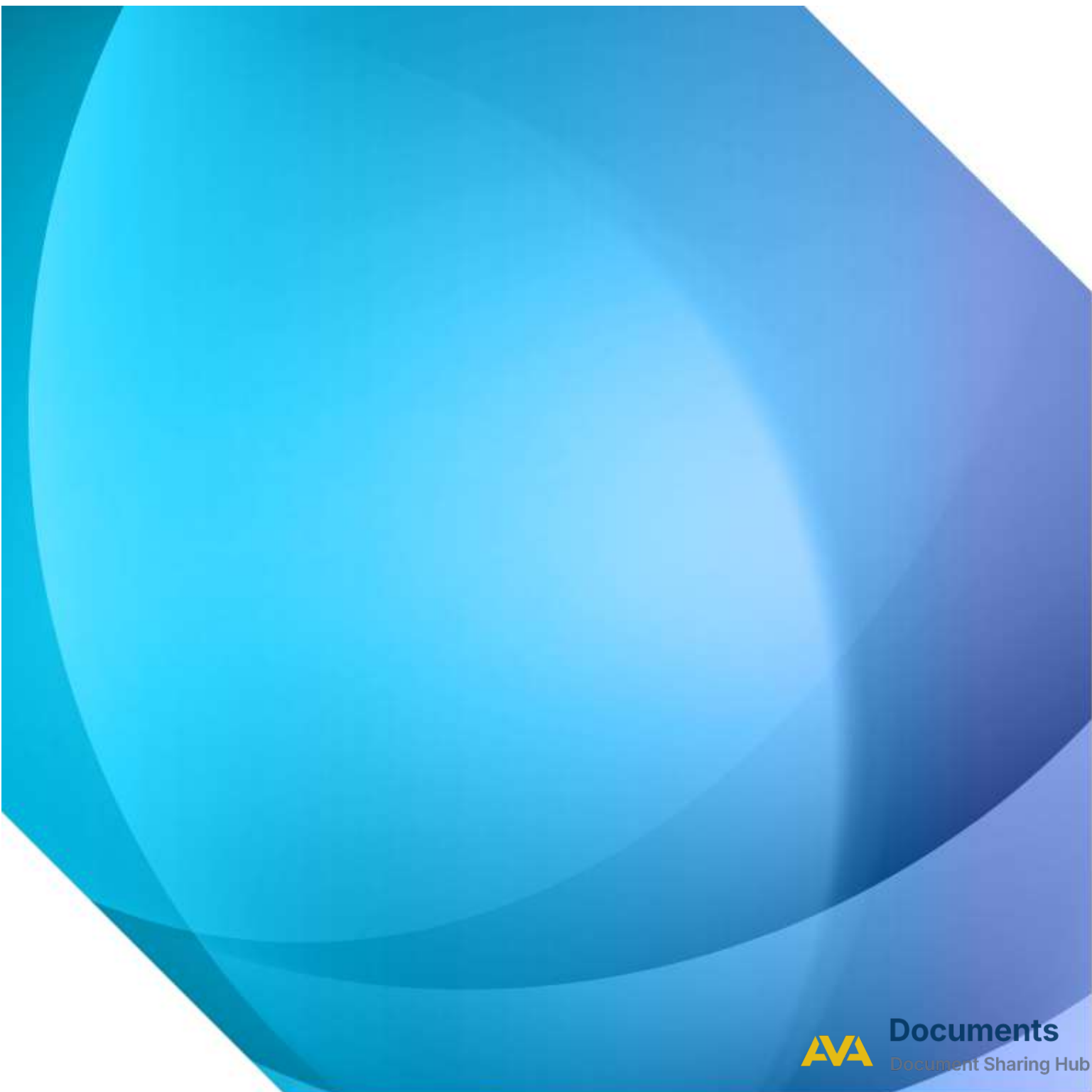


Unmanned Aircraft System Operations in UK Airspace – Guidance

CAP 722



Published by the Civil Aviation Authority, 2020

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Previously published as DAP Unmanned Aerial Vehicle Operations in UK Airspace – Guidance, June 2001

First edition of CAP 722, 29 May 2002

Second edition, 12 November 2004

Third edition, 28 April 2008

Third Edition incorporating amendment 2009/01, 14 April 2009

Fourth Edition, 6 April 2010

Fifth Edition, 10 August 2012

Sixth Edition, 31 March 2015

Seventh Edition, July 2019

Seventh Edition, amendment 2019/01, 23 July 2019

Seventh Edition, amendment 2019/02, 30 July 2019

Seventh Edition, amendment 2019/03, 6 September 2019

Eighth Edition, 5 November 2020

The latest version of this document is available in electronic format at www.caa.co.uk/CAP722

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Revision History

Eighth Edition

November 2020

This revision implements the new UAS Regulatory Package, which becomes applicable in its entirety in the UK from 31 December 2020. The document has been completely restructured in order to accommodate the necessary changes and present them in a clearer and more comprehensible manner.

Seventh Edition

September 2019

A number of small amendments have been made to CAP 722 Seventh edition since it was published in July.

Seventh Edition

July 2019

This amendment updates references and text in accordance with ANO 2016 and its subsequent amendments, changes to European regulations brought about by the publication of the New Basic Regulation in Autumn 2018, incorporates Guidance material that has been published in the interim, and brings terms, definitions and procedures/processes up to date as they have evolved, and a change to the structure of the document.

In addition, the opportunity has been taken to transfer the Appendices into two separate, but related, documents with CAP 722A covering the development of Operating Safety Cases, and CAP 722B covering the requirements for National Qualified Entities.

Some minor editorial amendments have been made to this edition, since original publication in July. A list of these changes can be found on the CAP 722 publication web page.

Sixth Edition

March 2015

CAP 722 has been completely refreshed and restructured under this revision. Key changes to the document are:

- Complete restructure of the document.
- Updates to all Chapters (including Abbreviations and Glossary of Terms).
- Introduction of a Concept of Operations Approach (ConOps)

- Introduction of the UAS OSC - Unmanned Aircraft System Operating Safety Case (formerly titled Congested Areas Operating Safety Case).
- Introduction of an Approval Requirements Map.
- Removal of Military Operations Chapters.
- Addition of Alternative Means of Compliance to demonstrate Operator Competency.
- Introduction of Restricted Category Qualified Entities.

Fifth Edition

10 August 2012

The changes at this edition primarily concentrate on updating areas where terms, definitions or procedures have evolved significantly and where details of chapter sponsors have also been changed. The specific areas to note are:

- Revised Abbreviations and Glossary (also reflected throughout the document), which reflect worldwide developments in UAS terminology.
- Introduction of a Human Factors chapter.
- A complete rewrite of the 'Civil Operations, Approval to Operate' chapter.
- Amendments to civilian Incident/Accident Procedures.
- A complete revision to Section 4 (Military Operations), which reflects the formation of the Military Aviation Authority (MAA) and the revised Military Aviation Regulatory Publications.

Fourth Edition

6 April 2010

This edition incorporates the changes to legislation introduced in Air Navigation Order 2009 (ANO 2009) regarding the requirement for operators of small unmanned aircraft to obtain a CAA permission when their aircraft are being used for aerial work, and also in some cases for surveillance or data acquisition purposes (now termed small unmanned surveillance aircraft).

Unmanned aircraft having a mass of less than 7 kg are now covered by this new legislation, which is intended to ensure public safety by applying appropriate operational constraints, dependent on the flying operation being conducted and the potential risks to third parties. In line with this change, some guidance on the additional details to be provided within an application for permission to operate small unmanned aircraft have also been included (Annex 1 to Section 3, Chapter 1).

Expanded guidance regarding the reporting of incidents/occurrences involving the operation of unmanned aircraft has also been included; such reporting is viewed as being a vital element in the successful development of the 'fledgling' civilian UAS industry.

Finally, in line with continued developments in UAS terminology, and the principle that unmanned aircraft are still to be treated as aircraft rather than as a separate entity. In line with this, the term 'pilot' (i.e. the person who operates the controls for the aircraft) is used more frequently. The term 'Remotely Piloted Aircraft' (RPA) is also emerging in some areas, although it has not yet been wholeheartedly accepted for use in the UK.

Third Edition

28 April 2008

Introduction

Following discussions at the CAA Unmanned Aircraft Systems (UAS) Working Group, held on 12 October 2006, it was considered that sufficient progress had been made in many areas of UAS work to warrant a substantial review of CAP 722. In particular, as an upsurge in UAS activity is envisaged over the coming years it is essential that both industry and the CAA, as the regulatory body, clearly recognize the way ahead in terms of policy and regulations and, more importantly, in safety standards.

With an ever-increasing number of manufacturers and operators, it is vital that the regulations keep pace with UAS developments, without losing sight of the safety issues involved in the simultaneous operation of manned and unmanned aircraft. As a living document, it is intended that CAP 722 will be under constant review and that it will be revised, where necessary, to take account of advances in technology, feedback from industry, recognised best practice and changes in regulations, which are developed to meet these demands. However, it is recognised that with continual rapid developments there will inevitably be times when Chapter sponsors will have to be approached directly for further guidance.

Revisions in this Edition

The layout of the document has been amended to more clearly separate Civil and Military guidance and as such the Chapters have changed in many areas. In addition, while there are many minor textual changes to the document, a significant revision has been made in many areas and as such it is recommended that those involved in UAS operations review the entire content of the document to ensure that they are fully cognisant with the update.

Impending Changes to Regulation

The CAA is in the process of a consultation with industry over a proposal to amend the Air Navigation Order which will require operators of UAS with a UAV component of less than 7 kg mass to obtain a CAA permission, as is currently the case for UAVs with a mass of 7-20 kg. This proposal intends to ensure public safety by applying operational constraints to

UAVs of less than 7 kg mass, as deemed appropriate to the type of operation envisaged and the potential risk to members of the public.

If the consultation exercise approves the proposal, it is likely that the ANO Amendment will pass into law in December 2008. Potential operators of UAS with a UAV component of less than 7 kg must ascertain, before commencing operations, whether or not they are required to obtain a CAA permission.

Third Edition incorporating amendment 2009/01 14 April 2009

This amendment is published in order to update contact details and references throughout the document and make some editorial corrections.

Second Edition

12 November 2004

The major changes in this document are on legal, certification, spectrum and security issues.

Details of the CAA Policy on Model Aircraft/Light UAV have also been included.

Foreword

Aim

CAP 722, Unmanned Aircraft System Operations in UK Airspace – Guidance and Policy, is compiled by the Civil Aviation Authority's Unmanned Aircraft Systems Unit (UAS Unit). CAP 722 is intended to assist those who are involved with the development, manufacture or operation of UAS to identify the route to follow in order that the appropriate operational authorisation(s) may be obtained and to ensure that the required standards and practices are met. Its content is primarily intended for non-recreational UAS operators, but it is clearly recognised that there is a great deal of overlap with recreational use, particularly when the smaller (lower mass) unmanned aircraft are concerned; as a result, much of this guidance is also directly relevant to recreational uses.

Furthermore, CAP 722 highlights the safety requirements that must be met, in terms of airworthiness and/or operational standards, before a UAS is allowed to operate in the UK.

In advance of further changes to this document, updated information can be found on the CAA website¹.

How to use this document

This document is divided into 5 Chapters which provide generalised information which is relevant to all forms of UAS operation (recreational and non-recreational or employing simple or complex technologies) and 4 Annexes which provide more detailed information for operators.

Its content is directly related to the new package of UAS Regulations, which apply within the UK from 31 December 2020.

Page and section headers are also colour coded in order to assist the location of text associated with particular topics as follows:

- | | |
|-------------------------------|---|
| Black section headers | - refer to administration and document layout aspects |
| Purple section headers | - refer to General information |
| Blue section headers | - refer to Operational matters |
| Green section headers | - refer to Engineering and technical matters |

¹ www.caa.co.uk/uas

Orange section headers - refer to **Personnel** matters

Dark red section headers - refer to **Human factors and safety management** matters

The terms below are to be interpreted as follows:

- **‘Must’** / ‘must not’ indicates a mandatory requirement.
- **‘Should’** indicates a strong obligation (i.e. a person would need to provide clear justification for not complying with the obligation).
- **‘May’** indicates discretion.
- **‘Describe’** / **‘explain’** indicates the provision of logical argument and any available evidence that justifies a situation, choice or action.

Units of measurement

The units of measurement used within this document are expressed in accordance with those used in normal aviation practise within the UK:

- Vertical distances of aircraft (heights, altitudes) are expressed in **feet (ft)**
- Heights of obstructions are expressed in **metres (m)**
- Distances for navigation, airspace reservation plotting, and ATC separation are expressed in **nautical miles (nm)**
- Shorter distances are expressed in **metres (m)** and **kilometres (km)** when at or over 5000 metres
- Mass is expressed in **kilogrammes (kg)** and **grammes (g)** when less than 1kg
- Speed is expressed in **knots (kt)**

Note: *Speeds below 50kt may also be expressed in metres per second (m/s)*

Where appropriate, conversions will be provided within the text with the alternative value shown in brackets e.g. 400 feet (120 metres).

Other typical conversions that are used are:

- Distance
 - 10 feet = 3 metres
 - 50 feet = 15 metres
 - 500 feet = 150 metres
- Mass
 - 250g = 0.55 lb (pounds)
 - 25 kg = 55 lb

Content

CAP 722 does not replace civil regulations but provides guidance as to how civil UAS operations may be conducted in accordance with those regulations, along with any associated policy requirements. Wherever possible the guidance has been harmonised with any relevant emerging international UAS regulatory developments.

It is acknowledged that not all areas of UAS operations have been addressed fully. It is therefore important that operators, industry and government sectors remain engaged with the CAA and continue to provide comment on this document.

Availability

The primary method of obtaining a copy of the latest version of CAP 722 is via the CAA website² under the '[Publications](#)' section.

Updated information can be found within the '[Latest Updates](#)' section of the CAA website's UAS webpages.

The CAA also provides a more general aviation update service via the [SkyWise system](#).

Structure

The CAP 722 is structured as follows:

CAP 722

Chapter 1 General

Chapter 2 Operational Guidance

Chapter 3 Engineering and Technical Guidance

Chapter 4 Personnel

Chapter 5 Human Factors and Safety Management

Annexes:

Annex A The Open Category

Annex B The Specific Category

Annex C The Certified Category

Annex D Acceptable Means of Compliance and Guidance Material

² www.caa.co.uk/CAP722

CAP 722 is the lead document of the 'CAP 722 series' of UAS Guidance documentation, which includes:

CAP 722A – [ConOPS and Risk Assessment Methodology](#)

CAP 722B - [The Recognised Assessment Entity](#)

CAP 722C – UAS Airspace Restrictions Guidance and Policy

CAP 722D – [UAS Master Glossary and Abbreviations](#)

CAP 722E – [UAS Rotary Wing Swarm Operations - Visual Line of Sight – Requirements, Guidance and Policy](#)

Point of Contact

Enquiries relating to CAP 722 should be made as follows:

For queries relating to the content of CAP 722:

UAS Unit
CAA
Safety and Airspace Regulation Group
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RH6 0YR

E-mail: uavenquiries@caa.co.uk

For matters concerning operations, authorisations or approvals:

Shared Service Centre (UAS)
CAA
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

Telephone: 03300 221908

E-mail: uavenquiries@caa.co.uk

Abbreviations and Glossary of Terms

The definitive list of abbreviations and terms/definitions that are relevant to UAS operations within the UK and for the whole CAP 722 'series' of documents are centralised within CAP 722D UAS Definitions and Glossary (www.caa.co.uk/cap722d)

CHAPTER 1 | General

1 General

1.1 Introduction

1.1.1. Policy

UAS operating in the UK must meet at least the same safety and operational standards as manned aircraft when conducting the same type of operation in the same airspace.

As a result, when compared to the operations of manned aircraft of an equivalent class or category, UAS operations must not present or create a greater hazard to persons, property, vehicles or vessels, either in the air or on the ground.

However, with unmanned aviation, the primary consideration is the type of operation being conducted, rather than who or what is conducting it, or why it is being done. Because there is 'no one on board' the aircraft, the consequences of an incident or accident are purely dependent on where that incident/accident takes place. The CAA's focus is therefore on the risk that the UAS operation presents to third parties, which means that more effort or proof is required where the risk is greater.

The CAA will supplement CAP 722 with further written guidance when required. For the purpose of UAS operations, the 'See and Avoid' principle employed in manned aircraft is referred to as 'Detect and Avoid'.

1.1.2. Unmanned aircraft – clarification of terms

Although all definitions are contained within CAP 722D, the following are reproduced here:

'unmanned aircraft' means any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board;

'aircraft' means any machine that can derive support in the atmosphere from the reactions of the air other than reactions of the air against the earth's surface;

For clarification, the CAA considers the following as flying 'objects' rather than flying 'machines', and so are not considered to be unmanned aircraft:

- Paper aeroplane.
- Hand launched glider, but only those with no moveable control surfaces or remote-control link.

- Frisbees, darts and other thrown toys.

For the purposes of electrically powered unmanned aircraft, the batteries are considered as part of the aircraft, and the 'charge' is considered as the fuel.

1.1.3. Scope

The guidance within CAP 722 concerns civilian UAS as they are defined in CAP 722D (UAS Definitions and Glossary of Terms). It primarily focuses on the aspects connected with unmanned aircraft that are piloted remotely, whilst acknowledging the potential for autonomous operations in the future.

Military Systems are regulated by the Military Aviation Authority (MAA).

1.2 Legal considerations

1.2.2 The Chicago Convention

As a signatory to the Chicago Convention of 7 December 1944 and a member of ICAO, the United Kingdom undertakes to comply with the provisions of the Convention and Standards contained in Annexes to the Convention, except where it has filed a Difference to any of those standards.

Article 3 of the Convention provides that the Convention applies only to civil aircraft and not to State aircraft. State aircraft are defined as being aircraft used in military, customs and police services. No State aircraft may fly over the territory of another State without authorisation. Contracting States undertake when issuing Regulations for their State aircraft that they will have “due regard for the safety of navigation of civil aircraft”.

Article 8 of the Convention provides that no aircraft capable of being flown without a pilot shall be flown without a pilot over the territory of a Contracting State without special authorisation by that State. Under this Article, ICAO has determined that the term “*without a pilot*” should be taken to mean without a pilot *on-board the aircraft* and hence this has specific relevance to unmanned aircraft operations.

Article 8 of the Convention also requires that “each contracting State undertake to insure *sic* that the flight of such aircraft without a pilot in regions open to civil aircraft shall be so controlled as to obviate danger to civil aircraft”.

1.2.2.1 ICAO Annexes

The 19 Annexes to the Chicago convention contain the International Standards and Recommended Practices (SARPS), upon which every ICAO member State then uses to create its own national regulations, or in some cases a set of ‘regionalised’ regulations (such as within the European Union).

ICAO is currently in the process of developing international SARPS covering Remotely Piloted Aircraft Systems which are conducting international Instrument Flight Rules (IFR) operations within controlled airspace and from aerodromes. These SARPS fit into the Certified category of UAS operations (see 2.2.3 below) and the appropriate UK regulations will be adapted in accordance with these SARPS when they are completed.

ICAO is not currently developing SARPS for any other types of UAS operations.

1.2.3 UAS Regulation within the UK

This section sets out the basis for UAS regulation within the UK. It directly reflects the corresponding EU regulations and represents the regulatory situation that will be in place for UAS within the UK after the EU exit transition period ends on 31 December 2020.

In very simple terms, the relevant EU regulations (the Basic Regulation plus the UAS Implementing Regulation and the UAS Delegated Regulation – described below) will be transferred across into UK domestic law, as UK regulations, once the transition period ends. These regulations are referred to as ‘retained EU law’.

The text, layout and intent of the EU regulations will remain as currently written except that any European references (such as Member States, the Commission, competent authorities etc) have been changed to UK references (such as United Kingdom, Secretary of State, CAA etc).

It should be noted that the names of the ‘retained’ regulations (E.g. *COMMISSION IMPLEMENTING REGULATION [EU] 2019/947*) will not be changed. Therefore, extreme care must be taken when any reference is made to a regulation in order to ensure that the regulation made in UK domestic law is being referenced.

Note: *The presumption to be followed is that any reference made in domestic law to EU legislation should be interpreted as a reference to the ‘retained EU law’ version of the EU legislation that applies in UK domestic law (as opposed to the EU law version).*

1.2.3.1 The Role of the CAA

The CAA is the designated competent authority for all civil aviation matters within the UK. The duties of the CAA are set out in the Civil Aviation Act 1982, as amended. The CAA regulates aviation within the legislative framework as set by the government and overseen by the Department for Transport. This remit of the CAA therefore includes the registration of aircraft, the safety of air navigation and aircraft (including airworthiness), the health of persons on board aircraft, the control of air traffic, the certification of operators of aircraft and the licensing of air crews and aerodromes.

Included within the role of the CAA, and the tasks of the UAS unit, is:

- Carrying out the tasks of the competent authority as defined in Article 18 of the UAS Implementing regulation (UAS IR – see 1.2.3.4).
- The production of policy and guidance
- Issuing operational authorisations for operations
- Issuing safety notices and directives

- Issuing general permissions and exemptions
- Oversight activities for organisations and persons holding authorisations and approvals
- Carrying out enforcement activity in cooperation with the Investigation and Enforcement Team.

It is not the role of the CAA to carry out Research and Development activities; these must be performed by the UAS industry. The research and development process could include consultation with the CAA at appropriate stages so that the CAA can provide guidance on the interpretation of the applicable rules and regulations.

It is strongly recommended that developers of new or novel technology for UAS or support systems set up a programme of discussion and review of their research and development activity with the CAA through the innovation team; early engagement is vital in the process. This will ensure that UAS and system developers will have access to the best advice on the applicable regulations, thereby increasing the likelihood of the ultimate acceptance of any UAS or supporting system by the civil authorities.

UAS and support system designers will need to demonstrate equivalence to the regulatory requirements and standards that are set for manned aircraft.

1.2.3.2 The Basic Regulation

The Basic Regulation (BR), which has the designation '[REGULATION \(EU\) 2018/1139 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL](#)' sets out the common rules for civil aviation within the UK. It makes provision for Implementing Regulations or Delegated Regulations (sometimes referred to as Implementing Acts or Delegated Acts) dealing with subjects such as airworthiness certification, continuing airworthiness, operations, pilot licensing, air traffic management and aerodromes.

Note: A 'retained version' of the BR has also been made and is applicable from 1 January 2021.

Neither the BR nor its Implementing Regulations apply to aircraft carrying out military, customs, police, search and rescue, firefighting, coastguard or similar activities or services (which are known as 'State aircraft'). The State of the UK must, however, ensure that such services have due regard as far as practicable to the objectives of the Regulation.

The essential requirements for unmanned aircraft are contained within Annex IX of the BR.

Certain categories of civil aircraft are also exempt from the need to comply with the BR and its Implementing Regulations. These exempt categories are listed in Annex I to the

BR (normally referred to as 'Annex I aircraft') and primarily consist of manned aircraft categories. The exempt categories which are of relevance for UAS are detailed in paragraph 2 of Annex I, and copied below:

- tethered aircraft with no propulsion system, where the maximum length of the tether is 50 m, and where:
 - the MTOM of the aircraft, including its payload, is less than 25 kg, or
 - in the case of a lighter-than-air aircraft, the maximum design volume of the aircraft is less than 40 m³;
- tethered aircraft with a MTOM of no more than 1 kg.

All other UAS are subject to the Basic Regulation and its implementing and delegated regulations as discussed in 1.2.3.3 below.

An aircraft which is not required to comply with the Basic Regulation, either because it is a State aircraft or because it falls within one of the exempt categories, remains subject to separate national regulation, to be found within the Air Navigation Order (ANO).

1.2.3.3 Implementing and Delegated Regulations

Implementing Regulations are regulations that, in effect, put the requirements of the Basic Regulation into practice. The conditions within EU Implementing Regulations are set by the European Commission, but only when agreed (under a vote if necessary) by a committee consisting of representatives from all of the EU countries (for aviation matters, this is called the 'EASA Committee').

- Implementing Regulations for airworthiness certification and continuing airworthiness were the first 'common EU regulations' to be introduced.
- Implementing Regulations for pilot licensing, operations, aerodromes, air traffic management and common rules of the air have more recently become applicable.

Delegated Regulations also put the requirements of the basic regulation into practice, but for non-essential parts of legislation. The key difference is that these regulations can be adopted by the European Commission without the need to first obtain the explicit approval of the representatives of the European countries, (i.e. the EU Member States have *delegated* this task to the EC) although in practice the EC will still seek consensus if at all possible. Delegated Regulations are used in aviation for:

- Regulations that contain technical requirements or standards.
- Regulations relating to Third-countries.

1.2.3.4 The UAS Regulation Package

Specific EU regulations covering UAS operations were published on 11 June 2019 and, like the BR, will be transferred into UK law at the end of the Brexit EU exit transition period. This 'UAS Regulation Package' consists of two separate, but interlinked regulations as follows:

- "Commission Implementing Regulation (EU) 2019/947 on the procedures and rules for the operation of unmanned aircraft".

Note 1: For simplicity, this is referred to as the 'UAS Implementing Regulation' (UAS IR) within this document

- "Commission Delegated Regulation (EU) 2019/945 on unmanned aircraft and on third country operators of unmanned aircraft systems".

Note 2: This is referred to as the 'UAS Delegated Regulation' (UAS DR) within this document

Both regulations have been amended by the EU since their first publication.

Additionally, as a result of the UK's exit from the European Union, both regulations have been further amended in accordance with the principles described in 1.2.3 above by the "Unmanned aircraft (Amendment) (EU Exit) Regulations 2020"

Consolidated versions of each are published by the CAA as [CAP 1789A](#) (UAS IR) and [CAP 1789B](#) (UAS DR).

1.2.3.4.1 Applicability

The UAS DR became applicable on 1 July 2019.

The UAS IR is applicable throughout the EU and the UK from 31 December 2020.

These regulations do not apply to operations that are conducted indoors.

1.2.4 The Air Navigation Order 2016

The main civil requirements for UK aviation are set out in the ANO.

The provisions in the ANO concerning equipment requirements, operational rules, personnel licensing, aerodrome regulation and regulation of air traffic services apply to all non-military aircraft, organisations, individuals and facilities.

With regard to UAS operations, the ANO provides additional regulatory content that is

either:

- not covered by the IR and DR – for example, endangerment regulations and legal penalties for breaches of these regulations; or
- in support of a more general requirement stated within the IR or DR – for example, airspace restrictions around aerodromes and other ‘protected’ locations.

ANO 2016 article 240 applies to all persons and stipulates that a person must not recklessly or negligently act in a manner likely to endanger an aircraft or a person within an aircraft.

ANO 2016 article 241 applies to all operating categories and stipulates that a person must not recklessly or negligently cause or permit an aircraft (manned or unmanned) to endanger any person or property (which includes other aircraft and their occupants).

If the CAA believes that danger may be caused by the flight of any aircraft (including unmanned aircraft), then the CAA may direct that the aircraft must not be flown (ANO 2016 article 257 - CAA’s power to prevent aircraft flying).

1.2.4.1 UAS related articles within the ANO

The Department for Transport intends to amend the ANO so that it reflects the applicability of the new UAS regulations.

Guidance on the amendment will be published in a separate CAP and will be subsequently incorporated into this document.

Note: *If the ANO and the new UAS regulations overlap, the ‘supremacy principle’ will apply. This means that the new UAS regulations or the Basic Regulation will always take precedence over the ANO.*

1.2.5 Civil and Military regulations

In the United Kingdom, there are two regulatory regimes: civil and military. Military requirements are a matter for the Ministry of Defence. A military aircraft for this purpose includes any aircraft which the Secretary of State for Defence has issued a certificate stating that it must be treated as a military aircraft.

Any aircraft that is not a military aircraft must, under United Kingdom aviation safety legislation, comply with civil requirements. There is no special provision for other types of non-military State aircraft such as those carrying out police, search and rescue, firefighting, coastguard or similar activities or services.

1.3 Privacy and Security - Images and other Data Collection Requirements

The provision 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*’ in relation to the registration of UAS operators within Article 14 (5)(a) ii of the IR.

UAS operators and remote pilots should be aware that the collection of images of identifiable individuals, even inadvertently, when using surveillance cameras mounted on an unmanned aircraft, may be subject to the General Data Protection Regulation and the Data Protection Act 2018. Further information about these regulations and the circumstances in which they apply can be obtained from the Information Commissioner’s Office and website: <https://ico.org.uk/for-the-public/drones/>.

UAS operators must be aware of their responsibilities regarding operations from private land and any requirements to obtain the appropriate permission before operating from a particular site. They must ensure that they observe the relevant trespass laws and do not unwittingly commit a trespass whilst conducting a flight.

1.4 Insurance

It is the responsibility of every UAS operator to ensure they have appropriate insurance coverage. This is a condition of each operational authorisation that is issued by the CAA.

[Regulation \(EC\) 785/2004](#), which came into force on 30 April 2005, requires most operators of aircraft, irrespective of the purposes for which they fly, to hold adequate levels of insurance in order to meet their liabilities in the event of an accident. This EC Regulation specifies, amongst other things, the minimum levels of third-party accident and war risk insurance for aircraft operating into, over or within the EU (including UAS) depending on their Maximum Take-Off Mass (MTOM). Details of the insurance requirements can be found on the CAA website³ under “Mandatory Insurance Requirements”.

UK legislation which details insurance requirements is set out in Civil Aviation (Insurance) Regulations 2005⁴.

Article 2(b) of EC 785/2004 states that the regulation does not apply to ‘model aircraft with an MTOM of less than 20kg’, but the term ‘model aircraft’ is not defined within the regulation itself. Therefore, for the purposes of interpretation within the insurance regulation only, its use of the term ‘model aircraft’ should be taken to mean:

“Any unmanned aircraft which is being used for sport or recreational purposes only”.

Note: For all other purposes, the definition of model aircraft is as set out within CAP 722D.

For all other types of unmanned aircraft operation, whether commercial or non-commercial, appropriate cover that meets the requirements of EC 785/2004 is required.

³ <http://www.caa.co.uk/default.aspx?catid=122&pagetype=90&pageid=4510>

⁴ <http://www.opsi.gov.uk/si/si2005/20051089.htm>

1.5 Registration

The registration requirements for civil UAS are contained within Regulation (EU) 2018/1139 (the EASA Basic Regulation) and in the UAS IR; they are in line with the requirements of ICAO Annex 7.

The registration requirements for unmanned aircraft differ from those required for other aircraft in that they are dependent on the category of UAS operation (see 2.2 below).

The following basic principles apply:

- UAS operated within the Certified category (i.e. the design is subject to certification) – each individual UA must be registered. Further details are provided in Annex C.
- UAS operated within the Open or Specific categories – the UAS operator must be registered. Further details, including the specific circumstances where registration is required, are provided in Annexes A and B.

1.6 Enforcement

The CAA takes breaches of aviation legislation seriously and will seek to prosecute in cases where dangerous and illegal flying has taken place.

The CAA's enforcement strategy is designed to reflect the balance of capabilities between the CAA and local Police services.

The Police often have greater resources, response times and powers of investigation than the CAA. To support this, the CAA has agreed with the Police, in a signed Memorandum of Understanding that the Police will take the lead in dealing with UAS misuse incidents, particularly at public events, that may contravene aviation safety legislation or other relevant criminal legislation. Please report any misuse of UAS to your local Police force.

The CAA's remit is limited to safety and also to investigate where someone is operating, or has operated, in a manner that is not in accordance with their operational authorisation. This does not include concerns over privacy or broadcast rights.

Breaches of Aviation Regulation legislation must be reported directly to:

Investigation and Enforcement Team
Civil Aviation Authority
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

E-mail: ietmailbox@caa.co.uk

Privacy issues are covered by the Information Commissioners Office (ICO) and will not be dealt with by the CAA.

If you have any concerns about UAS being used in your area, either from a safety or privacy perspective, contact your local police on 101.

CAA Enforcement guidance can be found here [Enforcement-and-prosecutions](#).

CHAPTER 2 | Operational Guidance

2 Operational Guidance

2.1 Operating Principles

2.1.1 Visual line of sight operations (VLOS)

Operating within Visual Line of Sight (VLOS) means that the remote pilot must be able to clearly see the unmanned aircraft and the surrounding airspace at all times while it is airborne. The key requirement of any flight is to avoid collisions and a VLOS operation ensures that the remote pilot is able to monitor the aircraft's flight path and so manoeuvre it clear of anything that it might collide with. While corrective lenses may be used, the use of binoculars, telescopes, or any other forms of image enhancing devices are not permitted. Putting things in very simple terms, when operating VLOS, the aircraft must not be flown out of sight of the remote pilot's eyes.

The CAA will normally accept that the VLOS requirement is met when the UA is flown out to a distance of 500 metres horizontally from the remote pilot, but only if the aircraft can still be seen at this distance.

The 'operating height' is limited to a maximum distance of 400 feet (120 metres) from the closest point of the earth's surface (see para 2.1.1.1 below). Operations at a greater distance from the remote pilot may be permitted if an acceptable safety case is submitted. For example, if the aircraft is large it may be justifiable that its flight path can be monitored visually at a greater distance than 500 metres. Conversely, for some small aircraft, operations out to a distance of 500 metres may mean it is not possible to assure or maintain adequate visual contact, and so the aircraft must obviously be kept closer to the remote pilot.

2.1.1.1 VLOS Operating Heights

Visual Line of Sight operations are normally limited to a maximum distance of 400 feet (120 metres) from the closest point of the surface of the earth, unless when overflying certain obstacles (see Annex A paragraph A1.1.3). However, there is scope for the CAA to authorise flight at greater heights, via an operational authorisation (see Annex B), if the CAA is satisfied that this can be achieved safely. Operations above 400 feet may also be permitted within a protected aerodrome's flight restriction zone (FRZ – see 2.5.1), under the procedures detailed in 2.5.1, without the need to seek prior authorisation from the CAA.

This height limitation is intended to contribute to the safety of manned aircraft from the risk of collision with an unmanned aircraft. With the obvious exception of take-off and landing, the majority of manned aircraft fly at heights greater than 500 ft (150 m) from the surface. While there are some other exceptions where manned aircraft fly at 'low level' (such as Police, Air Ambulance and Search and Rescue helicopters, as well as military aircraft), flying an unmanned aircraft below 400 ft (120 m) significantly reduces the likelihood of an encounter with a manned aircraft.

In aviation terms, 'height' means the vertical distance of an object (in this case the unmanned aircraft) from a specified point or datum (in this case above the surface of the earth). To cater for the few occasions where an unmanned aircraft is being flown over hilly/undulating terrain or close to a cliff edge, the regulations specify a requirement to remain within a 400 feet (120 m) distance from the surface of the earth, as shown in Figure 1 below.

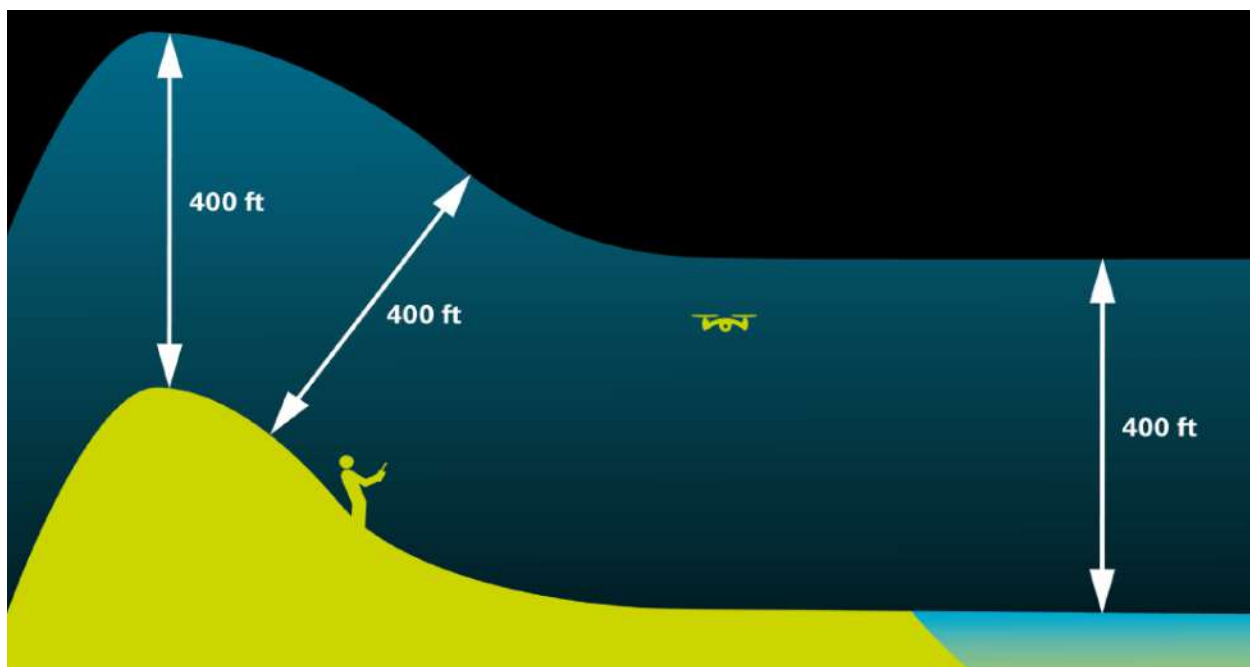


Figure 1 – 400ft (120m) separation from surface of the earth

It must be noted that the 400 ft (120 m) limitation applies to 'heights above/distances from' the surface of the earth. It does not automatically apply to heights/distances from tall buildings or other structures unless covered by Annex A paragraph A1.1.3.

2.1.1.2 VLOS operations at night

There are no specific prohibitions to VLOS operations during night time. The basic VLOS principles still apply (i.e. you must be able to see the aircraft and the surrounding airspace).

Any applications for operational authorisations which include VLOS flight at night will be

expected to include a 'night operations' section within the operations manual which details the operating procedures to be followed and should include items such as:

- daylight reconnaissance and site safety assessment of the surrounding area;
- identification and recording of any hazards, restrictions and obstacles;
- illumination of the launch site;
- aircraft lighting/illumination requirements;
- weather limitations for operation.

2.1.1.3 Avoidance of other aircraft

Remote pilots flying under VLOS should always approach their task with the mindset that they will be the ones that will need to 'make the first move' when avoiding other airspace users; invariably, they will be the first to recognise (i.e. 'see' or more likely 'hear') the potential conflict.

The small size and structure of most 'VLOS operated' UA, particularly the multi-rotor models, means that they are unlikely to be clearly visible to pilots of manned aircraft until at a much closer distance than would normally be the case when looking at another manned aircraft. This is particularly the case when the UA is hovering or moving slowly. Visually observing a small unmanned aircraft from another aircraft is likely to be a 'late sighting' with reduced time to alter course and avoid collision.

This is particularly relevant when operating near areas such as the London helicopter routes, due to the higher density of low-level traffic; remote pilots should fly their aircraft no higher than strictly necessary for the operation. Due to their small size and ability to operate out of small sites in towns and cities, the smaller types of unmanned aircraft are particularly difficult to see against an urban backdrop when compared to the relatively much larger size of a manned aircraft.

Many unlicensed helicopter landing sites also exist, including hospital helipads, as well as numerous Police helicopter and air ambulance flights. 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 remote pilots must take active precautionary measures to avoid affecting the safety of other airspace users. Such measures should involve keeping sufficiently clear to avoid any avoiding action being necessary by either party, or any distraction or change in mission to the other party (e.g. aborting an air ambulance landing due to a UAS sighting).

It should also be noted that the UAS IR specifically requires remote pilots operating in the Open and Specific categories to "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” [UAS.OPEN.060(2)(b) and UAS.SPEC.060(3)(b)]. In practical terms, unmanned aircraft operated under VLOS could present a particular hazard when operating near any aerodrome or other landing site due to the presence of manned aircraft taking off and landing.

A NOTAM is generally not required to be issued for VLOS operations due to the typically small scale, duration and operating limitations of VLOS flights. The potential need for NOTAM action must, however, form part of the operator’s risk assessment process, particularly above 400ft (120m), outside of controlled airspace or when several unmanned aircraft will be operating together.

2.1.2 Beyond visual line of sight operations (BVLOS)

Operation of an unmanned aircraft beyond a distance where the remote pilot is able to respond to or avoid other airspace users by direct visual means (i.e. the remote pilot’s observation of the unmanned aircraft) is considered to be a BVLOS operation.

Unmanned aircraft intended for BVLOS operations will require either:

- A technical capability which has been accepted as being at least equivalent to the ability of a pilot of a manned aircraft to ‘see and avoid’ potential conflicts. This is referred to as a Detect and Avoid (DAA) capability. Further details regarding DAA can be found at 3.6;

Note: Any DAA capability would be expected to ensure compliance with Regulation (EU) 923/2012 the Standardised European Rules of the Air (SERA) chapter 2 (avoidance of collisions), as adjusted by Rule 8 of the Rules of the Air Regulations 2015 (Rules for avoiding aerial collisions);

- A block of airspace to operate in which the unmanned aircraft is ‘segregated’ from other aircraft - because other aircraft are not permitted to enter this airspace block, the unmanned aircraft can operate without the risk of collision, or the need for other collision avoidance capabilities; or
- Clear evidence that the intended operation will pose ‘no aviation threat’ and that the safety of persons and objects on the ground has been properly addressed.

Note: The ultimate responsibility for avoiding collisions lies with the remote pilot, irrespective of the flight rules that the flight is being conducted under, or any ATC clearances that may have been issued.

2.1.2.1 BVLOS operations utilising visual observation (Extended Visual Line of Sight - EVLOS)

In some cases, the requirement for the remote pilot to maintain direct visual contact with the unmanned aircraft can be addressed via other non-technical ‘visual observation’ methods or procedures while still achieving the key responsibilities of avoiding collisions.

Although technically these are BVLOS operations (because the remote pilot cannot actually see the unmanned aircraft), they are more often referred to as ‘Extended Visual Line of Sight’ or EVLOS. It is important to note, however, that collision avoidance is still achieved through the ‘unaided visual observation’ of a human, either through the use of additional observers and/or visually ‘scanning’ a block of airspace for conflicts.

With the exception of one particular case in the Open category (see Annex A, A1.1.1), EVLOS operations may only be conducted within the Specific category (see 2.2 below) under the terms of an operational authorisation issued by the CAA and based on a risk assessment. Factors taken into consideration must include:

- the procedures for avoiding collisions;
- the size of the unmanned aircraft being used;
- the colour of and markings on the unmanned aircraft;
- any additional aids to observation;
- meteorological conditions and visibility, including background conditions (cloud / blue sky);
- the use of deployed observers, including suitable communication methods within the team; and
- operating range limits - suitable radio equipment must be fitted in order to be able to effect positive control over the UA at all times.

2.1.3 Protection of Third Parties

While the primary focus of the UAS Regulations is on the protection of persons, UAS operators and remote pilots must also bear in mind their responsibilities towards vehicles, vessels and structures while flying, even if they are unoccupied.

Under ANO 2016 article 241, *‘no person may recklessly or negligently cause or permit an aircraft to endanger any person or property’*. This article does, of course, also apply to the endangerment of manned aircraft with an unmanned aircraft (because manned aircraft are ‘property’) and the occupants of manned aircraft (because they are still ‘persons’).

Similarly, ANO 2016 article 240 requires that *‘a person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft’*. Although this

article does not apply to 'small unmanned aircraft' (see the exception in article 23 – ie. a small unmanned aircraft cannot be 'endangered'), its requirements still apply to UAS operators and remote pilots.

Key points to note when considering the safety of third parties:

- Fly defensively and with the expectation that control of the UA could be lost without notice
- Reduce the harmful characteristics of the small unmanned aircraft to people
 - Minimise the UA's mass wherever possible or use a smaller/lighter UA
 - Use a UA with design features that reduce harm
 - Do not fly at excessive speeds when close to people
- Check that the UA is in a safe condition to fly
- Consider the environmental factors that may aggravate the potential for loss of control or loss of propulsion
- Consider the use of additional operating personnel to warn uninvolved people immediately following any loss of control or propulsion
- Make use of any available technology or safety features which may reduce the risk of harm if control is lost

2.1.3.1 Uninvolved Persons

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

An uninvolved person is a person that does not take part in the UAS operation, either directly or indirectly, such as:

- Spectators or any other people gathered for sport activities or other mass public events for which the UAS operation is not the primary focus;
- People sitting at a beach or in a park or walking on a street or on a road.

A person may be considered to be 'involved' in a UAS operation if they:

- are solely present for the purpose of participating in the flight operation; or
- have given explicit consent to the UAS operator or to the remote pilot to be part of the UAS operation (even indirectly as a spectator or just accepting to be overflown by the UAS); and

- have received from the UAS operator or from the remote pilot clear instructions and safety precautions to follow in case the UAS exhibits any unplanned behaviour. Such persons could include building-site or other industrial workers, film and TV production staff and any other pre-briefed, nominated individuals with an essential task to perform in relation to the event.

In principle, this means that an involved person must:

- be able to decide whether or not to participate in the UAS operation;
- broadly understand the risks involved;
- have reasonable safeguards introduced for them, introduced by the site manager, the UAS operator or the remote pilot during any UAS operation; and
- be expected to follow the directions and safety precautions provided.

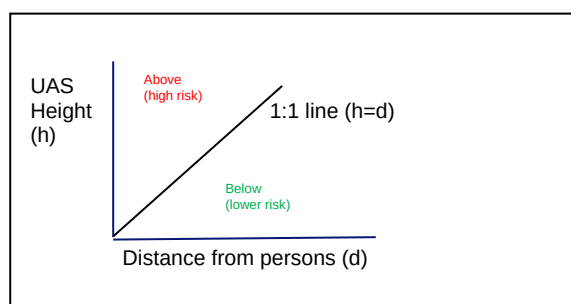
The UAS operator or remote pilot should check by asking simple questions to make sure that the directions and safety precautions have been properly understood.

Persons should not be restricted from taking part in the event or activity if they decide not to participate in the UAS operation.

Note: When filming with a UAS at a large music festival or public event, it is not sufficient to inform the audience, or anyone present via a public address system, or via a statement on the ticket, or in advance by email or text message. Those types of communication channels do not satisfy the points above. In order to be considered an 'involved person', each person should be asked for their permission and be made aware of the possible risk(s).

2.1.3.1.1 The 1:1 rule

The '1:1 rule' is a simple principle (as opposed to an exact rule in law) which can be used to quickly work out what separation from uninvolved persons is safe enough in the short term. It is based on the relationship between the unmanned aircraft's height and its distance from the uninvolved person (the 1:1 line) and works as follows:



- A2 subcategory – (for C2 aircraft only)

When operating in 'low-speed' mode within 30m of uninvolved persons, remote pilots 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. (i.e. if the aircraft is at 10m height, it should be kept at least 10m horizontally away from uninvolved people.

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.

- A3 subcategory

The 1:1 rule is a short-term separation measure aimed at dealing with unexpected issues, such as a person that is approaching or has entered the area of flight.

If the UA is above the 1:1 line (i.e. closer to the person than its height), then it must be moved further away quickly, or its height reduced, until below the 1:1 line.

If/when the UA is below the 1:1 line, then the remote pilot can continue to monitor the situation until the person has vacated the operating area.

Note: the separation from any uninvolved person must not be reduced below 50m horizontally at any time.

2.1.3.2 Vehicles, vessels and structures

The regulations are focussed on the safety of uninvolved persons and so there are no specific minimum distances set down for separation from 'vehicles, vessels and structures'.

However, this does not imply that there are no limits to consider at all. In many cases, vehicles, vessels and structures will still have persons inside them who need to be protected. There are two important points to consider:

- The current 'endangerment' regulation in the Air Navigation Order (article 241), still applies, and so it is an offence to 'endanger' such property with an unmanned aircraft;
- The prescribed separation distances from uninvolved persons still apply to persons that are occupants of any vehicle, vessel or structure. Therefore, the relevant limitations for separating from persons must still be applied, unless the remote pilot can be certain that they are either:
 - unoccupied, or;

- in the case of structures, the remote pilot can be certain that the occupants will still be protected.

Additionally, the overall security and privacy situation must also be considered. There may be buildings in the area where it would be inadvisable, from a security or privacy standpoint, to be flying close to without first obtaining permission to do so.

2.1.3.3 Congested areas

As part of the aim to protect uninvolved persons, flights within areas that are used for residential, commercial, industrial or recreational purposes (i.e. areas that are densely populated or likely to be occupied by large numbers of persons) have additional operational limitations placed on them.

UAS flights within these 'congested' areas may only be undertaken:

- by UA that are deemed to be small enough to not present a hazard;
- by UA that have been built to specific product safety standards;

Note: in both of the cases above, additional remote pilot competency requirements may also be required.

or,

- if authorised by the CAA.

2.1.3.4 Assemblies of people

Assemblies of people have been defined by an objective criterion related to the possibility for an individual to move around in order to limit the consequences of an unmanned aircraft that has become out-of-control.

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 'escape' from any risk posed by the UAS operation.

Qualitative examples of assemblies of people are:

- sporting, cultural, religious or political events;
- beaches or parks on a sunny day;
- commercial streets during the opening hours of the shops;
- ski resorts/tracks/lanes;

- music festivals and concerts;
- marches and rallies;
- parties, carnivals and fêtes.

2.1.4 Tethered UAS operations

A tethered UAS operation is one where the unmanned aircraft remains securely attached (tethered) via a physical link to a person, the ground or an object at all times while it is flying. The tether normally takes the form of a flexible wire or a cable and may also include the power supply to the aircraft as well.

Operations with a tethered UAS can be used as an efficient solution in a number of cases, for example where an operating area is restricted, or when the required flight time exceeds the normal endurance of a free flying battery powered aircraft.

Tethered UAS that are powered and have a mass greater than 1kg are subject to the same basic operating regulations as all other unmanned aircraft and, where necessary, the same operational authorisation process. But the fact that the operation is tethered can be used as a significant mitigation factor when applying for an operating authorisation, thus greatly simplifying the overall process.

Tethered UAS with a mass of 1kg or less are not subject to the requirements within the UAS IR, but will instead be addressed within the forthcoming amendment to ANO 2016 (see 1.2.4.1).

2.1.5 Swarming UAS operations

Guidance regarding VLOS rotary wing UAS swarming operations can be found within [CAP 722E](#).

2.2 Categories of operation

UAS operations are regulated in a manner that is proportionate to the level of risk that the individual operation presents. This 'risk and operation centric' approach means that each operation will fall into one of three operating categories as described in 2.2.1, 2.2.2 and 2.2.3 below.

2.2.1 Open category

The Open category covers operations that present a low risk to third parties. Operations within this category are conducted within a set of basic and pre-defined limitations and do not require any further authorisation by the CAA.

The overall concept of the Open category is that it should be simple and straightforward for the user to understand.

2.2.1.1 Operational boundaries

Open category operations are bounded by three main factors:

- the maximum take-off mass/flying weight of the unmanned aircraft must be less than 25kg;
- the unmanned aircraft must be operated within VLOS (unless operating in accordance with the procedure described at A1.1.1); and
- the unmanned aircraft must not be flown further than 400 feet (120 metres) from the closest point of the surface of the earth (unless operating in accordance with the procedure described at A1.1.3);

All three of these factors must apply for an Open category operation. If not, then the operation must be conducted under the requirements of the Specific category (see 2.2.2) instead.

2.2.1.2 Open category subcategories

The Open category is then further divided down into three operational 'subcategories', primarily based on the proximity of the unmanned aircraft to uninvolved persons while in flight, as follows:

- **A1 (fly 'over' people)** – Operations in subcategory A1 can only be conducted

with unmanned aircraft that present a very low risk of harm or injury to other people due to their low weight, or their type of construction, or because they are a 'toy' (i.e. they are 'inherently harmless'). But for privacy and security reasons, flight over assemblies of people is not permitted.

Note: For a transition period until 31 December 2022, some 'legacy' unmanned aircraft with a mass that is less than 500g may also be used in subcategory A1, provided that the remote pilot has successfully completed an additional competency examination (the A2 CofC as described in 4.2.3.1.2) in order to mitigate the increased risk.

- **A2 (Fly 'close to' people)** – Operations in subcategory A2 can only be conducted with some very particular types of unmanned aircraft. These types must be compliant with a particular product safety standard which allows use in the A2 subcategory (see 2.3.1.3 below), although a transition period also permits the restricted use of some other types (see Note). Flights can be conducted to a minimum safe horizontal distance of 30 metres from uninvolved persons, and this can be further reduced to 5 metres horizontally when the system's 'low-speed mode' is selected. In addition, the remote pilot must have successfully completed an additional competency examination (the A2 CofC as described in 4.2.3.1.2) in order to operate in this subcategory.

Note: For a transition period until 31 December 2022, some 'legacy' unmanned aircraft with a mass that is less than 2kg may also be used in subcategory A2, but they cannot be flown within a horizontal distance of 50 metres from uninvolved persons. The remote pilot must also have successfully completed the same A2 CofC examination.

- **A3 (Fly 'far from' people)** – This category covers the more general types of unmanned aircraft operations. The unmanned aircraft may only be flown in areas that are completely clear of uninvolved persons and may not be flown within 150 metres horizontally of areas that are used for residential, commercial, industrial or recreational purposes.

2.2.1.3 Open category product standards

A key element of the Open category is that any unmanned aircraft that are sold for use within this category will also be subject to a set of product standards. The overall concept is similar to the safety marking schemes that are used for items such as electrical products etc.

In order to achieve this standardisation, unmanned aircraft that are intended to be sold within the UK (often also referred to as the 'market') have been subdivided into 5 'classes'. These classes, which are labelled from 'C0' to 'C4' provide a link to the

operational subcategories as follows:

- Class **C0** - may be flown in all subcategories.
- Class **C1** - may be flown in all subcategories.
- Class **C2** - may only be flown in subcategories A2 or A3.
- Class **C3** - may be flown in subcategory A3 only.
- Class **C4** – may be flown in subcategory A3 only.

The specific descriptions of each Class of unmanned aircraft are listed at 3.1. UAS products 'placed on the market' (i.e. sold to the general public for the first time) for use in the Open category on or after 1 January 2023 must be compliant with one of the above 'UAS Classes'. Manufacturers may, however, place UAS products on the market with a UAS Class marking in advance of this date.

The product standards cover a range of topics including mass, build quality/type of construction, maximum speed, noise limits, remote identification and geoawareness functions, provision of user manuals, plus a host of other elements. The standards are intended to ensure that the UAS product is safe, provided that it is used within the boundaries of the appropriate subcategory.

It is most important to note that an unmanned aircraft product can only be allocated within a UAS Class if it has been manufactured to the relevant product standard, independently assessed as being compliant, and visibly labelled as such.

UAS that are not allocated within a UAS Class, either because they are 'home built' or were placed on the market prior to 1 January 2023 without a Class marking, may continue to be operated indefinitely, but only within certain strict provisions, some of which are only applicable for a 'transitional period'. Full details of these provisions are contained in Annex A, within Sections A2.1, A2.2 and A2.3 (as appropriate for each subcategory).

2.2.1.4 Open category – interpretation of 'Mass'/'Weight'

Although the UAS Regulations make reference to 'maximum take-off mass' (MTOM) throughout, as defined in Article 2 of the UAS IR, this term creates some confusion when referring to 'home built' or other 'legacy' unmanned aircraft where an MTOM has not been defined by the manufacturer. The term 'take-off mass' is also used when referring to legacy aircraft, but only within one article (Article 22 – transitional arrangements) and the term is not specifically defined.

To clarify the situation the UK interprets these terms within the Open category only as follows:

- Unmanned aircraft marked with a Class marking (C0 to C4) – MTOM will continue to be used as defined
- Unmanned aircraft without a Class marking – any reference to MTOM or ‘take-off mass’ should be taken to mean the weight of the unmanned aircraft at the point of take-off for that particular flight (which is referred to as the ‘flying weight’)

2.2.2 Specific category

The Specific category covers operations that present a greater risk than that of the Open category, or where one or more elements of the operation fall outside the boundaries of the Open category.

The key element of the Specific category is that the UAS operator is required to hold an operational authorisation, which has been issued by the CAA.

This operational authorisation will be based on the CAA’s evaluation of a safety risk assessment that has been produced by the UAS operator or, in some circumstances, has been ‘pre-defined’ and published by the CAA.

The operational authorisation document sets out the privileges and limits of the operation. Given the name of the category, each operational authorisation is specific to the named UAS operator and is dependent on the risk assessment and evidence supplied to the CAA by that operator.

Further details are provided at 2.3 below.

2.2.2.1 Specific category – use of certified UA or certified equipment

Certified UA and/or certified equipment may be used for Specific category operations as a means of risk reduction or as a mitigating measure in the risk assessment.

The use of certified UA or equipment does not mean that the whole flight operation is then transferred to the Certified category, but if the certification of those products is relied upon within the risk assessment, then all aspects/conditions related to that certification (such as routine maintenance, scheduled servicing and the qualifications of the organisations and personnel carrying out those duties) must also be complied with.

‘Certified equipment’ is considered to be any aircraft installed equipment for which the relevant approved organisation has demonstrated compliance against a recognised technical standard and performance requirement, and has received a form of certification from a recognised competent aviation authority that attests such compliance (e.g. a European Technical Standard Order (ETSO) approval).

2.2.3 Certified category

The Certified category covers operations that present an equivalent risk to that of manned aviation; because of this they are be subjected to the same regulatory regime (i.e. certification of the unmanned aircraft, certification of the UAS operator, licensing of the remote pilot).

UK regulations relating to the Certified category are still being developed and are not yet published. Until unique UAS regulations are available, the principles set out in the relevant manned aviation regulations for airworthiness, operations and licensing will be used as the basis for regulating the certified category.

2.2.3.1 Boundary with the Specific category

UAS operations in the 'certified' category include operations with a high risk.

Being dependent on the safety risk assessment process, and the nature and risk of the type of operation concerned, the boundary between 'specific' and 'certified' category cannot be expressed purely in terms of mass of the UA.

The combined effect of Article 6 of the UAS IR and Article 40 of the UAS DR is that UAS operations must be conducted in the 'certified' category when they:

- Involve a UA with a characteristic dimension of 3m or more being flown over assemblies of people; or,
- involve the transport of people; or,
- involve the carriage of dangerous goods, that may result in high risk for third parties in case of accident.

Additionally, the CAA may determine that an operation, originally proposed for the specific category, must instead be conducted in the certified category. This would be the case when, having considered the risk assessment provided by the UAS operator, the CAA considers that the risk of the operation cannot be adequately mitigated without:

- the design, production and maintenance of the UAS being certified; and
- the UAS operator being certified; and,
- the remote pilot being licensed (unless the UAS is autonomous)