Drones: Safety Guidance and Risk Assessment Template

This guidance focuses on the safety aspects of flying a drone and is based on the [Drone and Model Aircraft Code](https://register-drones.caa.co.uk/drone-code); flying a drone that is under 25kg in weight and under operations categorised as Open A1 and A3 (basic, low-risk flying).

*Please note that this guidance document has been updated in line with the new UAS Regulations that came into effect on 31 December 2020. To see a summary of the changes, see* [*here*](http://publicapps.caa.co.uk/docs/33/CAP2008_EU_Drone_Rules_Factsheet_V7%206.pdf)*.*

What is a drone?

A drone is a small unmanned aircraft.

Drone classes

Drones are split into five classes, based on the weight and capability of the drone, as outlined below:

|  |
| --- |
| Class |
| C0 (toy, not a toy – no camera, not a toy- with camera) |
| C1 |
| C2 |
| C3 |
| C4 |

These classes were introduced recently, so your drone may not have been given a class when it was made. If your drone does not have a class mark, it is classed by its flying weight, see below:

|  |
| --- |
| Flying Weight |
| Below 250g – toy |
| Below 250g – not a toy – no camera |
| Below 250g – not a toy – with camera |
| 250g and above |

Drone Operations

The types of flying undertaken with the drone are known as operations. There are different categories of drone operations, which affect factors including where you can fly, and how close to people and crowds you can fly. Below are the categories of drone operations:

|  |  |
| --- | --- |
| Categories | Type of flying |
| Open A1 and A3 | Basic, low-risk flying |
| Open A2 | More risk than A1 and A3 |
| Specific | Moderate-risk flying |
| Certified | High-risk, complex flying |

*N.B. This guidance is in relation to the Open A1 and A3 sub-categories. You’ll need to get further authorisation if you want to do more advanced flying, or if you want to fly a drone that weighs 25kg or more. For example, if you want to fly in the open A2 sub-category, or in the Specific and Certified categories.*

Who is classed as the Drone Operator?

The Drone Operator is responsible for managing the drone, and for who they allow to fly it. They must be 18 years or older, and is usually the person or organisation that owns the drone (but not always).

Who is classed as the Drone Flyer?

The Drone Flyer is the person responsible for flying the drone safely and legally.

ID and Registration for Drone Operators and Flyers

If you own or fly a drone, it is likely that you will be required to register with the Civil Aviation Authority (CAA), this will depend on the class of drone that you are flying. For registration requirements, see [here](https://register-drones.caa.co.uk/registration-requirements). It is against the law to fly a drone without having the required IDs.

Flyer ID

* Individuals that fly drones must pass a theory test and register for a Flyer ID: <https://register-drones.caa.co.uk/individual>. This includes children (those under 13 must be with a parent/guardian when they take the test and register).
* Flyer ID’s are valid for 5 years, however, if you took your last test under the previous regulations, that flyer ID will last for three years. You can check when an ID expires [here](https://register-drones.caa.co.uk/my-registration).

Operator ID

* Drone operators must register for an Operator ID (they must be 18 years or over).
* You must [label every drone you’re responsible for](https://register-drones.caa.co.uk/labelling-your-drone-or-model-aircraft) (the same operator ID can be used for every drone you’re responsible for).
* You can register your organisation as an Operator, though the person registering must be authorised as the accountable manager for the drone: <https://register-drones.caa.co.uk/organisation/register>. Anyone within the organisation who wants to fly the drone will also need to register and get their own Flyer ID.
* Operator ID’s are valid for 1 year.
* As the Operator, you must ensure that whoever is flying the drone has a valid Flyer ID, you can check [here](https://register-drones.caa.co.uk/check-a-registration).

If you fly your own drone, you must ensure you have both an Operator ID and a Flyer ID, <https://register-drones.caa.co.uk/individual/register-and-take-test-to-fly>.

If you’re the Drone Operator, and someone else will fly the drone you’re responsible for, you must tell them:

* To fly safely and follow the [Drone and Model Aircraft Code](https://register-drones.caa.co.uk/drone-code) when they fly
* To follow the manufacturer’s instructions for flying
* What you as the Drone Operator will be responsible for, such as keeping any built-in software up to date
* What you expect them to do, especially to do with flying and maintaining your aircraft

*N.B. if several people will fly, such as in a business, club or school, consider writing this information down so that everyone can easily access it.*

Maintaining the Drone

The manufacturer’s instructions should detail how the drone should be maintained and if there are any servicing or inspection requirements. Ensure that built-in software (firmware) is kept up to date.

Flying and Distance Restrictions on Drone Flights

Fly below 120m (400 ft)

* Drones must only be flown up to 120m (400ft) above the earth’s surface. This will reduce the likelihood of the drone coming into conflict with other aircraft (look and listen out for other aircraft that may be flying below 120m such as air ambulances and police helicopters).

Flying close to people (including people in buildings and transport, including cars, lorries, trains, boats)

* + - * A minimum horizontal distance of 50m must be kept between the drone and people. This creates a no fly zone around people that goes all the way up to the legal height limit. You must not fly over people in this no fly zone, even if you fly higher than 50m. You can fly closer than 50m to people who are with you and who are involved in what you’re doing, such as friends, family or colleagues out flying with you, as long as you are not putting them in danger.
      * For drones between 250g and 500g, or C1 class, they can be flown closer to people than 50m, but you must not intentionally fly over them.
* For drones below 250g or C0 class, they can be flown closer to people than 50m and you can fly over them.
* You will sometimes need to increase the 50m minimum distance from people to make sure that your flight remains safe. Follow these general rules:
  + If you fly higher than 50m, you should keep the same distance horizontally (e.g. keep 80m away if you fly at a height of 80m).
  + If poor weather conditions (e.g. very windy) means that there could be a greater risk to people, fly further away from them.
  + If flying at high speeds, fly further away to give yourself more time to react.

*N.B. When thinking about how close you can fly, remember, you must never put people in danger. Even small drones could injure people if they are not flown safely.*

Crowds

* Drones must not be flown over crowds (e.g. shopping areas, sports events, religious/political gatherings, festivals, crowded beaches/parks).

Residential, recreational, commercial and industrial areas

* Drones must be flown at least 150m away from residential, recreational, commercial and industrial areas.
* Drones below 250g, or C0 or C1 class can be flown in residential, recreational, commercial and industrial areas, if it is safe to do so.

Airports, Airfields and Aircraft

* Never fly in a flight restriction zone (FRZ) unless you have permission from the airport.
* The [DroneSafe website](https://dronesafe.uk/restrictions/) gives details of airfield restrictions and more information on getting permission and some drone apps also give details of flight restriction zones.

Always check for flying restrictions before flying the drone, as well as hazards. Example restrictions and hazards, together with information on places to check for these, can be found [here](https://register-drones.caa.co.uk/drone-code/where-you-can-fly) (see Point 8).

Monitoring the Drone

During the flight, the Drone Flyer must operate within Visual Line of Sight (VLOS), maintaining direct visual contact with the drone and the surrounding airspace at all times while it is airborne, to ensure that they can monitor the drones flight path and identify any hazards in the air and on the ground as quickly as possible, in order to avoid collision with other objects / persons. Whilst corrective lenses (normal glasses or contact lenses) may be used to achieve this, the use of binoculars, telescopes, or any other forms of electronic viewing equipment (such as a smart phone, tablet or video goggles) are not permitted. The drone flyer must have unaided visual contact with the drone.

The drone flyer can ask someone to be their observer, and that observer must stand next to the drone flyer and they must be able to talk to each other at all times. Either the drone flyer or the observer must be able to keep the drone in direct sight and have a full view of the surrounding airspace at all times. The observer does not need to have a flyer ID, but the drone flyer must tell them what to look out for. The drone flyer will still be responsible for keeping the flight safe.

Ensuring your flight is safe

Before commencing your drone flight, you should:

* Read any instructions before you fly.
* Make sure you know what your drone can and cannot do, i.e.
  + how far your drone can fly from you before it loses signal
  + how long your drone can fly before running low on power or fuel.
* Know how to set/update functions such as maximum flying height, lost connection/’return-to-home’, geo-awareness software.
* Ensure your drone is fit to fly, e.g.
  + Check fuel and battery levels
  + Check any built-in software is up to date.
* Make sure any equipment is secure and that you have not exceeded the maximum take-off mass (MTOM).
* Check for current and forecasted weather that could affect your flight, and that the drone will work if the temperature is low.
* Ensure the drone flyer is fit to fly.
* Ensure that the drone flyer will not be distracted.
* Ensure that the drone flyer can take quick action if the situation changes in the air or on the ground (e.g. needing to land or reduce flying height). Consider what permission you may need to retrieve your drone if you need to land on private property.
* Check there are no flying restrictions in place.

Flight Plan

Ensure a flight plan is in place. This should include designating a safe area for the drone to take off and land, ensuring that the drone will not be obstructed by persons / objects / other aircraft; and that the drone does not enter into any restricted areas.

Modifying a ‘C class’ Drone

If a C class drone is modified, it will no longer count as a C class drone. Instead, you must follow the rules for the flying weight of your drone: either lighter than 250g, or 250g and above. It does not matter whether you’ve increased the weight or not. E.g. if you have a C1 drone and you change the motor to one that’s not specified by the drone manufacturer, you can no longer fly your drone in recreational, residential, industrial or commercial areas.

Modifying means changing anything that affects the weight or how the drone flies. It does not include replacing broken or damaged parts with new ones of the same design, e.g. replacing broken rotor blades with new rotor blades specified by the manufacturer.

Drone Attachments and Cargo

Ensure that any attachments to the drone are secured pre-flight.

If you plan to carry any equipment on your drone, you must not go over the maximum take-off mass (MTOM). This is the maximum safe weight your drone can take-off and fly with. It includes fuel and any items or equipment attached to it. You will find the MTOM in your drone instructions.

Never drop anything from your drone while it’s flying.

Never carry any dangerous cargo on your drone.

Emergencies & First Aid

Ensure that you have first aid provision available in the case of an incident occurring. The drone operator, flyer and spectators should be made aware of emergency procedures pre-flight.

Dangerous incidents, near misses or suspicious activity

If you’re involved in a dangerous incident or near miss when flying the drone, it must be reported to the Civil Aviation Authority. An incident or near miss includes anything that did, or could, put people in danger and/or cause damage to property, buildings, equipment or aircraft.

You should also thoroughly investigate any accidents/incidents/near misses with a view to putting additional measures in place to reduce the risk of recurrence.

If you see anybody using a drone in a suspicious or dangerous way, police should be called on 101. If it’s at an airport, call airport security.

People’s Privacy

You should ensure that by using the drone, you will not be invading anyone’s privacy when you’re out flying. See [here](https://register-drones.caa.co.uk/drone-code/protecting-peoples-privacy) for more information.

Risk Assessment

You should ensure that a risk assessment is carried out and recorded for the use of the drone (a risk assessment template is provided at appendix 1), and that this is reviewed prior to each use to ensure that all relevant hazards have been considered. You would also need to review the risk assessment following any changes (e.g. changes to legislation, change in model of drone etc.), and/or following any accidents, incidents or near misses.

Insurance

You should ensure that you have the correct insurance cover in place before operating your drone. Speak to Hettle Andrews for further advice.

Authorisation before flying outside of the Drone and Model Aircraft Code

The [Drone and Model Aircraft Code](https://register-drones.caa.co.uk/drone-code) covers flying in the Open A1 and A3 categories. If you want to fly outside the rules of this Code, you must first get the correct [authorisation](https://www.caa.co.uk/Consumers/Unmanned-aircraft-and-drones/).

Indoor Use

If you fly your drone indoors, it will not be subject to air navigation legislation as long as it remain indoors throughout the flight. However, other Health & Safety legislation will still apply, and risks should still be assessed and adequately controlled.

Less Common Flying

For more guidance on carrying out lesson common flying activities, see [here](https://register-drones.caa.co.uk/drone-code/less-common-types-of-flying).

Drones in law

The following acts and regulations include some of the key points of law that the Drone and Model Aircraft Code is based on. The list is not intended to be comprehensive.

Acts and regulations

* [CAP1789A: Consolidated version of the EU UAS Implementing Regulation](https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=9654).
* [CAP1789B: Consolidated version of the EU UAS Delegated Regulation.](https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=9655)
* [The Air Navigation Order 2016](https://www.legislation.gov.uk/uksi/2016/765/contents/made), including the [2018 amendment](https://www.legislation.gov.uk/uksi/2018/623/made) and [2019 amendment](https://www.legislation.gov.uk/uksi/2019/261/made).
* The Civil Aviation Authority has published a copy of the [Air Navigation Order with amendments inserted](https://publicapps.caa.co.uk/modalapplication.aspx?cc=fnf).
* [The Data Protection Act 2018](https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted).

Useful resources

* Using A Drone For Work (CAP2005): <http://publicapps.caa.co.uk/docs/33/CAP2005_EU_Drone_Rules_Factsheet_V7%203.pdf>
* Unmanned Aircraft System Operations in UK Airspace – Guidance (CAP 722): <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415>
* Requirements For Flying In The Open Category (CAP2012): <http://publicapps.caa.co.uk/docs/33/CAP2012_EU_Drone_Rules_Factsheet_V7%207.pdf>
* The New UAS Regulations – What’s The Difference? (CAP2008): <http://publicapps.caa.co.uk/docs/33/CAP2008_EU_Drone_Rules_Factsheet_V7%206.pdf>

Appendix 1

Template Risk Assessment – Use of Drones (under operations categories Open A1 and A3, under 25kg)

Please note that this is a template risk assessment. The list of hazards and control measures in this template are not exhaustive and are for guidance only. They should be used as a base for your own risk assessment, and not the completed article.

|  |  |  |  |
| --- | --- | --- | --- |
| Name of organisation |  | Date assessed |  |
| Risk assessor(s) |  | Activity |  |

| What are the hazards? | Who might be harmed and how? | What are you already doing to reduce the risk (i.e. existing control measures)? | What further action is necessary (i.e. are any further control measures required)? | Additional action required (Y or N)? |
| --- | --- | --- | --- | --- |
| Lack of maintenance of drone | All  Drone failing mid-flight / injury | * *Maintenance to be completed as per drone manual guidance. [You should detail specific instructions on advised maintenance detailed in the drone manual].* * *You should ensure that pre-use checks are carried out in line with the manufacturers’ recommendations.* * *You should ensure that built-in software (firmware) is kept up to date.* |  |  |
| Lack of servicing / inspection of the drone | All  Drone failing mid-flight / injury | * *Servicing and inspection completed as per drone manual. [You should detail specific instructions on advised servicing and inspection detailed in the drone manual].* |  |  |
| Unsuitable take off / landing area | All  Injury to spectators | * *Take-off and landing areas to be agreed before the flight and included in the flight plan.* * *Ensure that spectators are not placed in close proximity to the take-off / landing areas. Barriers/stewards/signage may be necessary.* |  |  |
| Drone being flown into an unsuitable location | All  Drone out of control / crashing / flying into restricted areas / injuring persons | * *Flight plan to be established beforehand to ensure that drone will be flown in a suitable area.* |  |  |
| Operator / Flyer not registered | All  Drone crashing / persons injured due to unsafe flying | * *Drone operator has a valid Operator ID in place, and the ID is displayed on the drone.* * *Drone flyer has passed the theory test and has a valid Flyer ID.* |  |  |
| Lack of competence of drone flyer | All  Drone out of control / crashing / injuring persons | * *Flyer must be fully conversant with and trained on the use of the drone (N.B. specialist training may be required in some circumstances).* |  |  |
| Loss of sight of drone during flight | All  Drone out of control / crashing / injuring persons | * *Flight plan to be established beforehand to ensure that the drone will not go out of the drone flyer’s line of sight at any time during the flight.* |  |  |
| Poor weather conditions | All  Drone out of control / crashing / injuring persons | * *Weather forecast to be checked before flight to ensure good conditions are forecasted.* * *Drones should not be operated during high winds (you should check the drone manual for details of any safe operating limits).* |  |  |
| Collision with external obstacles (e.g. overhead lines, birds, trees, other aircraft etc.) | All  Drone crashing and inuring persons | * *Drone flyer to produce a flight plan before take-off, ensuring that obstacles are not in the line of sight.* * *Drone flyer to have full vision of the drone at all times during flight.* * *Drone must not be flown any higher than 120m (400 ft) above the earth’s surface.* * *The drone will not be flown within the Flight Restriction Zone (FRZ).* * *Drone to be flown within distance restrictions for its class/weight.* * *If the drone encounters a low flying aircraft, drone flyer to reduce their flying height or land as soon as the aircraft is heard or seen. Hover at a low level well out of the way, and wait until it’s safe to continue with the flight, or land the drone. Immediately land the drone if it appears the aircraft is attempting to land.* |  |  |
| Drone flyer being distracted | Spectators / members of the public  Drone out of control / crashing / injuring persons | * *Spectators and others to be advised when the flight will take place and to not speak to the drone flyer unless there is an emergency.* |  |  |
| Drone flyer unfit to fly | All  Drone out of control / crashing / injuring persons | * *Anyone operating/flying the drone must not be under the influence of alcohol as this may affect their judgement and ability to fly the drone.* * *Anyone operating/flying the drone must not be under the influence of drugs or medicine. They must check with their doctor or pharmacist if taking medicines that may affect their ability to operate the drone and must not fly if they are advised that their ability to drive a car or operate machinery may be affected.* * *Anyone operating/flying the drone must not fly if they are tired or unwell, as this may affect their judgement and ability to fly the drone.* |  |  |
| Injury to spectators / members of the public | Spectators / members of the public  Serious injury / death | * *Drone to be flown within distance restrictions for its class/weight.* * *Flight plan to be made before take-off.* * *Spectators to be informed of flight beforehand, and when possible, advised of flight plan.* * *First aid provision available.* |  |  |
| Drone overheating | All  Drone catching on fire / burns / injury | * *Drone to be serviced and maintained in accordance with the manufacturer’s specification – see ‘Lack of maintenance of drone’ and ‘Lack of servicing / inspection of the drone’.* * *You should consult the drone manual for any safe operating limits.* |  |  |
| Articles dropping from the drone | All  Persons being hit by falling article / injury | * *Any installations / articles attached to the drone to be secured and checked pre-flight by operator.* * *No articles to be purposely dropped from the drone during flight.* * *If planning to carry installations / articles attached to the drone, it must be ensured that the drone does not go over the maximum take-off mass (MTOM). The MTOM can be found in the drone instructions.* |  |  |
| Carrying unsafe cargo | All | * *Dangerous cargo must not be carried on the drone.* |  |  |
| Unauthorised use of the drone | All  Drone not used properly / crashing / flying into restricted areas | * *Only trained drone flyers who have a Flyer ID to be permitted to fly the drone.* * *Drone to be stored securely when not in use with access limited to authorised personnel.* |  |  |
| Loss of power | All  Drone failing mid-flight / injury | * *Completion of pre-use checks to ensure that the drone has adequate power for the intended flight.* |  |  |
| Lack of suitable insurance | All | * *Describe here the insurance that is in place for the use of your drone(s). Contact Hettle Andrews should you need further advice on the requirements.* |  |  |
| Lack of suitable licensing / permits / authorisation | All | * *You should consult the CAA website at*: [*https://www.caa.co.uk/consumers/unmanned-aircraft-and-drones/*](https://www.caa.co.uk/consumers/unmanned-aircraft-and-drones/) *to determine whether you will require a license and/or permit, and ensure that this is in place prior to operation.* * *To fly in any category outside of Open A1 and A3, authorisation must be gained from the CAA:* [*https://www.caa.co.uk/Consumers/Unmanned-aircraft-and-drones/*](https://www.caa.co.uk/Consumers/Unmanned-aircraft-and-drones/) |  |  |
| Landing on private property (e.g. in the event of emergency landing) |  | * *Drone flyer/operator to seek permission from property owner before retrieving drone.* |  |  |
| Dangerous incidents or near misses occurring during use | All  Persons put in danger / injuries | * *If you’re involved in a dangerous incident or near miss when flying the drone, it must be reported to the Civil Aviation Authority.* * *Accidents/incidents/near misses should be recorded and investigated with a view to putting additional measures in place to reduce the risk of recurrence.* * *Ensure that you have first aid provision available in the case of an incident occurring. The drone operator, flyer and spectators should be made aware of emergency procedures pre-flight.* |  |  |
| Suspicious activity | All  Persons put in danger | * *Police to be notified as soon as possible by calling 101 (or airport security if at an airport).* |  |  |
| *Other hazards identified…* |  |  |  |  |

Document Control

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| Revision No. |  |  |  |  |  |  |  |  |  |  |
| Frequency of review |  |  |  |  |  |  |  |  |  |  |
| Next review date |  |  |  |  |  |  |  |  |  |  |
| Reviewed by |  |  |  |  |  |  |  |  |  |  |

Action Plan

| Action required | Person(s) Responsible | Target Date | Completion Date |
| --- | --- | --- | --- |
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| Risk Assessor Name |  | Signature |  | Date |  |
| Approver Name |  | Signature |  | Date |  |