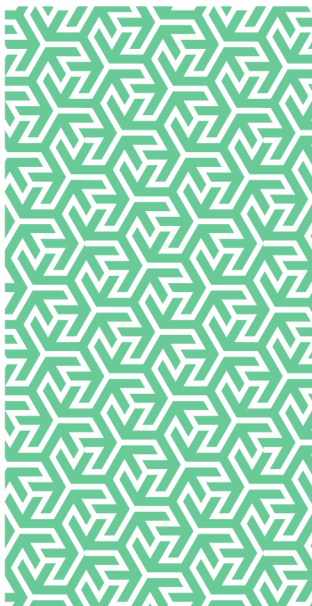




## **Risk control**

### **Drones and Model Aeroplanes**



In partnership with



# Drones and Model Aeroplanes

## Background

An unmanned aircraft system (UAS) can be defined as 'any aircraft operating or designed to operate autonomously or to be piloted remotely without a pilot on board'. It is worthwhile noting that model aircraft fall within this definition and are therefore included within the scope of this guidance.

Commonly known as drones, UAS's are used in situations where manned flight is considered too risky, too difficult, or too expensive. They offer organisations an opportunity to undertake activities faster, safer, cheaper and with less environmental impact than traditional methods. These aircraft can remain airborne for long periods, and can transmit real-time imagery of activities occurring on the ground. UAS's are often equipped with surveillance technologies and are controlled remotely by an operator on the ground. This is done by radio control, using feedback mechanisms built into the UAS mechanism while utilising the Global Positioning Satellite ("GPS") system.

## Growing Use and Threat

Public authorities are increasingly using UAS's for a variety of specific applications. Such applications may include assessing planning applications, surveying dangerous buildings or monitoring coastal erosion. Police forces may commonly use UAS's for crime prevention and / or detection purposes. Search and rescue is considered to be one of the most popular uses over recent times as large areas can be surveyed quickly and hard to reach areas accessed with relative ease and at low risk.

However, their use can present a danger to people on the ground as well as other aircraft.

AIRPROX is a situation in which, in the opinion of a pilot or air traffic services personnel, the distance between aircraft as well as their relative positions and speed have been such that the safety of the aircraft involved may have been compromised. Statistics released by the UK Airprox Board detail approximately 471 AIRPROX reports made to them in connection with the use of UAS between 2018 and 2022<sup>1</sup>. A significant proportion of these events involved commercial aircraft operating in or around the controlled airspace of the UK's major airports.

## Regulation

The regulations that specifically set out the requirements for UAS operations in the UK are contained within:

- The Air Navigation Order 2016 (as amended by the Air Navigation (Amendment) Order 2017)<sup>2</sup>.

- Regulation (EU) 2019/947<sup>3</sup> as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 – referred to as 'The UAS Implementing Regulation'.
- Regulation (EU) 2019/945<sup>4</sup> as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 – referred to as 'The UAS Delegated Regulation'.

These are predominantly safety regulations but they also cover some privacy and security issues. Limits on where unmanned aircraft may fly are also set.

The Air Navigation Order 2016 (as amended by the Air Navigation (Amendment) Order 2017) also sets out some requirements that apply to unmanned aircraft, and the most relevant ones are:

- Article 240: Endangering safety of an aircraft

A person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft.

- Article 241: Endangering the safety of any person or property

A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.

## Rules for Flying UAS

Below provides a general summary of the rules for flying a UAS in the UK.

The rules applied to UAS operation within the UK are based upon the risk characteristics of the flight including where it is flown, its operation in proximity to other people as well as its size and weight.

There is no longer a distinction between flying commercially and flying for recreational purposes.

If the UAS is flown as part of a business then the operator / flyer is strongly encouraged to carefully read 'Unmanned Aircraft System Operations in UK Airspace – Guidance' (CAP722) as published by the Civil Aviation Authority (CAA) (2020)<sup>5</sup>.

The rules create three categories for UAS use:

## — Open

This category is focused upon low-risk drone flights (e.g. operating a very light drone or operating in the countryside far from people). If the flying activity qualifies for this category then specific authorisation from the CAA is not required.

The Open category is split into three sub-categories:

- A1: They may be flown over people for a short time as long as it is not a large gathering or crowd.
- A2: Some distance from people must be maintained, normally 30 metres. But this depends on, among other things, the characteristics of the drone that is being flown (weight or class). To fly in the A2 sub-category, as well as passing the normal flyer ID online test, operators / flyers must also pass an additional written theory exam and declare that they have gained some practical knowledge with the drone.
- A3: The drone must stay at least 50 metres horizontally away from people and 150 metres horizontally away from parks, industrial and built-up areas.

Table 1 below provides a summary of the restrictions placed upon drones in accordance with their characteristics and perceived level of risk:

UAS		Operation		Drone operator/pilot	
Max weight	Subcategory	Operational restrictions	Drone operator registration	Remote pilot competence	Remote pilot minimum age
< 250 g	A1 (can also fly in subcategory A3)	<ul style="list-style-type: none"> <li>No flight expected over uninvolved people (if it happens, overflight should be minimised)</li> <li>No flight over assemblies of people</li> </ul>	No, unless camera / sensor on board and the drone is not a toy	No training required	No minimum age
< 500 g			Yes	<ul style="list-style-type: none"> <li>Read carefully the user manual</li> <li>Complete the training and pass the exam defined by your national competent authority or have a 'Proof of completion for online training' for A1/A3 'open' subcategory</li> </ul>	16*
< 2 kg	A2 (can also fly in subcategory A3)	<ul style="list-style-type: none"> <li>No flying over uninvolved people</li> <li>Keep a horizontal distance of 50 m from uninvolved people</li> </ul>	Yes	<ul style="list-style-type: none"> <li>Read carefully the user manual</li> <li>Complete the training and pass the exam defined by your national competent authority or have a 'Remote pilot certificate of competency' for A2 'open' subcategory</li> </ul>	16*
< 25 kg	A3	<ul style="list-style-type: none"> <li>Do not fly near or over people</li> <li>Fly at least 150 m away from residential, commercial or industrial areas</li> </ul>	Yes	<ul style="list-style-type: none"> <li>Read carefully the user manual</li> <li>Complete the training and pass the exam defined by your national competent authority or have a 'Proof of completion for online training' for A1/A3 'open' subcategory</li> </ul>	16*

Table 1. Open Sub-Categories. Source: EASA, 2022<sup>6</sup>

## — Specific

This category is intended for higher risk flights such as flying over urban areas. The operator will need operational authorisation from the CAA prior to the commencement of any flight.

## — Certified

This category is for large unmanned aircraft that, due to the increased risks involved, are subject to higher levels of approval and regulation. Examples may include package delivery drones.

## Drone Classification

As of 1 January 2023 new drones have had to adhere to specific standards associated with their characteristics and are classified between C0 and C4. Classification is based upon the drone's weight and capability, with these factors determining where and how it can be flown.

Drones that fall within the C0 or C1 classification can be flown in the Open A1 sub-category.

For drones falling within the C2 classification, they can be flown in the Open A2 or A3 sub-categories.

Drones categorised as C3 and C4 can only be operated within the Open A3 sub-category.

If an older unclassified drone is below 250g then it can continue to operate within the Open A1 sub-category. All other unclassified drones must be operated within the Open A3 sub-category.

Home-built drones weighing less than 250g and with a maximum speed of less than 42mph (68Km/h) can be flown in the Open A1 sub-category. All other home-built drones must be flown within the Open A3 sub-category

## Flyer and Operator ID's

The UK Drone and Model Aircraft Code<sup>7</sup> has been published by the CAA for those people flying drones, model aeroplanes, model gliders, model helicopters, and other UAS outdoors in the Open A1 and A3 sub-categories.

It reminds people that it's against the law to fly a drone or model aircraft without having the required IDs and specifies the specific requirements placed upon operators and flyers.

#### — Flyer ID

Flyers must pass the CAA's official theory test to get a flyer ID before flying a drone or model aircraft covered by the regulations. They are responsible for flying safely and legally. People can be fined for breaking the law when flying a drone, and in the most serious cases, may face a prison sentence.

Flyer ID's are not required for drones that fall into the C0 category.

For unclassified drones, Flyer ID's are not required if the drone is below 250g.

#### — Operator ID

The operator is the person responsible for managing a drone or model aircraft. They are responsible for ensuring the drone is maintained and that anyone who flies it has a flyer ID. Persons must be 18 or over to be able to acquire an Operator ID.

Operator ID's are not required for drones that fall into the C0 category as long as a camera is not fitted to the device.

Operator ID's will only be required for unclassified drones that are fitted with camera's and those which are 250g and above.

Flyer ID's and Operator ID's can be acquired via the CCA website: <https://register-drones.caa.co.uk/individual>

## Data Protection

Although the Information Commissioner makes the distinction between 'hobbyists' and individuals or organisations who use UAS's for professional or commercial purposes, it is good practice for domestic users to be aware of the potential privacy intrusion which the use of UAS can cause to make sure they're used in a responsible manner.

Using a UAS to record images of other people without their consent could be a breach of the Data Protection Act 2018<sup>8</sup>. Categories of personal data have been widened to include a much broader list of items that are regarded as being personal data. Location data are formally included within the definition of personal data.

Where UAS's are used for non-domestic purposes, operators will need to comply with their data protection obligations and it will be considered as good practice for domestic users to be aware of the potential privacy intrusion which the use of UAS can cause to make sure they're used in a responsible manner.

## Disaster Recovery

As with all mechanical objects, there is potential for failure of UAS's, particularly in mid-flight. This places distinct importance on the need for servicing and maintenance of UAS's to be conducted directly in accordance with any advice supplied by the manufacturer or supplier.

Recovery procedures should consider not only the potential property and personal damage that might be incurred by unintentional and uncontrolled descent, but also the technology and data that may be held by the vehicle should it be recovered by unauthorised persons. A "disaster recovery" plan should form part of the flight plan, and risk assessment for the vehicle.

## Risk Assessment

If used commercially, a UAS becomes a piece of work equipment, and as such, a suitable and sufficient risk assessment considering the suitability for the task (including unsafe flying conditions such as adverse weather), maintenance (including mechanical / battery) and air worthiness regimes will be necessary. Regulation 9 of the Provision and Use of Work Equipment Regulations<sup>9</sup> states that:

*"Every employer shall ensure that all persons who use work equipment have received adequate training for purposes of health and safety, including training in the methods which may be adopted when using the work equipment, any risks which such use may entail and precautions to be taken."*

Part of an employer's responsibility is to provide suitable and sufficient controls for those employees using the UAS for the purposes of work. This includes detailing the overarching policy that specifies what these controls should be. Communication of the policy is essential, not only to employees, but also to those for whom the service is being provided.

Loss of an UAS during airborne activity should be an over-riding concern. Being a vehicle that moves in three dimensions, collateral damage to infrastructure (including buildings, power-lines, and moving objects such as public transport vehicles) should also form part of the assessment. The risk assessment must consider if loss is preventable (such as by knowledge of technical failure or inherent performance characteristic, or simply due to power failure). If such characteristics are known and preventable, a failure to manage these may

land the organisation / flyer with significant legal, financial and reputational consequences.

The UK Drone and Model Aircraft Code<sup>7</sup> (points 10 – 19) provides practical advice for flyers and operators on what to do before, during, and after a flight.

## Insurance Implications

Traditional insurance is designed to protect property from damage and people from injury. There are a number of pieces of legislation that covers aviation insurance requirements, including the Civil Aviation (Insurance) Regulations 2005<sup>10</sup>. In summary, if a drone is being used for commercial purposes then appropriate insurance cover is required. The cover must be compliant with Regulation (EC) No 785/2004<sup>11</sup>.

Questions which an insurer may require answers to may include:

- 1 How many UAS's will be used?
- 2 What category is each UAS? (C0 – C4)
- 3 What purposes would they be used for?
- 4 Where might they be deployed (rural locations, residential, industrial)?
- 5 How often might they be used?
- 6 What training will be provided to operatives (is the pilot qualified to a recognised standard)?
- 7 Where they will be used and in what proximity to (for example):
  - a) Aircraft flight paths and airports or main motorways and roads creating a distraction.
  - b) Rail infrastructure, national grid power lines and power plants (conventional and nuclear).
  - c) Petrochemical and gas Installations.
  - d) Operation near MOD Sites and Military / RAF Installations.

Liability insurers may be able to extend an existing liability policy to cover the use of UAS's, depending upon category and usage. It is incumbent on all policyholders to consult closely with their liability insurers and make sure coverage is agreed, and if this is not possible to seek alternative insurance cover which may rest within the aviation insurance market.

## Conclusion

UAS's offering undoubted benefits to organisations and individuals, however, they also create risk exposures that need to be carefully considered in terms of safety, physical security, and privacy.

In many senses, a UAS can often be regarded as a (albeit complex) piece of work equipment, and the demand for appropriate risk management and assessment procedures is similar to those for all other workplace activities and equipment.

There is a developing range of insurance policy covers available. Whilst each case needs to be considered on its own merits, it is possible in certain circumstances, for modified public liability policies to accommodate the liabilities arising from UAS use.

## References

- 1 <https://www.airproxboard.org.uk/media/00gmwtx5/bluebook38.pdf>
- 2 <https://www.legislation.gov.uk/ukxi/2017/1112/contents/made>
- 3 <https://www.legislation.gov.uk/eur/2019/947/contents>
- 4 <https://www.legislation.gov.uk/eur/2019/945/contents>
- 5 <http://www.caa.co.uk/CAP722>
- 6 <https://www.easa.europa.eu/en/domains/civil-drones/drones-regulatory-framework-background/open-category-civil-drones>
- 7 <https://register-drones.caa.co.uk/drone-code>
- 8 <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>
- 9 <https://www.legislation.gov.uk/ukxi/1998/2306/contents/made>
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- 11 <https://www.legislation.gov.uk/eur/2004/785/contents>



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