the likelihood of it colliding with uninvolved people, and so the separation distance must be increased (or the height reduced). This is so that, in the event of a propulsion failure, the UA is not likely to fall in an area with uninvolved people present.



GM1 UAS.OPEN.040(2) UAS Operations in Subcategory A3

CAA ORS9 Decision No. 16

RESIDENTIAL, COMMERCIAL, INDUSTRIAL AND RECREATIONAL AREAS

The definition of residential, commercial, and recreational areas includes individual buildings in remote locations.

GM1 UAS.OPEN.040(3) UAS Operations in Subcategory A3

CAA ORS9 Decision No. 16

COMPLETION OF A1/A3 REMOTE PILOT COMPETENCE

See "AMC1 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3) UAS Operations in Subcategories A1, A2 and A3" on page 70 and "UAS.OPEN.030 UAS operations in subcategory A2" on page 72 (2)(a) and "UAS.OPEN.040 UAS operations in subcategory A3" on page 83 (3) UAS operations in subcategories A1, A2 and A3.

GM1 UAS.OPEN.040(4)(c), (d) and (e) UAS Operations in Subcategory A3

CAA ORS9 Decision No. 16

MODIFICATION OF A UAS WITH A CLASS MARK

See "GM1 Article 2(16) Definitions" on page 25.

UAS.OPEN.050 Responsibilities of the UAS operator

The UAS operator shall comply with all of the following:

- (1) develop operational procedures adapted to the type of operation and the risk involved;
- (2) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;
- (3) designate a remote pilot for each flight;
- (4) ensure that remote pilots and all other personnel performing a task in support of the operations are familiar with manufacturer's instructions provided by the manufacturer of the UAS, and:
 - (a) have appropriate competency in the subcategory of the intended UAS operations in accordance with points UAS.OPEN.020, UAS.OPEN.030 or UAS.OPEN.040 to perform their tasks or, for personnel other than the remote pilot, have completed an on-the-job-training course developed by the operator;
 - (b) are fully familiar with the UAS operator's procedures;
 - (c) are provided with the information relevant to the intended UAS operation concerning any geographical zones designated by the Secretary of State in accordance with Article 15;
- (5) update the information into the geo-awareness system when applicable according to the intended location of operation;
- (6) in the case of an operation with an unmanned aircraft of one of the classes defined in Parts 1 to 5 of the Annex of Delegated Regulation (EU) 2019/945, ensure that the UAS is:
 - (a) accompanied by the corresponding [...] declaration of conformity, including the reference to the appropriate class; and
 - (b) the related class identification label is affixed to the unmanned aircraft.

(7) Ensure in the case of an UAS operation in subcategory A2 or A3, that all involved persons present in the area of the operation have been informed of the risks and have explicitly agreed to participate.

AMC1 UAS.OPEN.050(1) Operations in Subcategory A3

CAA ORS9 Decision No. 16

OPERATIONAL PROCEDURES

The UAS Operator is responsible for developing procedures that are adapted to the type of operations and to the risks involved, and for ensuring that those procedures are complied with. The extent of the detail that needs to be provided within those procedures will vary depending on the relative complexity of the operation and/or the organisation involved.

Written procedures may not always be necessary, especially if the UAS Operator is also the only RP. The limitations of the Open category and the operating instructions provided by the UAS manufacturer may be considered sufficient.

If the UAS Operator employs more than one RP, the UAS Operator must:

- (a) develop procedures for UAS operations in order to coordinate the activities between its employees; and
- (b) establish and maintain a list of their personnel and their assigned duties.

For UAS Operators who wish to develop procedures, guidance can be found in the AMC and GM to Article 11.

GM1 UAS.OPEN.050(2) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

EFFICIENT USE OF RADIO SPECTRUM TO AVOID HARMFUL INTERFERENCE- VHF RADIO COMMUNICATIONS

The incorrect and illegal use of VHF Radiotelephony (RT) can cause significant impact to airspace users who require its use for communication with an ATS provider, especially in critical phases of flight or during an emergency. VHF radio communication should not be required in the Open category.

It should be noted that the use of VHF RT is strictly controlled, and requires the pilot to hold an appropriate licence, and to use an appropriately licenced radio for air-air, air-ground or ground-ground use.

It is the responsibility of the UAS Operator to ensure that the radio spectrum used for the C2 Link and for any payload communications complies with the relevant Ofcom requirements and that any licenses required for its operation have been obtained.

Frequency bands are allocated by Ofcom, details can be found on the Ofcom website and include [IR 2030 – UK Interface Requirements 2030](#) which covers licence exempt short range devices. Applications for the assignment of frequencies within the bands must be addressed to Ofcom.

Licencing of frequency allocations is the responsibility of Ofcom and hence, where required, all applications for a frequency assignment should be directed in the first instance to Ofcom. In frequency bands where the CAA is the assigning authority, then the application will be passed to the CAA by Ofcom so that the CAA can conduct the technical work, but Ofcom still remains the licencing authority.

There are no specific frequencies allocated for use by UAS in the UK. However, the most used frequencies are 35 MHz, 2.4 GHz and 5.8 GHz.

35 MHz is a frequency designated for model aircraft use only, with the assumption that clubs and individuals will be operating in a known environment to strict channel allocation rules. It is therefore not considered to be a suitable frequency for more general UAS operations (i.e. outside a club environment) where the whereabouts of other users is usually difficult to assess.

2.4 GHz is a licence free band used for car wireless keys, household internet and a wide range of other applications. Although this is considered to be far more robust to interference than 35 MHz, operators must act with appropriate caution in areas where it is expected that there will be a high degree of 2.4 GHz activity.

5.8 GHz is a licenced band which requires a minimum payment and registration with Ofcom. This band is in use with other services including amateur-satellite, weather and military radars. Details can be found on the [Ofcom website](#).

For further UAS specific guidance on whether a licence is required for your UAS, more information can be found on the [Ofcom website](#).

Operations close to any facility that could cause interference (such as a radar station) could potentially disrupt communications with the UAS, whatever the frequency in use. GNSS jamming activities may also disrupt communications as well as C2 signals. Information on scheduled GNSS jamming exercises can be found on the [Ofcom website](#), and should be promulgated via NOTAM.

AMC1 UAS.OPEN.050(4)(c) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

OBTAIN UPDATED INFORMATION ABOUT GEOGRAPHICAL ZONES

The UAS Operator must download the latest version of the geographical zone data and make this available to the RP such that they can upload it into the geo-awareness system, if such a system is available on the UA used for the operation. This information must be both an accurate, and complete, representation of the applicable airspace restrictions to the UAS Operation.

UAS.OPEN.060 Responsibilities of the remote pilot

(1) Before starting an UAS operation, the remote pilot shall:

- (a) have the appropriate competency in the subcategory of the intended UAS operations in accordance with points UAS.OPEN.020, UAS.OPEN.030 or UAS.OPEN.040 to perform its task and carry a proof of competency while operating the UAS, except when operating an unmanned aircraft referred to in points (5)(a), (5)(b) or (5)(c) of point UAS.OPEN.020;
- (b) obtain updated information relevant to the intended UAS operation about any geographical zone designated by the Secretary of State in accordance with Article 15;
- (c) observe the operating environment, check the presence of obstacles and, unless operating in subcategory A1 with an unmanned aircraft referred to in points (5)(a), (5)(b) or (5)(c) of point UAS.OPEN.020, check the presence of any uninvolved person;
- (d) ensure that the UAS is in a condition to safely complete the intended flight, and if applicable, check if the direct remote identification is active and up-to-date;
- (e) if the UAS is fitted with an additional payload, verify that its mass does not exceed neither the MTOM defined by the manufacturer or the MTOM limit of its class.

(2) During the flight, the remote pilot shall:

- (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;
- (b) keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property;
- (c) comply with the operational limitations in geographical zones designated in accordance with Article 15;

- (d) have the ability to maintain control of the unmanned aircraft, except in the case of a lost link or when operating a free-flight unmanned aircraft;
 - (e) operate the UAS in accordance with manufacturer's instructions provided by the manufacturer, including any applicable limitations;
 - (f) comply with the operator's procedures when available;
 - (g) when operating at night, ensure that a green flashing light on the unmanned aircraft is activated.
- (3) During the flight, remote pilots and UAS operators shall not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.
- (4) For the purposes of point (2)(b), remote pilots may be assisted by an unmanned aircraft observer. In such case, clear and effective communication shall be established between the remote pilot and the unmanned aircraft observer.

AMC1 UAS.OPEN.060(1)(c) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

OPERATING ENVIRONMENT

- (a) The RP should observe the operating environment and check any conditions that might affect the UAS operation such as; the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation.
- (b) Familiarisation with the environment and obstacles should be conducted, when possible, by walking around the area where the operation is intended to be performed.
- (c) It must be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are within limits defined as suitable for the UAS, which must not exceed any specified in the manufacturer's manual. Note that this may need to include an understanding of the effects of wind flow / air flow patterns and potential turbulence caused by obstacles and buildings in the location of operation at all operating heights.
- (d) The RP must be familiar with the operating environment and the light conditions and make a reasonable effort to identify potential sources of electromagnetic energy, which may cause undesirable effects, such as electromagnetic interference (EMI) or physical damage to the operational equipment of the UAS.

AMC1 UAS.OPEN.060(1)(d) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

UAS IN A SAFE CONDITION TO COMPLETE THE INTENDED FLIGHT

The RP must:

- Update the UAS with data for the geo-awareness function if it is available on the UA, including relevant airspace restrictions;
- Ensure that the UAS is safe to be flown and complies with the instructions and limitations provided by the manufacturer, or the best practice in the case of a privately built UAS;
- Ensure that any payload carried is properly secured and installed and that it complies with the limits of the mass and Centre of Gravity (CG) of the UA;
- Ensure that the charge of the battery of the UA (and quantify of fuel, if applicable) is enough for the intended operation based on:
 - o the planned operation; and
 - o the need for extra energy in case of unpredictable events; and
 - o For UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-data-link recovery functions, the RP may have to set up the parameters of this function to adapt it to the envisaged operation prior to flight.
- Ensure any lighting or remote identification systems (if applicable) are functioning correctly.

AMC1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

VLOS RANGE

The maximum distance of the UA from the RP will depend on the size of the UA and on the environmental characteristics of the area (such as the visibility, presence of tall obstacles, etc.).

RPs must keep the UA at a distance such that they are always able to clearly see it and evaluate the distance of the UA from other obstacles.

If the operation takes place in an area where there are no obstacles and the RP has unobstructed visibility up to the horizon, the UA can be flown up to a distance such that the UA remains clearly visible, in order that it can be controlled, this includes being able to determine its orientation.

If there are obstacles in the operating area, then the distance should be reduced such that the RP is able to evaluate the relative distance of the UA from those obstacles.

The RP should also consider other factors that may affect the maximum range of the UA from the RP, including the C2 link range.

Ensure VLOS, as defined within GM1 Article 2(7), is maintained at all times during flight.

AMC1 UAS.OPEN.060(2)(d) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

ABILITY TO MAINTAIN CONTROL OF THE UA

In order to maintain control of the UA, the RP should:

- (1) be focused on the operation of the UA, as appropriate; and
- (2) not operate a UA while also operating a moving vehicle;
- (3) Operate only one UA at a time

If, as a passenger, the RP operates a UA from a moving ground vehicle or boat, the speed of the vehicle must be slow enough for the RP to maintain a VLOS of the UA, maintain control of the UA at all times and maintain situational awareness and orientation.

Autonomous operations are not allowed in the Open category, and the RP must be able to take control of the UA at any time, except in the event of a free-flight UA. This includes when required to land the UA at any point during the flight, by maintaining VLOS.

In the event of a lost C2 Link the RP will no longer be able to take control of the UA, therefore the RP must take all reasonable steps to ensure that the UA is not flown into a situation where the C2 Link might be lost (e.g. due to excessive range from the command unit, or in an area where the potential for RF interference is increased).

In addition, RPs must always fly their UA in a manner that, should a lost C2 Link situation occur, the UA will not subsequently endanger persons or property (e.g. while flying its 'return to home' procedure).

GM1 UAS.OPEN.060(1)(b)

CAA ORS9 Decision No. 16

UPDATED INFORMATION ON GEOGRAPHICAL ZONES

Although "UAS.OPEN.060 Responsibilities of the remote pilot" on page 90 (1)(b) specifically refers to geographical zones established under "art. 15 Operational conditions for UAS geographical zones" on page 56, the primary means for restricting flight of aircraft (including UA) in the UK, is under the ANO article 239. The RP must be familiar with these restrictions, and obtain any necessary permissions required to fly within them. This information can be found within the AIP.

GM1 UAS.OPEN.060(2)(a) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

PSYCHOACTIVE SUBSTANCES OR ALCOHOL

It is the responsibility of the RP to ensure that they are fit to fly and are not under the influence of any psychoactive substance or alcohol. While the general message is 'don't drink and fly', additional information is provided below for reference and guidance.

While no actual limits are specified, the alcohol and drug consumption limitations that are prescribed for driving a car may be considered as an appropriate limit when flying in the Open category (i.e., if you are fit to drive a car, then you should be considered fit to fly in the Open category).

INJURY, FATIGUE, MEDICATION OR SICKNESS

While there are no specific requirements or medical standards set out for operations in the Open category, RPs should apply the same considerations that they would before driving a motor vehicle or riding a pedal cycle on the road.

OTHER CAUSES

'Other causes' means any physical or mental disorder or any functional limitation of a sensory organ that would prevent the RP from performing the operation safely.

GM1 UAS.OPEN.060(2)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

DISCONTINUATION OF THE FLIGHT IF THE OPERATION POSES A RISK TO OTHER AIRCRAFT

There is an obligation on the RP to maintain a thorough visual scan of the surrounding airspace to avoid any risk of a collision with manned aircraft. It is likely that the RP will identify other airspace users before they identify the UA, and therefore the RP will usually be the first to manoeuvre away from any conflicting aircraft.

RPs should be aware that their UA are generally difficult, if not impossible, to see from another aircraft until they are extremely close.

As soon as the RP sees another aircraft, parachute, or any other airspace user, they must immediately keep the UA at a safe distance from it and land if the RP is not confident the flight can continue without posing a risk to the other airspace user.

If the RP cannot ensure suitable separation from the other aircraft, the UA must be landed immediately.

Although many aerodromes are protected by FRZs, many unlicensed aerodrome sites also exist, including hospital helipads. Such aircraft may loiter at low-level or land and take off unexpectedly. All of these types of helicopter operations may therefore be affected by VLOS operations particularly when approaching to land or departing from a site; UAS Operators and RPs must take active precautionary measures to avoid affecting the safety of other airspace users, either by requiring them to take avoiding action, disrupting a mission or distraction (for example, aborting an air ambulance landing due to a UA sighting).

DISCONTINUE THE FLIGHT IF THE OPERATION POSES A RISK TO ANIMALS AND THE ENVIRONMENT

In order to help assess whether the flight may pose a risk to animals, or the environment, the RP should check whether or not the flight is to take place within a Site of Special Scientific Interest (SSSI). When a flight may take place in such an area, the RP should contact the appropriate public body (e.g., Natural England, Natural Wales, Nature Scotland, National Trust, Historic Scotland, etc.) for further advice.

DISCONTINUE THE FLIGHT IF THE OPERATION POSES A RISK TO PEOPLE OR PROPERTY

This requirement also includes people inside vehicles. A collision, or even a distraction, caused by a UA to a motor vehicle, or any other passenger carrying vehicle, is likely to lead to a risk to the occupants of the vehicle.

EMERGENCY LANDING

Planning is a crucial stage to a mission's success and RPs must consider all 'in-flight' emergency scenarios, particularly when operating at a range where a systems failure or external influence may remove the RTH option and potentially result in an unplanned landing outside of the VLOS criteria. RPs should continually identify and update suitable Emergency Landing Sites (ELs) as part of their desk top analysis, when conducting on-site reconnaissance and throughout the flight phase.

If an UA Observer is not employed and an aircraft experiences a critical system failure, or is subject to unexpected external influences, precluding the aircraft from safely returning to the home point it may be necessary to conduct an unassisted emergency landing away from the RP. RPs are required to maintain good situational awareness throughout

all flights and must therefore adequately divide their attention between scanning the airspace for conflicting aircraft and achieving the mission. This should also involve exploiting the aircrafts sensor to scan the ground below for uninvolved persons infringing the safety minima and to identify suitable ELSs should an emergency landing be required. RPs should proactively scan and plan for new ELSs as the aircraft tracks away from the previous one. Whilst it is accepted that in such circumstances an RP may have little or no control over the aircrafts safe descent, they must make every effort to mitigate the risk to uninvolved persons.

GM1 UAS.OPEN.060(2)(c)

CAA ORS9 Decision No. 16

GEOGRAPHICAL ZONES

Although this requirement relates specifically to geographical zones established under Article 15, RPs should be aware of other airspace restrictions established under the ANO. These airspace restrictions must also be complied with. Details of these can be found within the AIP.

GM1 UAS.OPEN.060(2)(d) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

ABILITY TO MAINTAIN CONTROL OF THE UA

In order to help maintain control of the UA, the RP should fly cautiously, with the expectation that control of the UA may be lost without notice. The RP should avoid flying at excessive speeds when not necessary, especially near people.

The RP and UAS Operator should consider any environmental factors that may increase the potential for loss of control of the aircraft, or loss of propulsion. These factors may include terrain, other nearby sources of RF interference or weather conditions that may degrade the performance of the C2 link, and systems on the UA including batteries.

Precipitation may lead to water ingress into various systems on the UA, low temperatures may affect battery performance, and high wind speeds will result in a faster battery drain than in nil-wind conditions.

It should be noted that a partial loss of control may also be experienced, for example, a loss of some automated functions of the UA. The RP should be familiar with how these failures may affect other systems on the UA, and what backup systems are available- if any. The RP should also be familiar with flying the UA without the use of automated flight functions, in manual modes.

GM2 UAS.OPEN.060(2)(d) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

FREE-FLIGHT UA

'Free flight' means performing flights with no external control, taking advantage of the ascending currents, dynamic winds and the performance of the model. Outdoor free flights are carried out with gliders or with models equipped with means of propulsion (e.g. rubber-bands or thermal engines) that raise them in altitude, before they freely glide and follow the air masses.

For the purpose of free-flight UA, the person who launches the UA is the RP, and must comply with the responsibilities of the RP.

GM1 UAS.OPEN.060(3) and GM1 UAS.SPEC.060(3)(e) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

EMERGENCY RESPONSE DEFINITION

The term 'emergency response effort' covers any activities by police, fire, ambulance, coastguard, Search and Rescue or other similar services where action is ongoing in order to preserve life, protect the public or respond to a crime in progress. This includes activities such as road traffic collisions, fires, flooding events, rescue operations and firearms incidents, although this list is not exhaustive.

'Emergency response' is an action taken in response to an unexpected and dangerous event in an attempt to mitigate its impact on people, property or the environment.

EMERGENCY RESPONSE EFFORT

When there is an emergency response effort taking place within the operational area of a UAS, the UAS operation must be safely and immediately discontinued unless it was explicitly authorised by the responsible emergency response services.

When an emergency response effort is taking place close to the operational area, a safe distance must be maintained between the UA and the emergency response site so that the UA does not interfere with, or endanger, the activities of the emergency response services. The UAS Operator should take particular care not to hinder any possible aerial support to the emergency services, and to protect the privacy rights of persons involved in the emergency event.

GM1 UAS.OPEN.060(4) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

ROLE OF THE UA OBSERVER AND FIRST-PERSON VIEW

RPs may be assisted by UA Observers in helping them to keep the UA away from other aircraft and obstacles. The UA Observer must be situated alongside the RP and observers may not use any form of aided vision (e.g. binoculars) other than corrective spectacles or contact lenses.

UA Observers may also be used when the RP conducts UAS operations in first-person view (FPV), which is the method of controlling the UA primarily by referencing the UA's video downlink, either via watching the UA controller's screen or via goggles. The UA Observer must be situated alongside the RP and may not use aided vision other than corrective spectacles or contact lenses.

In all cases, the RP is still fully responsible for the safety of the flight.

The UA Observer's purpose is not to extend the range of the UA beyond the VLOS distance from the RP. However, in emergency situations, such as the need to perform an emergency landing away from the RP's position, binoculars may be used to assist the RP in safely performing the landing.

The UA Observer needs to be briefed by the RP or UAS Operator, in regard to keeping the UA within VLOS, and the definition of VLOS set out in GM1 Article 2(7). Whilst no minimum age, or competence level, is set out in law for a UA Observer, in order to meet the regulatory requirements that do exist, it is recommended that the UA Observer completes the Flyer ID test and learning, as set out in section "AMC1 UAS.OPEN.020(4) (b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3) UAS Operations in Subcategories A1, A2 and A3" on page 70 and "UAS.OPEN.030 UAS operations in subcategory A2" on page 72 (2)(a) and "UAS.OPEN.040 UAS operations in subcategory A3" on page 83 (3).

[UAS.OPEN.070 Duration and validity of the remote pilot online theoretical competency and certificates of remote pilot competency](#)

- (1) The remote pilot online theoretical competency, required by points (4)(b) of point UAS.OPEN.020 and point (3) of point UAS.OPEN.040, and the certificate of remote pilot competency, required by point (2) of point UAS.OPEN.030, shall be valid for five years.
- (2) The revalidation of the remote pilot online theoretical competency and of the certificate of remote pilot competency is, within its validity period, subject to:
 - (a) a demonstration of competencies respectively in accordance with point (4)(b) of point UAS.OPEN.020 or point (2) of point UAS.OPEN.030; or
 - (b) the completion of a refresher training addressing respectively the theoretical knowledge subjects as defined in point (4)(b) of point UAS.OPEN.020 or point (2) of point UAS.OPEN.030 provided by the CAA or an entity designated by the CAA .

(3) In order to revalidate the remote pilot online theoretical competency or the certificate of remote pilot competency upon its expiration, the remote pilot shall comply with point (2)(a).

GM1 UAS.OPEN.070 Duration and Validity of Remote Pilot Competency

CAA ORS9 Decision No. 16

DURATION OF FLYER-ID VALIDITY

A Flyer ID that was obtained under national regulations, or before this regulation became applicable, holds a validity period of 3 years. On renewal, these Flyer IDs will hold a validity of 5 years.

Part B UAS OPERATIONS IN THE 'SPECIFIC' CATEGORY

UAS.SPEC.010 General provisions

The UAS operator shall provide the CAA with an operational risk assessment for the intended operation in accordance with Article 11 [...] unless the operator holds a light UAS operator certificate (LUC) with the appropriate privileges, in accordance with Part C of this Annex. The UAS operator shall regularly evaluate the adequacy of the mitigation measures taken and update them where necessary.

[...]

UAS.SPEC.030 Application for an operational authorisation

- (1) Before starting an UAS operation in the 'specific' category the UAS operator shall obtain an operational authorisation from the CAA except where the UAS operator holds an LUC with the appropriate privileges, in accordance with Part C of this Annex.
- (2) The UAS operator shall submit an application for an updated operational authorisation if there are any significant changes to the operation or to the mitigation measures listed in the operational authorisation.
- (3) The application for an operational authorisation shall be based on the risk assessment referred to in Article 11 and shall include in addition the following information:
 - (a) the registration number of the UAS operator;
 - (b) the name of the accountable manager or the name of the UAS operator in the case of a natural person;
 - (c) the operational risk assessment;
 - (d) the list of mitigation measures proposed by the UAS operator, with sufficient information for the CAA to assess the adequacy of the mitigation means to address the risks;
 - (e) an operations manual when required by the risk and complexity of the operation;
 - (f) a confirmation that an appropriate insurance cover will be in place at the start of the UAS operations, if required by an enactment.

AMC1 UAS.SPEC.030(2) Application for an Operational Authorisation

CAA ORS9 Decision No. 16

SIGNIFICANT CHANGES TO THE OPERATIONAL AUTHORISATION

Any non-editorial change that affects the OA, or affects any associated documentation that is submitted to demonstrate compliance with the requirements established for the authorisation, is considered a significant change.

With regard to the information and documentation associated with the authorisation, changes are considered to be significant when they involve, for example:

- changes in the operations that affect the assumptions of the risk assessment;
- changes that relate to the safety management system (if applicable), or safety processes and procedures of the UAS Operator (including changes of key personnel), its ownership or its principal place of business;
- non-editorial changes that affect the OM, including the operational risk assessment.;
- non-editorial changes that affect the policies and procedures of the UAS Operator; and
- technical changes to the UAS.

UAS.SPEC.040 Issuing of an operational authorisation

(1) When receiving an application in accordance with point UAS.SPEC.030, the CAA shall issue, without undue delay, an operational authorisation in accordance with Article 12 when it concludes that the operation meets the following conditions:

- (a) all information in accordance with point (3) of point UAS.SPEC.030 is provided;
- (b) a procedure is in place for coordination with the relevant service provider for the airspace if the entire operation, or part of it, is to be conducted in controlled airspace.

(2) The CAA shall specify in the operational authorisation the exact scope of the authorisation in accordance with Article 12.

AMC1 UAS.SPEC.040(1)(b) Operational Authorisation

CAA ORS9 Decision No. 16

PROCEDURE FOR COORDINATION WITH SERVICE PROVIDER FOR OPERATION IN CONTROLLED AIRSPACE

Any application for operation in the Specific category must consider the need for involvement of the relevant Air Navigation Service Provider (ANSP), when operating within controlled airspace. This must be set out within a procedure, within the OM. This procedure must take into account the risk of the operation and provide any necessary coordination with the ATS unit.

For VLOS operations within controlled airspace, below 400ft AGL, no permission or notification to the ANSP is required, unless operating within an FRZ.

For VLOS operations within controlled airspace, above 400ft AGL, this must be coordinated via a notification process when required for that portion of airspace, as set out within the AIP. This is in addition to the FRZ permission process, if operating within an FRZ. The AIP may set out additional requirements for the notification, such as a notice period for notification, within the AIP.

Note:

ANSPs will be required to update the AIP with such requirements, as necessary, by means of an ACP, which is likely to be a 'Level 0 ACP'. Further information can be found in [CAP 1616](#).

Any operation that has the potential to impact the operation of another airspace user within controlled airspace, must consider how coordination with the ANSP will be achieved.

ANSPs may choose to be notified about all, or some, or no UAS operations within controlled airspace above 400ft AGL.

For BVLOS operations, at any height, within controlled airspace, the ANSP responsible for the management of the controlled airspace must be notified.

Although there is not a requirement to notify the ANSP when flying within controlled airspace below 400ft AGL, outside the FRZ, and within visual line of sight, this may still be identified as a risk mitigation within the risk assessment (see Article 11). In such cases, if this is adopted as a procedure within the OM, then this must also be carried out.

When notifying an ANSP of a potential flight within controlled airspace, the ATS unit may advise that the flight should not take place for safety, or other operational reasons. Although the ANSP may not specifically issue, or reject, a permission for entry to such airspace (unless an FRZ/Restricted area), this advice should be followed by the UAS Operator. Failure to follow this advice is likely to lead to a breach of a number of other regulatory requirements, such as ANO article 240,

which sets out that a person must not recklessly or negligently act in a manner likely to endanger an aircraft. The ANSP may choose to provide advice to the UAS Operator, on notification, of an alternative course of action that may mitigate the safety risk associated with the planned operation notified to the ANSP.

GM1 UAS.SPEC.040(1)(b) Operational Authorisation

CAA ORS9 Decision No. 16

PROCEDURE FOR COORDINATION WITH SERVICE PROVIDER FOR OPERATION IN CONTROLLED AIRSPACE

The Specific category covers a wide range of operations, many of which pose only a low air risk to other airspace users. In such instances (subject to proper procedures and risk assessment), it is not proportionate to require permission from, or notification to, an ANSP to operate within controlled airspace, much of which extends down to the surface.

The requirements of controlled airspace do not automatically apply to operations in the Open and Specific categories.

These instructions may be found within AIP Part 3, section AD 2.17, of the respective aerodrome (for controlled airspace established around an aerodrome) or within Part 2, section ENR 2.1 for other controlled airspace. If there are no instructions set out for the controlled airspace the flight is planned within, then it may be assumed that notification is not required.

The UAS Operator of any BVLOS operation will be expected to liaise with the ANSP when within controlled airspace, at any altitude.

A NOTAM is not sufficient for the purpose of this requirement (although may also be required, to promulgate details of the operation to other airspace users).

The notification of a flight to the ANSP as part of a coordination activity, as set out in "UAS.SPEC.040 Issuing of an operational authorisation" on page 101 (1)(b), does not imply the provision of any service, or separation, to the UA. If such a service is required by the OA then it must be explicitly agreed with the ANSP in advance of the flight.

UAS.SPEC.050 Responsibilities of the UAS operator

(1) The UAS operator shall comply with all of the following:

(a) establish procedures and limitations adapted to the type of the intended operation and the risk involved, including:

(i) operational procedures to ensure the safety of the operations;

- (ii) procedures to ensure that security requirements applicable to the area of operations are complied with in the intended operation;
 - (iii) measures to protect against unlawful interference and unauthorised access;
 - (iv) procedures to ensure that all operations are in respect of Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. In particular it shall carry out a data protection impact assessment, when required by the Information Commissioner's Office in application of Article 35 of Regulation (EU) 2016/679;
 - (v) guidelines for its remote pilots to plan UAS operations in a manner that minimises nuisances, including noise and other emissions-related nuisances, to people and animals.
- (b) designate a remote pilot for each flight or, in the case of autonomous operations, ensure that during all phases of the flight, responsibilities and tasks especially those defined in points (2) and (3) of point UAS.SPEC.060 are properly allocated in accordance with the procedures established pursuant to point (a);
- (c) ensure that all operations effectively use and support the efficient use of radio spectrum in order to avoid harmful interference;
- (d) ensure that before conducting operations, remote pilots comply with all of the following conditions:
- (i) have the competency to perform their tasks in line with the applicable training identified by the operational authorisation or, if point UAS.SPEC.020 applies, by the conditions and limitations defined in the appropriate standard scenario listed in Appendix 1 or as defined by the LUC;
 - (ii) follow remote pilot training which shall be competency based and include the competencies set out in paragraph 2 of Article 8:
 - (iii) follow remote pilot training, as defined in the operational authorisation, for operations requiring such authorisation, it shall be conducted in cooperation with an entity designated by the CAA ;
- [...]
- (v) have been informed about the UAS operator's operations manual, if required by the risk assessment and procedures established in accordance with point (a);

- (vi) obtain updated information relevant to the intended operation about any geographical zones designated in accordance with Article 15;
- (e) ensure that personnel in charge of duties essential to the UAS operation, other than the remote pilot itself, comply with all of the following conditions:
- (i) have completed the on-the-job-training developed by the operator;
 - (ii) have been informed about the UAS operator's operations manual, if required by the risk assessment, and about the procedures established in accordance with point (a);
 - (iii) have obtained updated information relevant to the intended operation about any geographical zones designated in accordance with Article 15;
- (f) carry out each operation within the limitations, conditions, and mitigation measures [...] specified in the operational authorisation;
- (g) keep and maintain an up-to-date record of:
- (i) all the relevant qualifications and training courses completed by the remote pilot and the other personnel in charge of duties essential to the UAS operation and by the maintenance staff, for at least 3 years after those persons have ceased employment with the organisation or have changed their position in the organisation;
 - (ii) the maintenance activities conducted on the UAS for a minimum of 3 years;
 - (iii) the information on UAS operations, including any unusual technical or operational occurrences and other data as required [...] by the operational authorisation for a minimum of 3 years;
- (h) use UAS which, as a minimum, are designed in such a manner that a possible failure will not lead the UAS to fly outside the operation volume or to cause a fatality. In addition, Man Machine interfaces shall be such to minimise the risk of pilot error and shall not cause unreasonable fatigue;
- (i) maintain the UAS in a suitable condition for safe operation by:
 - (i) as a minimum, defining maintenance instructions and employing an adequately trained and qualified maintenance staff; and
 - (ii) complying with point UAS.SPEC.100, if required;

- (iii) using an unmanned aircraft which is designed to minimise noise and other emissions, taking into account the type of the intended operations and geographical areas where the aircraft noise and other emissions are of concern.
- (j) establish and keep an up-to-date list of the designated remote pilots for each flight;
- (k) establish and keep an up-to-date list of the maintenance staff employed by the operator to carry out maintenance activities; and
- (l) ensure that each individual unmanned aircraft is installed with:
 - (i) at least one green flashing light for the purpose of visibility of the unmanned aircraft at night, and
 - (ii) an active and up-to-date remote identification system.

AMC1 UAS.SPEC.050(1)(a) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

OPERATIONAL PROCEDURES

The UAS Operator is responsible for developing procedures as required by the OA and for ensuring that those procedures are complied with.

The UAS Operator must:

- (1) develop procedures for its UAS operations within an OM, detailing the scope of the organisation and the procedures to be followed as a minimum. This manual should be expanded as necessary to cover any increased complexity in the types of UAS being flown (based on the manufacturer's recommendations, if available), or of the types of operation being conducted; and
- (2) compile and maintain a list of their personnel and their assigned duties.

The UAS Operator must allocate functions and responsibilities in accordance with the level of autonomy of the UAS during the operation.

These operational procedures must be set out within the OM as described in the AMC to Article 11.

GM1 UAS.SPEC.050(1)(a)(i) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

OPERATIONAL PROCEDURES TO ENSURE THE SAFETY OF THE OPERATION- HIGH VOLTAGE STORAGE DEVICES

The safe handling of such devices is important, and must be considered within the risk assessment process, described in the AMC/GM to Article 11. Consideration should be given to any time that any person may come into contact with such devices, including:

- Payload handlers/loaders
- Ground staff
- The RP
- Any person discovering the UA following an accident

Procedures should be established to cover all such eventualities and should include the display of relevant warnings.

The use of such devices on a UA should be identified and listed within the risk assessment process, and the display of a suitable warning label should be used as part of a mitigation of injury to third parties following an accident.

GM1 UAS.SPEC.050(1)(a)(iv) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

PROCEDURES TO ENSURE THAT ALL OPERATIONS ARE IN COMPLIANCE WITH REGULATION (EU) 2016/679 AS RETAINED (AND AMENDED IN UK DOMESTIC LAW) UNDER THE EUROPEAN UNION (WITHDRAWAL) ACT 2018, HEREAFTER REFERRED TO AS UK REGULATION (EU) 2016/679 ON THE PROTECTION OF NATURAL PERSONS WITH REGARD TO THE PROCESSING OF PERSONAL DATA AND ON THE FREE MOVEMENT OF SUCH DATA

The UAS Operator is responsible for complying with UK law and regulations in particular, with regard to privacy, data protection, liability, insurance, security and environmental protection.

This GM helps the UAS Operator to identify and describe the procedures to ensure that the UAS operations are in compliance with UK Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data.

For further information on data-protection responsibilities, see the ICO (Information Commissioner's Office) Website, [here](#). The following table is included as an example of how an operator may ensure their data-protection responsibilities are complied with.

Considerations for operators to discharge data-protection responsibilities

1. Identify the privacy risks that the intended operation may create

Considerations for operators to discharge data-protection responsibilities
2. Define your role with respect to personal data collection and processing
<input type="checkbox"/> I am the (joint) data controller <input type="checkbox"/> I am the (joint) data processor
3. Data protection impact assessment (DPIA)
Have you assessed the need to perform a DPIA: Yes <input type="checkbox"/> No <input type="checkbox"/>
If yes, do you have to perform a DPIA? Yes <input type="checkbox"/> No <input type="checkbox"/> - If yes, did you perform a DPIA? Yes <input type="checkbox"/> No <input type="checkbox"/>
4. Describe the measures you are taking to ensure data subjects are aware that their data may be collected
5. Describe the measures you are taking to minimise the personal data you are collecting or to avoid collecting personal data
6. Describe the procedure established to store the personal data and limit access to it
7. Describe the measures taken to ensure that data subjects can exercise their right to access, correction, objection and erasure
8. Additional information

GM1 UAS.SPEC.050(1)(b) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

LEVEL OF AUTONOMY AND GUIDELINES FOR HUMAN-AUTONOMY INTERACTION

Autonomous UAS are not the same as ‘highly automated’ UAS. There are many highly automated UAS currently in use today, but an autonomous UAS is one which requires no input or control in order to commence, and carry out its flight, and that no intervention from a RP is possible. It will be able to follow the planned route, communicate with other airspace users, detect, diagnose and recover from faults and operate at least as safely as a system with continuous human involvement.

Nevertheless, the risk assessment of autonomous operations should ensure, as for any other operations, that the risks identified are mitigated to an acceptable level.

GM2 UAS.SPEC.050(1)(b) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

DESIGNATE A REMOTE PILOT FOR EACH FLIGHT

In the case of UAS Operators that are organisations, the RP does not have to necessarily be an employee or part of the organisation, in order to be designated a RP for a specific flight by the UAS Operator. The UAS Operator, however, remains responsible for the safety of the operation and the RP must follow the procedures of the UAS Operator. The UAS Operator remains responsible for ensuring the competence of the RP and that the obligations of the RP are met, in the same way as it would be if the RP was an employee of the UAS Operator's organisation.

The RP remains responsible for adhering to the regulatory responsibilities of the RP, and the UAS Operator remains responsible for adhering to the regulatory Responsibilities of the Operator.

GM1 UAS.SPEC.050(1)(c) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

EFFICIENT USE OF RADIO SPECTRUM

It is the responsibility of the UAS Operator to ensure that the radio spectrum used for the C2 Link and for any payload communications complies with the relevant Ofcom requirements and that any licences required for its operation have been obtained.

It is also the responsibility of the operator to ensure that the appropriate aircraft radio licence has been obtained for any transmitting radio equipment that is installed or carried on the aircraft, or that is used in connection with the conduct of the flight and that operates in an aeronautical band.

Licensing of frequency allocations is the responsibility of Ofcom and hence, where required, all applications for a frequency assignment should be directed in the first instance to Ofcom. In frequency bands where the CAA is the assigning authority, the application will be passed to the CAA by Ofcom so that the CAA can conduct the technical work however, Ofcom remains the licensing authority.

Where a frequency licence is required (e.g., in protected frequency bands or where powers exceed the current regulatory limits) the CAA will not be able to issue a permission or exemption.

There are no specific frequencies allocated for use by UAS in the UK. However, the most used frequencies are 35 MHz, 2.4 GHz and 5.8 GHz.

35 MHz is a frequency designated for model aircraft use only, with the assumption that clubs and individuals will be operating in a known environment to strict channel allocation rules. It is therefore not considered to be a suitable frequency for more general UAS operations (i.e., not in a club environment) where the whereabouts of other users is usually difficult to assess.

2.4 GHz is a licence free band used for car wireless keys, household internet and a wide range of other applications. Although this is considered to be far more robust to interference than 35 MHz, operators must act with appropriate caution in areas where it is expected that there will be a high degree of 2.4 GHz activity.

5.8 GHz is a licenced band which requires a minimum payment and registration with Ofcom. This band is in use with other services including amateur-satellite, weather and military radars. Details can be found on the [Ofcom website](#).

For further UAS specific guidance on whether a licence is required for your UAS, more information can be found on the [Ofcom website](#).

Operations close to any facility that could cause interference (such as a radar station) could potentially disrupt communications with the UAS, whatever the frequency in use. GNSS jamming activities may also disrupt communications as well as C2 signals. Information on scheduled GNSS jamming exercises can be found on the [Ofcom website](#).

The risk assessment process described in the AMC and GM to "art. 11 Rules for conducting an operational risk assessment" on page 47 is likely to involve a radio frequency survey, in order to meet "UAS.SPEC.050 Responsibilities of the UAS operator" on page 103 (1)(c), which should also include a physical range check.

UAS Operators are advised to carry out such a survey, when assessing the suitability of a site for a proposed UAS Operation. In doing so, the operator should:

- Explain how C2 instructions, as well as telemetry data, are relayed between the command unit and the UA.
- Describe in detail Operational C2 link management, including frequency switchovers and C2 link contingency situations.
- Provide the Link Budget Calculation, wherever possible¹

The following table may assist in this survey:

¹A link budget calculation is the theoretical calculation of the end-to-end performance of a communications link

Survey element considerations when assessing the suitability of a site for a proposed UAS Operation		
C2 Link	Radio Line Of Sight (RLOS) C2 link	
	Beyond Radio Line Of Sight (BRLOS) C2 link (if applicable)	
Transceivers / Modems	Power Levels	
	Transmission Schemes	
Operating Frequencies Used		
Third Party Link Service Provider		
Minimum and average assured data Rates		
Minimum and average assured latencies		
Means of protection against harmful interference		
Any other relevant information		
Operating Frequencies Used		

Providing a detailed control system architecture diagram that includes informational or data flows and subsystem performance may assist in explaining the requirements above.

C2 link could include, direct (RLOS) or relayed (BRLOS). BRLOS includes all satellite systems or relaying C2 link through UA in the air to extend the signal range.

The following examples of technical solutions may help make the C2 link secure: pairing, encryption or back up link. It is recommended to use licensed spectrum for BVLOS operations to minimise the chances of external interference and to improve latency.

The UAS Operator should identify what alerts, such as warning, caution and advisory alerts, does the system provide to the operator and RP, to advise them of C2 link disruption.

The UAS Operator should consider what design characteristics or procedures are in place to maintain the availability, continuity, and integrity of the datalink. Factors to consider:

- RF or other interference
- Flight beyond communications range
- Antenna masking (during turns and/or at high attitude angles)
- Loss of command unit functionality

- Loss of UA functionality
- Atmospheric attenuation including precipitation
- RF wireless site survey to ensure reliable connectivity, it may include:
 - o Survey for frequency coverage throughout the potential operating area.
 - o Survey for frequency capacity to ensure sufficient bandwidth to support all predicted operations.

AMC1 UAS.SPEC.050(1)(d)(i), (ii) and (iii) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

REMOTE PILOT COMPETENCE- CURRENCY

The UAS Operator should identify the appropriate amount of recent flying experience in order to be considered 'current'.

Currency requirements should include:

- Regular practise of manoeuvres relevant to the scope of the OA.
- Regular practise of abnormal conditions and in-flight failures, such as:
 - o the ability to identify a deteriorating situation and react accordingly;
 - o taking manual control after a failure of any automated system;
 - o practice flight in 'manual' modes;
 - o identification of the potential for GNSS and compass loss or degradation.

As a minimum, RPs are expected to have logged at least 2 hours of total flight time in the last 3 calendar months on the type of UA applicable to the OA. For VLOS operations, this should be 'live' flight time, and not carried out on a simulator.

For new and novel types of UA, which are being test flown by a RP, currency must be demonstrated using a similar aircraft type. It is expected that this will be detailed within the specific flight test plan, and set out within the OM.

The UAS Operator, however, will need to identify the suitable level of currency for their operation, which is likely to be greater than the 2 hour minimum described above, for more complex operations.

RPs are expected to maintain a log book of flying activity, which may be used to demonstrate currency. This should contain:

- Date

- Aircraft type
- Aircraft identification (registration, if applicable, or serial number)
- Take off and landing location
- Duration (including whether in daylight, or at night)
- Remote pilot name
- Description of the flight/remarks

This should be stored electronically, in order that it can be easily submitted to the CAA for oversight purposes.

This is separate to the UA technical logbook requirement set out in "AMC1 UAS.SPEC.050(1)(g) Responsibilities of the UAS Operator" on the next page.

GM1 UAS.SPEC.050(1)(d)(i), (ii) and (iii) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

THEORETICAL KNOWLEDGE SUBJECTS FOR REMOTE PILOT TRAINING FOR THE 'SPECIFIC' CATEGORY

Within the Specific category there exists a wide range of potential UAS operations, each with unique risk. It is the responsibility of the UAS Operator to identify the competency requirements of the RP (requirements in addition to the GVC), and all personnel involved in the UAS operation, that is commensurate with the risk assessment for the given operation.

See "AMC1 Article 8 Remote Pilot Competence" on page 35 for further information on these requirements.

AMC1 UAS.SPEC.050(1)(d)(vi) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

OBTAIN UPDATED INFORMATION ABOUT GEOGRAPHICAL ZONES

The UAS Operator must download the latest version of the geographical zone data and make this available to the RP such that they can upload it into the geo-awareness system, if such a system is available on the UA used for the operation. This information must be both an accurate, and complete, representation of the applicable airspace restrictions to the UAS Operation.

AMC2 UAS.SPEC.050(1)(d)(vi) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

UPDATED INFORMATION ON GEOGRAPHICAL ZONES

Although UAS.SPEC.050(1)(d)(vi) specifically refers to geographical zones established under Article 15, the primary means for restricting flight of aircraft (including UA) in the UK, is under the ANO article 239. The RP must be familiar with these restrictions, and obtain any necessary permissions required to fly within them. This information can be found within the AIP.

AMC1 UAS.SPEC.050(1)(e)(ii) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

INFORMATION ABOUT THE UAS OPERATOR'S MANUAL

The UAS Operator must ensure that the personnel in charge of duties essential to the UAS operation, apply the procedures contained in the operator's OM.

AMC1 UAS.SPEC.050(1)(g) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

LOGGING OF FLIGHT ACTIVITIES AND RECORD-KEEPING

Operations must be logged, using a technical logbook for each aircraft, which must be held on an electronic record. This is to assist with regulatory oversight.

NOTE:

This is separate to the RP log-book requirements, set out in "AMC1 UAS.SPEC.050(1)(d)(i), (ii) and (iii) Responsibilities of the UAS Operator" on page 112.

The information to be recorded must include the following:

- a. the identification of the UAS (manufacturer, model/variant (e.g. serial number));
 - i. If the UAS itself is not subject to registration (i.e. not certified), the identification of the UAS may be achieved using the serial number of the UAS.
- b. the date, time, and location of the take-off and landing;
- c. the duration of each flight;
- d. the total number of flight hours/cycles (take off and landings);
- e. The name of the RP responsible for the flight;
- f. the activity performed (including the OA number, and whether the flight was VLOS or BVLOS);

- g. any significant incident or accident that occurred during the operation;
- h. a completed pre-flight inspection
- i. any site risk assessments and radio frequency surveys carried out;
- j. any defects and rectifications;
- k. any repairs and changes to the UAS configuration; and
- l. the information required to comply with "UAS.SPEC.100 Use of certified equipment and certified unmanned aircraft" on page 127.

Records must be stored for 3 years in a manner that ensures their protection from unauthorised access, damage, alteration, and theft.

The logbook can be generated in either electronic or paper format. If the paper format is used, it must contain, in a single volume, all the pages needed to log the holder's flight time. When one volume is completed, a new one will be started based on the cumulative data from the previous one.

GM1 UAS.SPEC.050(1)(g)(iii) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

UP TO DATE RECORD OF INFORMATION ON UAS OPERATIONS- FLIGHT DATA RECORDING

Although there is no legal requirement to make use of a flight data recording system (device, or service), it is recommended that UAS Operators make use of such systems to assist with the regulatory requirement set out in UAS.SPEC.050(1)(g)(iii). This would also assist with demonstration of regulatory compliance during the CAA audit process, to demonstrate that UAS Operations have been conducted within the conditions and limits of the OA, for example- providing a summary of the maximum height of all operations.

Such flight data recording systems are invaluable when investigating occurrences, insofar as providing a recording of the flight parameters, system status and control input.

This should also include the monitoring of high-voltage stored energy devices during the flight, for:

- The remaining charge left, i.e. the 'fuel' available for the remainder of the flight;
and
- The health of the batteries (i.e. the temperature/ rate of discharge etc).

It should also be noted that equipment manufacturers are responsible for specifying the minimum requirements for the monitoring of UAS high-voltage stored energy devices. It is the responsibility of the UAS Operator to define procedures for satisfying these minimum requirements as part of their risk assessment process, as described in the AMC and GM to Article 11.

GM1 UAS.SPEC.050(1)(h) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

A POSSIBLE FAILURE WILL NOT LEAD THE UAS TO FLY OUTSIDE THE OPERATIONAL VOLUME

In order to identify whether a possible failure may lead the UA to fly outside the operational volume, a detailed description of the volume is necessary for each flight.

- Applications for OAs covering only specific locations should include the following information within the application.
- Applications for OAs which are not limited to a specific location should include suitable procedures to identify and record the following information, within the application. The operational volume should be described in the following way:

Emergency Buffer

Contingency Volume

Flight Volume

Operational Volume

The Flight Volume should encompass the entire operation, with sufficient buffer for any operational movement around the flight path, due to navigational errors, expected weather conditions and any other reason for deviating from the flight path.

The Contingency Volume provides a buffer around the Flight Volume. If the UA leaves the Flight Volume and enters the Contingency Volume, then the contingency procedures, documented in the OM, must be activated. The exact procedures will depend on the nature of the operation but should result in the UA re-entering the Flight Volume. Excursions from the Flight Volume may result from unexpected weather conditions, avoidance manoeuvres from weather, other airspace users or other such reasons. The Contingency Volume should be sufficiently large to accommodate any excursion due to weather, with enough room to manoeuvre the UA back into the Flight Volume. The Flight Volume and the Contingency Volume make up the Operational Volume.

Should the contingency mitigations fail, the UA might leave the Operational Volume and enter the Emergency Buffer. Upon such an excursion, the Emergency Response Plan, detailed within the OM, should be executed. This may include terminating the operation safely, with the flight termination device and alerting ATC, the Police and reporting the accident to the CAA.

The UAS Operator should describe the proposed area(s) of operation, using relevant, up to date and suitable maps and diagrams, with photographs if necessary. This should also include details of any relevant airspace.

The accuracy of any maps used must be verified, and preferably from an authoritative cartographic source, such as Ordnance Survey.

Where appropriate, aeronautical charts must be sourced and used.

This may be a brief description and should include information such as:

- (a) Type of area – congested (urban), building sites, open countryside (rural), road, marine environment (offshore), airport etc.;
- (b) Geographic location;
- (c) Population density;
- (d) Features considered important to the operation(s) – roads, railways, tall obstacles and surrounding terrain;
- (e) Any operation at an aerodrome can be supported with relevant aeronautical information and charts, sourced from the AIP;
- (f) Any relevant airspace restrictions may be described using information from the AIP;

Simplistic descriptions such as, ‘all of the UK’ or ‘as clients request’, are not suitable operating area definitions, if not supported by suitable other conditions and limitations and information as described in points (a) to (f) above.

Individual sites do not necessarily need to be listed, if the description of the information above is adequate, and supporting procedures within the OM are provided.

The UAS Operator should, as part of the risk assessment process, identify how the operational and technical factors may lead to a delay between the RP commanding a control response, and the UA responding accordingly. This includes the following steps, that the UAS Operator should consider.



These steps are affected by multiple factors, such as HMI considerations, decision taking time, time taken to action a response, latency, and time taken to execute the command.

This time should be used to estimate the overall time taken between identifying the need to manoeuvre the aircraft, and the aircraft manoeuvring. This should be used when considering the operational volume, and the likelihood of the UA leaving it.

SAFETY SYSTEMS

Several modern commercially available UAS are fitted with safety systems as standard such as, GNSS position monitoring systems, which can aid navigation but also enable electronic safety measures. These include geo-fencing or geo-caging, automated return to home, controlled descents, hovering and automatic landing. Other safety systems are available including propeller guards, flight termination functions, tethering systems, airbags and an automatic parachute recovery system which, on detecting a problem prevent the propellers from turning (by either switching the power off or blocking them) and deploys a recovery parachute.

The UAS Operator should consider the use of any safety systems on a UA that could substantially reduce the risk to other aircraft and the public. Whilst the incorporation of such safety systems is not mandated their inclusion may be a significant factor in assuring appropriate levels of safety in the event of an UAS malfunction.

A number of different safety systems may be used to help meet this requirement.

The UAS Operator should explain, within the OM, any systems fitted to the UA or command unit that contribute to safe handling or recovery of the UA in the event of loss of control or situational awareness.

If independent 'kill switches' are relied on as safety risk mitigations, these must be fully described.

Use of schematic diagrams may help describe the system layout and how this is constructed.

The UAS Operator should include any manufacturer supplied data relating to equipment or components included in the system i.e. data sheets, specification sheets, performance data etc.

GM1 UAS.SPEC.050(1)(L) Responsibilities of the UAS Operator

CAA ORS9 Decision No. 16

GREEN FLASHING LIGHT

Although this text remains in the regulation; the requirement to install, and use, a green flashing light on UAS within the Specific category has not been retained within the UK version of this regulation, because the applicability date of this requirement (set out in Article 23) was after the UK EU exit date, and as such was not retained.

REMOTE ID

Although this text remains in the regulation; the requirement to install an active remote identification system within the Specific category has not been retained within the UK version of this regulation, because the applicability date of this requirement (set out in article 23) was after the UK EU exit date, and as such was not retained.

UAS.SPEC.060 Responsibilities of the remote pilot

(1) The remote pilot shall:

- (a) not perform duties under the influence of psychoactive substances or alcohol or when it is unfit to perform its tasks due to injury, fatigue, medication, sickness or other causes;
- (b) have the appropriate remote pilot competency as defined in the operational authorisation [...] or as defined by the LUC and carry a proof of competency while operating the UAS.
- (c) be familiar with manufacturer's instructions provided by the manufacturer of the UAS.

(2) Before starting an UAS operation, the remote pilot shall comply with all of the following:

- (a) obtain updated information relevant to the intended operation about any geographical zones designated in accordance with Article 15;
- (b) ensure that the operating environment is compatible with the authorised [...] limitations and conditions;
- (c) ensure that the UAS is in a safe condition to complete the intended flight safely, and if applicable, check if the direct remote identification is active and up-to-date;

(d) ensure that the information about the operation has been made available to the relevant air traffic service (ATS) unit, other airspace users and relevant stakeholders, as required by the operational authorisation or by the conditions designated by the Secretary of State for the geographical zone of operation in accordance with Article 15.

(3) During the flight, the remote pilot shall:

- (a) comply with the authorised [...] limitations and conditions;
- (b) avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property;
- (c) comply with the operational limitations in geographical zones designated in accordance with Article 15;
- (d) comply with the operator's procedures;
- (e) not fly close to or inside areas where an emergency response effort is ongoing unless they have permission to do so from the responsible emergency response services.

AMC1 UAS.SPEC.060(2)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

OPERATING ENVIRONMENT

The RP, UAS Operator, must check any conditions that might affect the UAS operation, such as the locations of people, property, vehicles, public roads, obstacles, aerodromes, critical infrastructure, and any other elements that may pose a risk to the safety of the UAS operation.

Familiarisation with the environment and obstacles should be conducted through a survey of the area where the operation is intended to be performed.

It must be verified that the weather conditions at the time when the operation starts and those that are expected for the entire period of the operation are within limits defined in the manufacturer's manual, as well as with the OA or declaration, as applicable.

The RP must be familiar with the light conditions and make a reasonable effort to identify potential sources of electromagnetic energy, which may cause undesirable effects, such as EMI or physical damage to the operational equipment of the UAS.

AMC1 UAS.SPEC.060(2)(c) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

THE UAS IS IN A SAFE CONDITION TO COMPLETE THE INTENDED FLIGHT

The RP, or the UAS Operator in the case of an autonomous operation, must:

- (a) update the UAS with data for the geo-awareness function if one is available on the UA;
- (b) ensure that the UAS is safe to be flown and complies with the instructions and limitations provided by the manufacturer;
- (c) ensure that any payload carried is properly secured and installed, respecting the limits for the mass and CG of the UA;
- (d) ensure that the UA has enough available propulsion energy for the intended operation based on:
 - i. the planned operation; and
 - ii. the need for extra energy in case of unpredictable events;
- (e) for a UAS equipped with a loss-of-data-link recovery function, ensure that the recovery function allows a safe recovery of the UAS for the envisaged operation; for programmable loss-of-data-link recovery functions, the RP may have to set up the parameters of this function to adapt it to the envisaged operation.
- (f) Ensure that any lighting or remote ID systems (if applicable) are functioning correctly.

AMC1 UAS.SPEC.060(3)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

AVOID RISK OF COLLISION WITH ANY MANNED AIRCRAFT - WHEN BEYOND VISUAL LINE OF SIGHT

When operating BVLOS, the risk of collision with a manned aircraft must be mitigated sufficiently. This is achieved using either:

- A technical capability which shall reduce the overall risk of a mid-air collision, to an acceptable level (as set out in the AMC to article 11) based on the environment in which the aircraft is operating; or

- An operational mitigation, which reduces the likelihood of encountering another aircraft to an acceptable level.

The use of a probabilistic safety argument, to assess the likelihood of encountering other aircraft, is not an operational mitigation if used as the sole component of a safety argument.

AVOID RISK OF COLLISION WITH ANY MANNED AIRCRAFT - WHEN OPERATING IN CLOSE PROXIMITY TO HELICOPTER LANDING SITES

When preparing a risk assessment for an operation, UAS Operators should consider the risk of interaction with un-notified aerial activity such as Air Ambulance arrivals and departures.

RPs and UAS Operators are reminded of the difficulty in visually observing UA, and the impact this is likely to have on the ability of other airspace users to avoid a collision with a UA.

Therefore, when operating in the vicinity of a Helicopter Landing Site, the UAS Operator should submit a NOTAM request to the [Airspace Regulation Unit](#) using the online [application form](#), in order to increase helicopter crew awareness of planned UAS activity.

It should be noted, that a NOTAM may not be issued, following such a request. This does not indicate that the UAS Operation should not take place, but that it does not require a NOTAM.

Similarly, if a NOTAM is generated, this does not constitute 'permission' for the operation, or mean that the UAS Operator may disregard other restrictions, requirements or regulations that may otherwise apply.

GM1 UAS.SPEC.060(1)(a) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

THE REMOTE PILOT SHALL NOT PERFORM DUTIES UNDER THE INFLUENCE OF PSYCHOACTIVE SUBSTANCES OR ALCOHOL

UAS Operators should propose procedures, including alcohol limits, within their OM. Although no limits currently exist in law, it is advised that UAS Operators make use of the current Railways and Transport Safety Act 2003 Section 93 limits, which are:

Level of alcohol	All UK nations
Micrograms per 100 millilitres of breath	9 µg
Micrograms per 100 millilitres of	20 µg

Level of alcohol	All UK nations
blood	
Micrograms per 100 millilitres of urine	27 µg

THE REMOTE PILOT SHALL NOT PERFORM DUTIES WHEN THEY ARE UNFIT TO PERFORM TASKS DUE TO INJURY, FATIGUE, MEDICATION, SICKNESS OR OTHER CAUSES

The medical requirements for operations within the Specific category will be set out in the OA. Normally, this will be achieved by reference to the medical requirements that have been set out by the UAS Operator in its OM, although in some cases, additional requirements may be expressed more precisely.

UAS Operators will be expected to propose details of their required medical standards through the risk assessment associated with the particular operation.

GM1 UAS.SPEC.060(2)(a) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

UPDATED INFORMATION ON GEOGRAPHICAL ZONES

Although "UAS.SPEC.060 Responsibilities of the remote pilot" on page 119 (2)(a) specifically refers to geographical zones established under "art. 15 Operational conditions for UAS geographical zones" on page 56, the primary means for restricting flight of aircraft (including UA) in the UK, is under the ANO Article 239. The RP must be familiar with these restrictions, and obtain any necessary permissions required to fly within them. This information can be found within the AIP.

GM1 UAS.SPEC.060(2)(d) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

INFORMATION RELEVANT TO THE OPERATION MADE AVAILABLE TO THE ATS UNIT

For AMC on this requirement, in relation to controlled airspace, see AMC1 UAS.SPEC.040(1)(b).

INFORMATION PROVIDED TO OTHER AIRSPACE USERS WHEN INSIDE AN FRZ

The AIP (Section ENR 1.1 – 4.1.8) sets out when a NOTAM should be used to promulgate UAS operations, when operating within an FRZ, including inside/outside hours of operation of the aerodrome.

VHF RADIO COMMUNICATIONS TO PROVIDE INFORMATION TO THE ATS UNIT

The use of VHF RT to help meet this requirement should only be used when absolutely necessary. Such circumstances may include:

- Operations within the close vicinity of an aerodrome, where permission for entry into an FRZ/ATZ has been arranged and the use of VHF RT has been requested by the ATS Unit.
- BVLOS operations outside segregated airspace.
- Operations in close vicinity to other airspace users, such as air shows and flying displays.

It is not possible to give an exhaustive list of such circumstances when the use of VHF RT is appropriate, and it is the responsibility of the operator to apply such a mitigation appropriately. Acceptance of such a mitigation within the OM does not authorise its use. A number of requirements must also be met in order to legally make use of VHF RT, which are detailed below.

If the operation is approved with such a mitigation, then the following requirements must be met and detailed within the OM, and may also be set out within the conditions of the OA:

- Suitable VHF radio must be installed on the UA, and a relay to the ground station provided to enable RP communication. The equipment and installation must be approved by the CAA. A ground-based VHF radio must not be used. This is due to regulatory requirements set out by Ofcom. Any queries on this requirement should be directed to Ofcom.
- Appropriate licence held by the RP; this will normally be a Flight Radio Telephony Operator's Licence (FRTOL), which must be issued by the CAA following recommendation from an examiner.
- Appropriate radio licence: the radio must either be licenced, or have an exemption from the wireless telegraphy act, to operate. Ofcom issue these licences.

Further information on radio requirements can be found in AIP GEN 1.5 section 5.

The use of RT on aeronautical band radios within the Specific category for contact with ATC should be limited to exceptional circumstances and be carried out as directed by the ATS unit with which the RP needs to communicate. In the majority of circumstances VHF RT is not required, and other methods of communication and/or procedural mitigations are sufficient.

GM1 UAS.SPEC.060(3)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

AVOID RISK OF COLLISION WITH ANY MANNED AIRCRAFT- WHEN BEYOND VISUAL LINE OF SIGHT

An operational mitigation to reduce the likelihood of encountering other aircraft, may include airspace segregation.

AVOID RISK OF COLLISION WITH ANY MANNED AIRCRAFT- WHEN OPERATING IN CLOSE PROXIMITY TO HELICOPTER LANDING SITES

The issuing of a NOTAM when operating in close proximity to a HLS is one way of alerting the air crew to the UAS operation, so that they are aware of it. It is the responsibility of the operator to determine:

- Whether there is a HLS nearby;
 - o The UAS Operator should determine whether there is an HLS in close proximity to their operation, although it should be expected that helicopters may take off and land anywhere. Although there is no authoritative source of all HLSs in the UK, the following list includes common examples of HLS;
 - Hospitals, air ambulance and police helicopter bases, HLS on office blocks and temporary HLS at large events such as horse racing events (these are normally subject to NOTAM).
 - o The following list contains examples of ways of checking whether an operation is likely to be in proximity to an HLS:
 - Military AIP, VFR charts, online GA mapping software, and satellite-based imagery analysis.
 - Whether the UAS operation is likely to affect the helicopter operation.
 - o Factors to consider include the planned height of the operation, the distance from the HLS and the planned flight path of the UA.

GM2 UAS.SPEC.060(3)(b) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

AVOID RISK OF COLLISION WITH ANY MANNED AIRCRAFT

There is an obligation on the RP to maintain a thorough visual scan of the surrounding airspace to avoid any risk of a collision with manned aircraft. It is likely that the RP will identify other airspace users before they identify the UA, and therefore the RP will usually be the first to manoeuvre away from any conflicting aircraft.

RPs are reminded of the applicable requirements of SERA, as set out in AMC1 Article 7 (2).

RPs should be aware that their UA are generally difficult, if not impossible, to see from another aircraft until they are extremely close.

As soon as the RP sees another aircraft, or parachute, or any other airspace user, they must immediately keep the UA at a safe distance from it and land if the UA is on a trajectory towards the other object.

If the RP cannot ensure suitable separation from the other aircraft such that there is no risk of a collision, then the UA must be landed immediately (see AMC1 Article 7(2)).

Although many aerodromes are protected by FRZs, many unlicensed helicopter landing sites also exist, including hospital helipads. Such aircraft may loiter at low-level or land and take off unexpectedly. All of these types of helicopter operations may therefore be affected by UAS operations particularly when approaching to land or departing from a site; UAS Operators and RPs must take active precautionary measures to avoid affecting the safety of other airspace users, either by requiring them to take avoiding action, disrupting a mission or distraction (for example, aborting an air ambulance landing due to a UAS sighting).

GM1 UAS.SPEC.060(3)(c) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

GEOGRAPHICAL ZONES

Although this requirement relates specifically to geographical zones established under Article 15, RPs should be aware of other airspace restrictions established under the ANO. These airspace restrictions must also be complied with. Details of these can be found within the AIP.

GM1 UAS.SPEC.060(3)(e) Responsibilities of the Remote Pilot

CAA ORS9 Decision No. 16

EMERGENCY RESPONSE EFFORT

See section: GM1 UAS.OPEN.060(3) for further information.

[UAS.SPEC.070 Transferability of an operational authorisation](#)

An operational authorisation is not transferable.

[UAS.SPEC.080 Duration and validity of an operational authorisation](#)

(1) The CAA shall specify the duration of the operational authorisation in the authorisation itself.

(2) Notwithstanding point (1), the operational authorisation remains valid as long as the UAS operator remains compliant with the relevant requirements of this Regulation and with the conditions defined in the operational authorisation.

(3) Upon revocation or surrender of the operational authorisation the UAS operator shall provide an acknowledgment in digital format that must be returned to the CAA without delay.

[...]

UAS.SPEC.090 Access

For the purpose of demonstrating compliance with this Regulation, an UAS operator shall grant to any person, that is duly authorised by the CAA, an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to operational authorisation [...], regardless of whether or not its activity is contracted or subcontracted to another organisation.

UAS.SPEC.100 Use of certified equipment and certified unmanned aircraft

(1) If the UAS operation is using an unmanned aircraft for which a certificate of airworthiness or a restricted certificate of airworthiness have been issued, or using certified equipment, the UAS operator shall record the operation or service time in accordance either with the instructions and procedures applicable to the certified equipment, or with the organisational approval or authorisation.

(2) The UAS operator shall follow the instructions referred to in the unmanned aircraft certificate or equipment certificate, and also comply with any airworthiness or operational directives issued by the CAA.

GM1 UAS.SPEC.100 The Use of Certified Equipment and Certified Unmanned Aircraft

CAA ORS9 Decision No. 16

GENERAL

For the purposes of "UAS.SPEC.100 Use of certified equipment and certified unmanned aircraft" above, 'certified equipment' is considered to be any equipment for which the relevant design organisation has demonstrated compliance with the applicable certification specifications and received a form of recognition from the CAA that attests such compliance (e.g., a TSO approval).

The use of certified equipment or certified UA in the Specific category does not imply an automatic transfer of the flight activities into the Certified category. However, the use of certified equipment or certified UA in the Specific category should be considered as a risk reduction and/or mitigation measure in the risk assessment. If the certification of those products is relied upon within the risk assessment, then all aspects/conditions related to that certification (such as performance limitations, routine maintenance, scheduled servicing and the qualifications/ approvals of the organisations and personnel carrying out those duties) must also be complied with.

An ETSO/ TSO approval approves the equipment, and not the installation of it on an aircraft. Therefore, the applicant needs to demonstrate via their risk assessment how this equipment does not impact on other aircraft systems or airspace users, an example is the electrical power requirements, i.e. this should not draw more power than the electrical distribution system can provide. This equipment should also not induce any electromagnetic interference on other equipment installed on the platform.

Part C LIGHT UAS OPERATOR CERTIFICATE (LUC)

UAS.LUC.010 General requirements for an LUC

- (1) A legal person is eligible to apply for an LUC under this Part.
- (2) An application for an LUC or for an amendment to an existing LUC shall be submitted to the CAA and shall contain all of the following information:
 - (a) a description of the UAS operator's management system, including its organisational structure and safety management system;
 - (b) the name(s) of the responsible UAS operator's personnel, including the person responsible for authorising operations with UASs;
 - (c) a statement that all the documentation submitted to the CAA has been verified by the applicant and found to comply with the applicable requirements.
- (3) If the requirements of this Part are met, an LUC holder may be granted the privileges, in accordance with point UAS.LUC.060.

UAS.LUC.020 Responsibilities of the LUC holder

The LUC holder shall:

- (1) comply with the requirements of points UAS.SPEC.050 and UAS.SPEC.060;
- (2) comply with the scope and privileges defined in the terms of approval;
- (3) establish and maintain a system for exercising operational control over any operation conducted under the terms of its LUC;
- (4) carry out an operational risk assessment of the intended operation in accordance with Article 11 [...],
- (5) keep records of the following items in a manner that ensures protection from damage, alteration and theft for a period at least 3 years for operations conducted using the privileges specified under point UAS.LUC.060:
 - (a) the operational risk assessment [...] and its supporting documentation;
 - (b) mitigation measures taken; and

(c) the qualifications and experience of personnel involved in the UAS operation, compliance monitoring and safety management;

(6) keep personnel records referred to in point (5)(c) as long as the person works for the organisation and shall be retained until 3 years after the person has left the organisation.

UAS.LUC.030 Safety management system

(1) An UAS operator who applies for an LUC shall establish, implement and maintain a safety management system corresponding to the size of the organisation, to the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.

(2) The UAS operator shall comply with all of the following:

(a) nominate an accountable manager with authority for ensuring that within the organisation all activities are performed in accordance with the applicable standards and that the organisation is continuously in compliance with the requirements of the management system and the procedures identified in the LUC manual referred to in point UAS.LUC.040;

(b) define clear lines of responsibility and accountability throughout the organisation;

(c) establish and maintain a safety policy and related corresponding safety objectives;

(d) appoint key safety personnel to execute the safety policy;

(e) establish and maintain a safety risk management process including the identification of safety hazards associated with the activities of the UAS operator, as well as their evaluation and the management of associated risks, including taking action to mitigate those risks and verify the effectiveness of the action;

(f) promote safety in the organisation through:

(i) training and education;

(ii) communication;

(g) document all safety management system key processes for making personnel aware of their responsibilities and of the procedure for amending this documentation; key processes include:

(i) safety reporting and internal investigations;

(ii) operational control;

- (iii) communication on safety;
- (iv) training and safety promotion;
- (v) compliance monitoring;
- (vi) safety risk management;
- (vii) management of change;
- (viii) interface between organisations;
- (ix) use of sub-contractors and partners;

(h) include an independent function to monitor the compliance and adequacy of the fulfilment of the relevant requirements of this Regulation, including a system to provide feedback of findings to the accountable manager to ensure effective implementation of corrective measures as necessary;

(i) include a function to ensure that safety risks inherent to a service or product delivered through subcontractors are assessed and mitigated under the operator's safety management system.

(3) If the organisation holds other organisation certificates within the scope of Regulation (EU) 2018/1139, the safety management system of the UAS operator may be integrated with the safety management system that is required by any of those additional certificate (s).

UAS.LUC.040 LUC manual

(1) An LUC holder shall provide the CAA with an LUC manual describing directly or by cross reference its organisation, the relevant procedures and the activities carried out.

(2) The manual shall contain a statement signed by the accountable manager that confirms that the organisation will at all times work in accordance with this Regulation and with the approved LUC manual. When the accountable Manager is not the Chief Executive Officer of the organisation, the chief executive officer shall countersign the statement.

(3) If any activity is carried out by partner organisations or subcontractors, the UAS operator shall include in the LUC manual procedures on how the LUC holder shall manage the relationship with those partner organisations or subcontractors.

(4) The LUC manual shall be amended as necessary to retain an up-to-date description of the LUC holder's organisation, and copies of amendments shall be provided to the CAA .

(5) The UAS operator shall distribute the relevant parts of the LUC manual to all its personnel in accordance with their functions and duties.

UAS.LUC.050 Terms of approval of the LUC holder

(1) The CAA shall issue an LUC after it is satisfied that the UAS operator complies with points UAS.LUC.020, UAS.LUC.030 and UAS.LUC.040.

(2) The LUC shall include:

- (a) the UAS operator identification;
- (b) the UAS operator's privileges;
- (c) authorised type(s) of operation;
- (d) the authorised area, zone or class of airspace for operations, if applicable;
- (e) any special limitations or conditions, if applicable;

UAS.LUC.060 Privileges of the LUC holder

When satisfied with the documentation provided, the CAA :

(1) shall specify the terms and conditions of the privilege granted to the UAS operator in the LUC; and

(2) may, within the terms of approval, grant to an LUC holder the privilege to authorise its own operations without applying for an operational authorisation.

UAS.LUC.070 Changes in the LUC management system

After an LUC is issued, the following changes require prior approval by the CAA :

(1) any change in the terms of approval of the UAS operator;

(2) any significant change to the elements of the LUC holder's safety management system as required by point UAS.LUC.030.

UAS.LUC.075 Transferability of an LUC

Except for the change to the ownership of the organisation, approved by the CAA in accordance with point UAS.LUC.070, an LUC is not transferable.

UAS.LUC.080 Duration and validity of an LUC

(1) An LUC shall be issued for an unlimited duration. It shall remain valid subject to:

(a) the LUC holder's continuous compliance with the relevant requirements of this Regulation and other relevant enactments ; and

(b) it not being surrendered or revoked.

(2) Upon revocation or surrender of an LUC, the LUC holder shall provide an acknowledgment in digital format that must be returned to the CAA without delay.

UAS.LUC.090 Access

For the purpose of demonstrating compliance with this Regulation, the LUC holder shall grant any person, that is duly authorised by the CAA , an access to any facility, UAS, document, records, data, procedures or to any other material relevant to its activity, which is subject to certification or operational authorisation [...], regardless of whether or not its activity is contracted or subcontracted to another organisation.

APPENDIX A – Article 16- UAS Operations in the Framework of Model Aircraft Clubs and Associations

Due to the size of the AMC and GM for Article 16, it has been included as an Appendix to this document.

GM1 Article 16 Definition of a Model Aircraft

CAA ORS9 Decision No. 16

DEFINITION OF A MODEL AIRCRAFT

The CAA has adopted the following two definitions:

Model Aircraft – An UA used for sporting and recreational purposes, flown by direct control inputs made by the RP without any autonomous capability other than for flight stabilisation purposes.

Note:

The definition of a model aircraft may include multi-rotor type ‘drones’. Any UA being flown in accordance with the definition above is considered a model aircraft. The use of any automation, such as automatic flight modes which alter the position of the aircraft, places the operation outside the definition of a model aircraft, and therefore outside the scope of Article 16. The aircraft must be flown with direct control inputs from the RP.

It is acknowledged that many UA have built in failsafe modes, which may be activated in some instances, for example- loss of control link. Activation of such a mode, although possibly automatic in nature, does not necessarily place the aircraft outside the scope of the definition of a model aircraft.

Large Model Aircraft – A model aircraft with a maximum take-off mass greater than 25kg.

GM2 Article 16 UAS Operations in the Framework of Model Aircraft Clubs and Associations

CAA ORS9 Decision No. 16

GENERAL

A model aircraft club or association may obtain an authorisation from the CAA that is valid for all their members to operate UA according to conditions and limitations tailored for the club or association.

The model aircraft club or association will submit the procedures that all members are required to follow to the CAA. When the CAA is satisfied with the procedures, organisational structure and management system of the model aircraft club or association, it may provide an authorisation that defines different limitations and conditions from those in the Open category. The authorisation will be limited to the operations conducted within the authorised club or association and within the United Kingdom.

The authorisation cannot exempt members of the club or association from the requirement to register in accordance with Article 14 of the UAS Regulation; however, the CAA may allow a model club or association to register their members on their behalf.

The authorisation may also include operations by persons who temporarily join in with the activities of the club or association (e.g., for leisure during holidays or for a contest), as long as the procedures provided by the club or association define conditions acceptable to the CAA.

An application from an association for an Article 16 authorisation must contain a suitable safety case, detailing each requested 'exclusion' from the Open category requirements, and why those exclusions are safe. The association must be able to demonstrate how it maintains oversight of its membership, and clubs, and must provide details of any competency scheme, safety reporting scheme, handbooks and guidelines and any other appropriate documentation.

GM3 Article 16 UAS Operations in the Framework of Model Aircraft Clubs and Associations

CAA ORS9 Decision No. 16

OPTIONS TO OPERATE A MODEL AIRCRAFT

Model flyers have the following options to conduct their operations:

- They may operate as members of a model club or association that has received an authorisation from the CAA, as defined in Article 16. In this case, they must comply with the procedures of the model club or association in accordance with the authorisation.
- In accordance with Article 15(2) the UK may define zones where UAS are exempted from certain technical requirements, and/or where the operational limitations are extended, including mass or height limitations.

- The UAS may be operated in Subcategory A3, in which the following categories of UAS are allowed to fly according to the limitations and conditions defined in UAS.OPEN.040:

- o UAS that meet the requirements defined in Article 20(b); and
- o privately built UAS with MTOM of less than 25 kg.

- An Article 16 authorisation will set out conditions and limitations of any agreement between the association and the CAA, including any Operator registration data transfer, and the issuing of Open category pilot competence certificates on behalf of the CAA, where appropriate.

- Where necessary, a permission or exemption to the ANO necessary for the purpose of an Article 16 authorisation will be included as an annex to the Authorisation.

AMC1 Article 16(1) UAS Operations in the Framework of Model Aircraft Clubs and Associations

CAA ORS9 Decision No. 16

REQUEST BY A MODEL AIRCRAFT CLUB OR ASSOCIATION

An article 16 authorisation will be issued following application from a model aircraft club or association. The application needs to demonstrate to the CAA which parts of the regulation the association wishes to be excluded from, and the proposed scope of the model aircraft operations.

An application should be submitted via the [UAS online form](#), and include a safety case, which outlines why each area of regulatory exclusion is safe, and what mitigations are applied.

An Article 16 authorisation will be issued for a period of 12 months, at which point the association may renew it.

REGISTRATION

An Article 16 authorisation may not exclude UAS Operators from the need to register with the CAA. AMC1 Article 16 (4) sets out the AMC for using the provision within the regulation to register members on their behalf, into the CAA registration system.

LARGE MODEL AIRCRAFT

The operation of large model aircraft is not normally automatically included within the scope of an Article 16 authorisation, and should be requested by the association on application.

An association may permit the operation of a large model aircraft, within the terms of the authorisation, if this has been included within the Article 16 authorisation, however the risk assessment within the Article 16 application will need to identify suitable mitigations. These need to include assessment of the design and construction of the aircraft, and assessment of pilot competence to fly it.

Once the UAS Operator of the large model aircraft holds a suitable certificate confirming the design and construction, and completion of a flight test programme, they may apply to their association for a permit to operate the large model aircraft.

The relevant pilot competence requirement shall be set out within the application for an Article 16 Authorisation, which will need to demonstrate the following:

- Basic flying competence;
- Theoretical knowledge, including regulatory requirements;
- Flying competence on the specific large model aircraft that the RP intends to fly. This should be assessed by the Association.

MODEL AIRCRAFT ASSOCIATION PERMITS

A system of permits may be included within the Article 16 authorisation, to enable the association to permit certain activity, by the association within the scope of the authorisation. The CAA will use this system of permits to allow certain activity to take place, following specific conditions set out within the authorisation, that requires additional oversight from the association.

Examples of such permits include a large model aircraft permit, model aircraft display permit and flight above 400ft permit. Associations should consider implementation of such a scheme, as part of a mitigation within their risk assessment for higher risk activities.

A description of the association procedures that would support such a scheme should be provided to the CAA on application for an Article 16 authorisation. These include:

- Process to assess an application from a club or individual within the association, for a permit
- Process to issue and revoke permits where safe, necessary and appropriate to do so
- Process to carry out suitable and sufficient oversight of activity permitted

FLIGHT ABOVE 400FT

If the association requests an exclusion from the 120m height limit applied in the Open category, then the operation of model aircraft may take place above 120m, either using:

- A 'standing' authorisation within the Article 16 authorisation, which allows regular flight above 400ft, within certain conditions. One such condition of this is a mass limit, set out within the article 16 authorisation. This mass limit is usually 7.5kg.
- A permit issued by the association for the routine operation of model aircraft above 400ft at a designated flying club. The association may issue a permit for routine flight above 400ft, to any suitable club which requests it, following successful completion of the association's process.
- A model aircraft display permit, which may permit flight above 400ft for the purpose of a display event.

MODEL AIRCRAFT FLYING DISPLAYS

A model aircraft flying display is defined as: 'Any flying activity deliberately performed, by model aircraft, for the purpose of providing an exhibition or entertainment at an advertised event'.

One condition of an Article 16 authorisation, is that a model aircraft flying display being organised within the limits of such an authorisation, is permitted by the association.

Model aircraft flying displays often involve flight of model aircraft above 400ft. There are mechanisms built into the Article 16 process, which may adjust the maximum height of 400ft, specifically for the purpose of a model aircraft flying display:

- For large model aircraft, within the large model aircraft permit; or
- For model aircraft less than 25kg, within the maximum height section of the Article 16 authorisation.

Both of these mechanisms are activated within the model aircraft flying display permit issued by the relevant association.

Operators of model aircraft being flown as part of a full-sized aircraft flying display, should read CAP 403, Chapter 17. These displays are subject to regulatory requirements, and the model aircraft elements of the display must be flown safely, in accordance with the display authorisation and CAP 403, and in accordance with the Article 16 authorisation and any necessary requirement to obtain a permit for the display.

Model aircraft operating in the Open or Specific category are excluded from the scope of ANO Article 86 (Flying Display) regulations, by the provisions of ANO Article 23, however any model aircraft operating as part of a display which is outside the limits of a suitable Article 16 Authorisation, or the Open category limits, must be authorised to do so within the Specific category.

Anyone wishing to undertake a model aircraft flying display should contact their relevant association for further advice. Only an association that is permitted to do so within their Article 16 Authorisation, may issue a permit for a model aircraft flying display.

Operators of any model aircraft operating outside an Article 16 Authorisation, and outside the limits of the Open category, must obtain an OA from the CAA for operating in the Specific category.

An Article 16 application will include within it any requirements relating to model aircraft displays, including the need for suitable risk assessments and the need to obtain any relevant airspace permission (such as FRZ permission from an aerodrome).

Model aircraft associations wishing to establish a risk assessment format for clubs to use as part of a model aircraft display plan, are encouraged to make reference to [CAP 403](#), and [SRG1303T](#).

THIRD COUNTRY OPERATORS WITHIN THE UK

Provisions for issuing an Article 16 Authorisation are made within this regulation, which (in its European form) has been implemented in all EU member states on 31 December 2020. As such, model aircraft operators from overseas may be able to operate in accordance with an Article 16 Authorisation issued by their own authority, within their own member state. Regulation EU 2019/947 (the current European Commission version) sets out within Article 16, paragraph 3, that such an authorisation is limited to the territory of the Member State in which it is issued.

RPs must meet the UK requirement for pilot competence, which is to hold a valid Flyer ID, in addition to any other competence requirement set out within the Article 16 authorisation.

The UK does not recognise UAS Operator registrations in third countries, and so the UAS Operator must comply with the UK registration requirements, set out in Article 14.

Third country model aircraft RPs and operators may operate within the limits of a UK CAA issued Article 16 Authorisation, with agreement from the relevant association. Any such operation must adhere to applicable UK regulations. Advice should be sought from the relevant association in the first instance.

UK OPERATORS IN THIRD COUNTRIES

Any UK RP and operator wishing to operate overseas must comply with the local regulations in place within the destination country. Any UK issued Article 16 Authorisation is only valid for use within the UK, and may not be used in any third country.

Currently no other countries recognise UK issued operator registrations, or pilot competence certificates

GM1 Article 16(1) UAS Operations in the Framework of Model Aircraft Clubs and Associations

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APPLICATION GUIDANCE

An application for an Article 16 authorisation will need to include a risk assessment. It is advised to use the risk assessment guidance described in GM1 Article 11, as a basis for the risk assessment. This should include the following (this list is not exhaustive):

- Description of the Association and its membership, including current total number of members;
- Description of flying activity, including locations and type of flying carried out;
- Description of competence and achievement schemes;
- Organisational structure, including organogram;
- Relevant procedures and processes within the association- including occurrence reporting and membership oversight;
- Description of which parts of the regulatory framework the association wishes to be excluded from. This should be included in a suitable tabular format, for example:

Article of Regulation	Requirement	Requested change	Reason	Supporting Evidence
Article 4 (1) (e)	<i>During flight, the UA is maintained within 120m from the closest point on the surface of the Earth.</i>	<i>During flight, the UA is maintained within 450m from the closest point on the surface of the Earth, for model aircraft with a mass less than 7.5kg.</i>	<i>Requirement to regularly fly above 120m for flight training and displays.</i>	<i>Risk assessment Volume 3</i>

- A safety case to provide evidence supporting the application. This should support any requests made in the table above.

Before submitting the application, the association should engage with the CAA RPAS and GA Unit to establish whether the Article 16 Authorisation is likely to be granted, and to answer any initial queries. Some basic feedback may be given at this stage, but a full review and feedback will not be given until the application is submitted.

Following submission of the application, an initial meeting will be arranged to discuss the application with the association, and once issued, regular meetings will be held with the association.

NOTIFICATION OF MODEL AIRCRAFT ACTIVITY TO OTHER AIRSPACE USERS

Consideration should be given to the need to notify other airspace users of model aircraft activity, when operating within the terms of an Article 16 authorisation. This should be identified at the time of application, during the risk assessment process.

Generally, this includes when operating above 400ft AGL as part of a display, or when operating a large model aircraft above 400ft.

Model aircraft operating within an aerodrome FRZ may be notified to other airspace users, via a NOTAM. This is at the discretion of the aerodrome ATS unit, and the recommendations set out in AIP section ENR 1.1 – 4.1.8.13.

Generally, a VLOS operation of a model aircraft does not require notification when above 400ft, when stated within the terms of the Article 16 authorisation and when outside controlled airspace.

The primary means of notification is via a NOTAM. A NOTAM highlights important operational information to pilots, which is checked as part of the brief before departure. NOTAMs are issued by the NOTAM office at NATS, and can be arranged by the CAA, individual operators, aerodromes or other agencies as necessary.

A NOTAM should be used to highlight unusual model aircraft activity to other pilots for awareness. This includes displays above 400ft, large model aircraft operating above 400ft and in some cases, when operating within an aerodrome FRZ. A NOTAM may be requested via the online form, available from the CAA website [here](#) , or for an aerodrome ATZ, by the aerodrome contacting the NOTAM office.

In general, a NOTAM should not be raised for an activity which is also notified within the AIP (section 5.5 (aerial sporting and recreational activities)). However, it is acknowledged that some sites in some instances (large display events for example) may need additional notification, in order to improve their visibility to airspace users, particularly the VFR GA community. In this case, a NOTAM in addition to the AIP entry may be requested for ‘an intense area of model aircraft activity’. These should be requested when necessary via the online form, available [here](#).

NOTIFICATION OF MODEL AIRCRAFT ACTIVITY TO THE ANSP

Model aircraft operations within controlled airspace, above 400ft, are expected to be considered within the Article 16 risk assessment. Compliance with procedures set out within the AIP is expected, and may form part of the air risk mitigations.

In this case, when a model aircraft operates above 400ft within controlled airspace, the UAS Operator should identify whether the portion of airspace requires a notification to the ATS unit responsible. This will be set out within the AIP, section ENR 2.1. This process is set out in GM1 UAS.SPEC.040(1)(b), and should be followed.

MILITARY LOW FLYING SYSTEM

The military operate a system of low flying routes throughout the UK, and frequently fly below 500ft, often to heights as low as 100ft. The vast majority of military low flying takes place between 250ft and 500ft, and usually on weekdays between 0700-2300 (GMT).

In order to assist deconfliction between low flying military aircraft and other civil airspace users, the low-level Civil Aircraft Notification Procedure (CANP) has been established to provide a means of notification to the low flying cell.

Model aircraft displays and any other intense model aircraft activity should be notified through the CANP process, by emailing the low flying booking cell. Contact details for the cell are published in the AIP, in section ENR 1.10 - 5.1.

Charts of the low flying system are available from the AIP (ENR 6-20 and 6-21), which show the tactical training areas, boundaries and areas of avoidance.

AMC1 Article 16(2)(b)(ii) Remote Pilot Competence

CAA ORS9 Decision No. 16

MINIMUM COMPETENCE REQUIRED TO OPERATE THE UAS SAFELY

There is no exclusion from the need to demonstrate basic Open category pilot competence, when operating under an Article 16 authorisation. As such, every RP is expected to hold (as a minimum) a 'Flyer ID'. This may either be obtained through the CAA, or issued on the CAA's behalf by the association.

The association shall identify additional pilot competence requirements, based on the scope of their application for an Article 16 authorisation. This pilot competence scheme shall be set out within the Article 16 application, including the syllabus, assessment criteria, currency requirements and how the scheme is administered.

The level of pilot competence required will be dependent on the risk of the operation, but will always be at a level that is equal to, or greater than the Open category pilot competence requirement set out in UAS.OPEN.020(4)(b), and members will demonstrate this by holding a 'Flyer ID'.

In order to meet the equivalent standard of the CAA Flyer ID test, the association pilot competence test must be comprised of at least 40 questions, which may be multiple choice. A verbal assessment of a selection of questions is not considered sufficient.

The pass mark shall be set by the association, but must be greater than 75%. The test may be 'open book', such that the candidate can make reference to copies of information material to support them during the exam, if the association decides that this is appropriate.

The subject areas to assess include:

- Aviation Safety
- Airspace restrictions
- Aviation regulation
- Human performance limitations
- Operational procedures
- Model aircraft general and technical knowledge
- Privacy and data protection
- Insurance
- Security

Some of these subjects may be of more relevance to some associations than others. The association should decide on the appropriate distribution of questions across these subject areas. If an association wishes to miss out an entire subject area, the reason for this must be detailed within the Article 16 application.

An association may wish to expand the selection of questions within the assessment, to cover a wider range of topics than is covered by the CAA DMARES test.

MODEL AIRCRAFT FLYING DISPLAY - PILOT COMPETENCE

Within the risk assessment for an Article 16 authorisation, if requesting the ability to permit model aircraft displays, the association should identify additional pilot competence and currency requirements.

In general, these include for the operation of large model aircraft within a display, or jet turbine powered model aircraft within a display. This is due to the large amount of kinetic energy carried by such aircraft, that may be transferred following a collision.

It is recommended that this includes additional training, and demonstration of currency – such as the flying of three complete display routines within the preceding 90 days of the event, one of which should have been flown within the preceding 30 days of the event- on an aircraft which is reasonably representative of the aircraft to be flown within the display- preferably on the same aircraft.

‘Reasonably representative’, in this context, refers to an aircraft of a similar mass, flying characteristics and type.

FLYER ID ISSUED ON BEHALF OF THE CAA

An association may apply for the scope of their Article 16 authorisation to enable them to issue a Flyer ID on behalf of the CAA, to their members. This means that their members do not need to read the CAA Drone Code and sit the CAA Flyer ID test, but that they may demonstrate competence through the association pilot competence scheme instead.

This Flyer ID is proof of competence to operate within the Open category, as well as forming part of the competence requirement to fly under the terms of the Article 16 authorisation.

A Flyer ID issued by the CAA following completion of a model aircraft association competence scheme, will last for 5 years, and may be renewed at any time during that period (after the first 11 months of validity).

The association will need to demonstrate that the training material and pilot competence test meets the requirements set out in UAS.OPEN.020(4)(b), and therefore is at least equivalent to the CAA Drone Code and Flyer ID test.

On application for an Article 16 Authorisation, the association will need to provide:

- A copy of all questions used in their pilot competence assessment;
- The procedures relating to the administration of the competence assessment;
 - o Exam conditions
 - o Pass mark
 - o Time limit
 - o Number of re-sits available
- The details of any practical assessment, if required;
- A copy of the training material used to support the competence scheme;

Upon request from the Association, the CAA will provide the Flyer ID to the Remote Pilot, and to the association, for each member who participates in the scheme.

The format of the Flyer ID will be identical to the format issued directly by the CAA to RPs, set out in section ‘AMC2 UAS.OPEN.020(4)(b) and UAS.OPEN.030(2)(a) and UAS.OPEN.040(3)’ and the association may not alter the ID or the format of the ID.

AMC1 Article 16(2)(b)(iii) UAS Operations in the Framework of Model Aircraft Clubs and Associations

CAA ORS9 Decision No. 16

ACTION IN CASES OF OPERATIONS/FLIGHTS THAT EXCEED THE CONDITIONS AND LIMITATIONS DEFINED IN THE OPERATIONAL AUTHORISATION

When a model club or association is informed that a member has exceeded the conditions and limitations defined in the OA, appropriate measures will be taken, proportionate to the risk posed, and in line with the agreed association/club procedures. Considering the level of risk of harm, the model club or association decides whether the competent authority should be informed. In any case, occurrences that cause an injury to persons or where the safety of other aircraft was compromised, must be reported by the model club or association to the CAA.

AMC1 Article 16(4) Registration

CAA ORS9 Decision No. 16

REGISTER MEMBERS INTO THE CAA REGISTRATION SYSTEM ON THEIR BEHALF

A facility to register model aircraft member into the CAA Operator registration system may be provided, if this is requested by the model aircraft association in the application for an Article 16 authorisation.

The terms of use of this facility shall be set out within the Article 16 authorisation, and data exchange requirements will be agreed between the association and the CAA prior to issuing the Article 16 authorisation.

The CAA will provide the Operator ID to the UAS Operator, and to the association, for each member who participates in the scheme.

The format of the Operator ID will be identical to the format issued directly by the CAA to UAS Operators, set out in section AMC1 Article 14(6) and the association may not alter the ID or the format of the ID.