

UAVs in Agriculture

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Rules and Regulations

When operating a drone it is vital that you follow the regulations set out by the Civil Aviation Authority (CAA). This publication will outline the current rules and regulations that apply to agricultural use and as well as the new regulations set to come into effect on the 1st of November 2020 (page 4).

Anyone responsible for a drone weighing between 250g and 20kg will need to register with the CAA as an operator. This costs £9 annually and must be completed by someone aged 18 or over. Once registered you will be given an operator ID with your certificate of registration.

The operator ID must always be displayed on your drone and be:

- On the main body of the aircraft.
- Visible without needing to remove or open part of your drone.
- In clear block capitals larger than 3mm.
- Secure and safe from damage.
- Easy to read when the aircraft is on the ground.

Anyone flying a drone weighing between 250g and 20kg will need to pass an online test. This is free and can be renewed every three years. The test and information can be completed on the CAA website (<https://register-drones.caa.co.uk/>).

What do I need to do in the online test?

- 20 multiple choice questions.
- You must answer 16 questions correctly to pass.
- You can take the test as many times as you want.

Users and operators who fail to register their drone or sit the competency tests could face significant fines.



The Drone Code

When you fly a drone in the UK it is your responsibility to be aware of the rules that are in place to keep everyone safe. Follow the Drone Code to make sure you are flying safely and legally.

The Drone Code states:

1. Always keep your drone in direct sight to a maximum of 500m horizontally from the operator. This ensures that you can see and avoid other objects while flying.
2. Never fly more than 400ft (120m) above the surface. This is against the law and reduces the likelihood of a conflict with manned aircraft.
3. Always keep at least 50m distance from people, buildings, cars, trains and boats.
4. Never fly closer than 150m from crowds and built-up areas and don't overfly them.
5. Never fly in an airports flight restriction zone (FRZ) without permission. Information on the UKs FRZs can be found on the Drone Safe UK webpage (<https://dronesafe.uk/restrictions/>).
6. You are responsible for each flight. Legal responsibility lies with you. Failure to fly responsibly could result in criminal prosecution.

The Drone Code can be found at <https://dronesafe.uk/drone-code/>

Note: Registering in the UK does not mean you can fly outside of the UK. Check with relevant authorities in the destination country.

Additional Regulations

The regulations for recreational unmanned aircraft flights are contained within the Air Navigation Order 2016 (ANO) which is the primary document for all aviation regulations within the UK.

Over and above the Drone Code, other important advice includes:

- You are responsible for flying your drone in a safe manner.
- You must not endanger anyone or anything with your drone, including items that you drop from it.
- If your drone weighs more than 20kg additional rules apply when flying in certain types of airspace.

You must obtain prior Permission from the CAA (Civil Aviation Authority) if you want to fly:

- Within 150m of either a congested area or a crowd of more than 1000 persons and/or
- within 50m of people or properties/objects that are not under your control.

For further information on flight permissions and exemptions go to: <https://www.caa.co.uk/Consumers/Unmanned-aircraft/Recreational-drones/Permissions-and-exemptions-for-unmanned-aircraft-flights-and-drones/>

Commercial Drone Regulations

A permission for commercial operations (PfCO) from the CAA is required if you wish to use your drone for:

- Commercial operations and/or,
- You wish to fly your aircraft within 50m of people or properties/objects that are not under your control.

If you want to operate within 150m of a crowd of more than 1000 persons then you will need to acquire an operating safety case (OSC) from the CAA on top of the PfCO. An exemption from the CAA is required if you wish to seek release from any other requirement within ANO 2016.

Commercial operations are defined by the CAA as '*any flight in return for remuneration or other valuable consideration.*' When queried regarding whether farmers using their personal drones for their own farm business the CAA stated that:

"A farmer flying his drone for his own purpose will not be getting paid to do it or receive remuneration for that flight. It is all about the flight. Therefore, we would deem that a farmer using a drone on their own land to check/survey their own fields would not require a PfCO." – CAA

However, farmers need to make sure they adhere to all existing flight regulations, especially in terms of distances from roads and buildings and towns (i.e. congested areas) that may border their farmland.

A PfCO can be obtained through courses offered by CAA approved National Qualified Entry (NQE) company. PfCOs are valid for 12 months and are subject to annual renewal, costing £190. It is a requirement to hold EC785/2004 public liability insurance if you are operating for commercial gain.

Further information about commercial operation requirements can be found at: <https://www.caa.co.uk/Commercial-industry/Aircraft/Unmanned-aircraft/Small-drones/Permissions-and-exemptions-for-commercial-work-involving-small-unmanned-aircraft-and-drones/>

UK Airspace Permissions

In addition to the above regulations, drone pilots must also follow UK airspace permissions. These include Prohibited Areas, Restricted Areas or Danger Areas (military ranges etc). There are also areas that can become temporarily restricted for a certain duration of time.

There are several apps and websites that monitor UK airspace permissions and updates. It is recommended that these are checked prior to flying to ensure you have up to date information. Below are links to three such services available:

- <https://dronesafe.uk/safety-apps/>
- <http://notaminfo.com/ukmap>
- <http://www.skydemonlight.com/>

These apps and websites are to be used as advisory and not absolute fact.

Flying on Private Land

Permission must be obtained from the land owner to take off or land on their property. There are currently no laws relating to flying over private property apart from those outlined in the Drone Code, however pilots may be liable if property owners feel their privacy is being infringed upon or that the drone is endangering or a nuisance. It is recommended that pilots notify land owners and heed any objections.

Changes in Regulation November 2020

From the 1st of November 2020 new regulations will come into force. These regulations will be considerably different to the current ones, transitioning to a risk-based system that removes the distinction between commercial and recreational flying. The risk itself depends on the drone you are flying (weight/type/abilities) and the type of operation you want to do (primarily distance to people who are not involved in your planned flight). There will still be a requirement to hold EC785/2004 public liability insurance if you are operating for commercial gain.



Training and Certification

The certificate requirements will also be changing with the new regulations. From November 2020 there will be three levels of training needed depending on the type of operations being conducted.

The Basic Operator Registration and Competency Test

- Required of all drone pilots flying a drone with a MTOM greater than 250g;
- or any drone equipped with a sensor that can capture personal data;
- or a drone capable of transferring more than 80 Joules to a human on collision.
- Completed online through the CAA website.

The A2 Certificate of Competence (A2 CofC)

- This is required to fly in the Open Category A2 (see page 6).
- This course requires the completion of an online course and 30 question exam.
- No practical flight assessment is needed for the A2 CofC, however you will need to self-declare that you have completed training flights.

The General VLOS Certificate (GVC)

- This is required for operations under the Specific Category.
- The course is similar to the current PfCO courses and consists of a theory test, creation of an operations manual and a flight assessment.

Note: Current PfCO holders will be able to renew and continue using their PfCO permissions after the new regulations come into effect without needing to requalify. This is subject to change.

Operating Categories

Drone flight will fall into three categories under the new legislation. The Open Category for low to no risk flights, the Specific Category for operations with greater risk, and the Certified Category for operations with risk similar to that of manned aviation. The full criteria are listed on the next page.

Open Category	Specific Category	Certified Category
<ul style="list-style-type: none"> • Operations that present low or no risk to third parties. • Operations are conducted in accordance with basic and pre-defined characteristics. • Not subject to any further authorisation • Flights must be: <ul style="list-style-type: none"> • within Visual Line of Sight • Not above 400 feet (120m) • No more than 25kg Maximum take-off Mass 	<ul style="list-style-type: none"> • Operations that present a greater risk than those of the Open Category, or where one or more elements fall outside of the Open Category. • Operations will require an Operation Authorisation from the CAA, based on a safety risk assessment. 	<ul style="list-style-type: none"> • Operations that present an equivalent risk to that of manned aviation. • Subject to the same regulatory regime (i.e. certification of aircraft, certification of the operator and licensing of the pilot). <p><i>Note: This category will not be covered in this document.</i></p>

Open Category: Drone Certification

As part of the new legislation all drones used in the Open Category will need to comply with new product standards set out by the CAA. Drones that are intended for use in the UK will be subdivided into 5 classes based on their weight, type and abilities. This certification will determine which Sub-categories the drone may be operated under as outlined below:

Class 0 – can be flown in all sub-categories

- Very small drones including toys.
- MTOM of less than 250g.
- Maximum speed of 19m/s.
- Unable to fly further than 400ft (120m) from controlling device.

Class 1 – can be flown in all sub-categories

- MTOM of less than 900g or transmit less than 80 joules if colliding with a human head.
- Maximum speed 19m/s.

Class 2 – can be flown in sub-category A2 and A3

- MTOM of less than 4kg.
- Designed to minimise injury to persons.
- Built in low-speed mode to limit speed to 3m/s when selected.

Class 3 – can be flown in sub-category A3

- MTOM of less than 25kg.
- Possesses automatic control modes.

Class 4 – can be flown in Sub-category A3

- MTOM of less than 25kg.
- Do not have any automatisisation other than for basic stabilisation.

All drones produced under the old guidelines are classified as 'legacy' drones, unless they have been certified in any of the new classes (C0-C4). The regulations in place for these drones will be in effect until the end of the transitional period (30th June 2022), at which point any drone classified as a 'legacy' drone will only be allowed to operate in Sub-Category A3.

Open Category: Sub-Categories

Within the open category there are three sub-categories – A1, A2 and A3:

Sub-Category A1 -fly overhead of people-	Sub-Category A2 -fly close to people-	Sub-Category A3 -fly far away from people-
<ul style="list-style-type: none"> Operations only conducted with C0 or C1 class drones or a 'legacy' drone MTOM of less than 250g Can fly overhead of people, but not open-air assemblies of people. <p>Note: 'legacy' drones with a MTOM of less than 500g can be flown in this category under transition rules until July 2022, but cannot intentionally overfly uninvolved people.</p>	<ul style="list-style-type: none"> Operations only conducted with C0 to C2 class drones or a 'legacy' drone with a MTOM of less than 2kg. Pilots must have an A2 CofC. C2 drones can fly within 30m (lateral) of uninvolved persons. C2 drones can fly to 5m (lateral) of uninvolved persons if they are in a 'low speed' mode and follow the 1:1 rule (e.g. 5 m horizontal and no more than 5 m vertical). 'Legacy' drones can only fly within 50m of uninvolved persons under transitional rules until July 2022. 	<ul style="list-style-type: none"> Covers more general types of operations. Can fly C0 to C4 and 'legacy' drones with a MTOM of up to 25kg. Operations can only occur in areas clear of uninvolved persons (i.e. lateral distance of 150 m from 'congested' areas and 50 m from uninvolved persons). Operations will not be conducted in areas used for residential, commercial, industrial or recreational purposes.

Specific Category

Operations that do not fall under the Open Category but are not complex enough to be placed in the Certified Category, fall under the Specific Category. In this category operators are required to apply for Operation Authorisation with the CAA before any flights may be conducted. To acquire this, the pilot must have completed the GVC course that includes a flight operations assessment and the creation of an operations manual. Operators will also need to tell the CAA what, where and how the drone will be operated, and be able to provide a safety risk assessment/safety case.

Examples of when operations fall under this category include:

- Operating a drone with a MTOM between 4kg and 25kg in residential, industrial, commercial or recreational areas.
- Operating a drone beyond your visual line of sight.
- Operating in congested areas with reduced distance restrictions.



Recommendations

The new regulations coming into effect on the 1st of November 2020 will reshape the way that drones are used in the agricultural sector. For standard drone imagery, if the land does not border any villages, larger settlements or roads then operating in the A3 category will be most suitable. If this is not the case and the land does border villages, or larger settlements then getting a A2 CofC would be advised, unless the drone is heavier than 4kg at which point a GVC may be required.

Further Information

The CAA website's dedicated drone section contains the most up to date guidance on regulations and laws that apply to drone operation in the UK:

<https://www.caa.co.uk/Consumers/Unmanned-aircraft-and-drones/>

For more information on the drone code and the CAA recommended safety phone app (Drone Assist) go to the Drone Safe Website:

<https://dronesafe.uk/safety-apps/>

The latest guidance and policy document (CAP 722) released by the CAA outlines the current UK drone regulations:

https://publicapps.caa.co.uk/docs/33/CAP722_Edition7_A3_SEP2019_20190903.pdf

For an in depth look into the changes coming into effect as of the 1st of November 2020. Refer to the CAA publication CAP 1789. Note this is subject to change as new amendments may be released by the CAA in the future:

<https://publicapps.caa.co.uk/docs/33/CAP1789%20EU%20UAS%20Regulations-Guidance.pdf>

Please note that all information in this document represents current UK rules and regulations for drone operation at the time of publishing*. These regulations are in constant review and are likely to be amended in the future. Please refer to the official CAA website for the most up to date information.



For further information about UAVs see
www.fas.scot or contact us on 0300 323 0161 or
by email at
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The European Agricultural Fund
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