

# Aviation Safety Information Leaflet: Drone Flying



## Introduction

The intention of this leaflet is to inform on the existing national regulation, highlight the associated risks related to professional drone flying and to provide guidance on the preparation of such flights.

In response to several drone related incidents, the Belgian Civil Aviation Authority (BCAA) decided to draw up a Aviation Safety Information Leaflet (ASIL) on drone flying. In the last few years, an increase in drone activities was seen and more and more applications for drones were developed. The BCAA calls upon all Belgian federations, organizations and instructors active in civil aviation to ensure safe drone flying among their community by means of training and awareness campaigns and to accurately brief upon the hazards.

Drone flying is flying an aircraft whereby the pilot is not on board of the aircraft but on the ground, remotely controlling the aircraft by means of a ground control station. The remote pilot keeps the drone under his/her command. The decision-making is in the hands of the remote pilot and these decisions enable the safe conduct of the flight. The remote pilot is responsible at any time and in any circumstances for the safe drone flying and makes sure that no mid-air collision or a crash on people or goods on the ground will happen. The remote pilot has to guarantee his/her ability to control the drone and keep away from any hazardous situation.

## Regulation

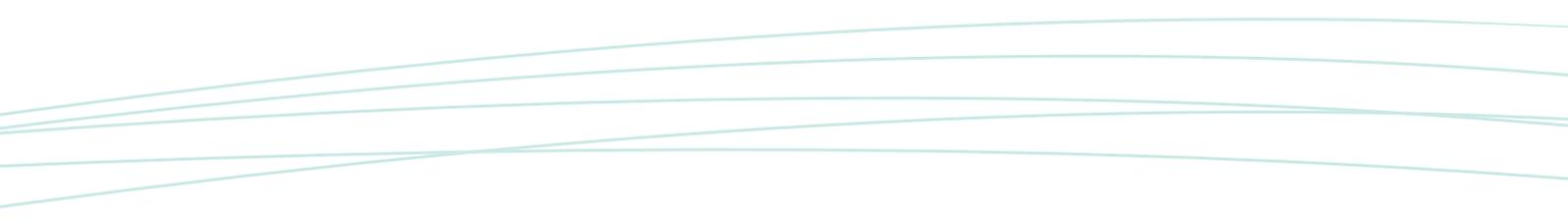
In Belgium, the Royal Decree of April 10, 2016 regulates the use of remotely piloted aircraft systems (drones) in Belgian airspace. It applies a risk-based approach to set proportionate requirements for the different types of operations with drones in Belgian airspace.

## Hazards and risk

It is obvious that a drone flight adds a new set of hazards in comparison with a routine navigation flight. The risk of a mid-air collision leading to uncontrollable aircraft and subsequent crash is high. Risk mitigation for example depends of:

- o Specialized training on aviation theory and on practical skills for the remote pilot;
- o Checks of skills and competence of the remote pilot;
- o Strict Standard Operating Procedures (SOP) for flying a drone;
- o Using an Operations manual of high quality describing how to perform the flights with a drone;
- o Years of experience of the remote pilot;
- o Flying drones with adequate performance characteristics;
- o Reduction of manoeuvres during drone flight;
- o Serious flight preparation and pre-flight briefings;
- o New technologies supporting drone flights like detect and avoid system;
- o Registration of the drones, used outside model aircraft terrains or private gardens;
- o Safety features and drones made with high quality materials and in compliance with safety standards;
- o Incident reporting for the lessons learnt.

However, for drones, there is only little training material, standardized SOP's and standardizes guidelines available.



## Drone flying: before you take off - key elements for a safe flight

Anyone who wants to fly a drone in Belgian airspace should ask himself/herself 5 questions:

1. What are my intentions with the drone?
2. What type of drone will I be flying?
3. Am I sufficiently qualified for what I intend to do and with that type of drone?
4. Do I need to have an operations manual and/or do I have to notify the authorities of the flight?
5. Where will I conduct my drone flight?

### 1. What are my intentions with the drone?

#### - Check the type of operation

The first question you should ask yourself is "what am I going to do with my drone?". This is called the **type of operation**.

In Belgium, we can distinguish between 5 types of operations:

- o **Private use:** you do not want to fly your drone higher than 10m (32.8ft) above a private terrain and the drone – weighing less than 1 kg (2.2lbs) - must be within line of sight at all times. These flights can only happen during daylight.
- o **Use as model aircraft:** A model aircraft is an aircraft with a take-off weight between 1 kg (2.2lbs) and 150 kg (330lbs) and used only for recreational purposes that is used above a model aircraft terrain recognised by the BCAA. The drone must be kept within the airspace that is reserved for that model aircraft terrain as specified in the Aeronautical Information Package (AIP).
- o **Class 2 operations:** you do not want to fly your drone higher than 150ft (around 45m) above ground outside controlled airspace and outside cities or communities. Operations can only occur in daylight conditions and the drone – weighing less than 5 kg (11lbs) - must remain within the pilot's line of sight at all times.
- o **Class 1b operations:** you want to fly your drone up to 300ft (around 90m) above ground outside controlled airspace. Moreover, you stay more than 50m (164ft) clear from people and/or goods on the ground. Operations can only occur in daylight conditions and the drone – weighing less than 150 kg (330lbs) - must remain within line of sight at all times.
- o **Class 1a operations:** you want to fly your drone up to 300ft (around 90m) above ground outside controlled airspace. Moreover, you will come closer than 50m (164ft) from people and/or goods on the ground or even overfly them or you will fly around an obstacle closer than 30m. Operations can only occur in daylight conditions and the drone – weighing less than 150 kg (330lbs) - must remain within line of sight at all times.

All operations that are not covered under the previous categories are to be considered as Class 1a operations.

Note that the operation types **private use** and **use as model aircraft** are not allowed for commercial or **professional purposes**.

Please be aware that the use of drones is prohibited for operations involving:

- o The transport of persons, mail or cargo;
- o Towing banners or such;
- o Dropping objects or liquids;
- o Acrobatic and formation flights.

## 2. What type of drone will I be flying?

Once you know what you want to do with your drone, you should consider which **type of drone** you will use.

When you want to operate your drone on a **private terrain** or on a **model aircraft terrain** you don't need to register your drone and you don't need an approval of your flight or to notify your flight to the BCAA.

In all other cases (**classes 2, 1b and 1a**) you need to fully comply with the requirements of the Royal Decree of April 10, 2016 regarding the use of drones in Belgian airspace. This means:

- o Registration of the drone at the BCAA.
- o A certificate of competence to fly a drone in case of class 2 operations or a remote pilot licence in case of class 1 operations (class 1a or class 1b).
- o An operations manual and risk assessment for class 1 operations (**class 1a or class 1b**)
- o A declaration made by the operator that the organisation is in full compliance with the national requirements for class 1b operations and the prior authorisation of the BCAA for class 1a operations.

## 3. Am I, as a pilot, sufficiently qualified for what I intend to do and with that type of drone?

Another important question you should ask yourself concerns your **skills and competence** to handle the drone that you want to fly in a safe way.

When you want to operate your drone on a **private terrain** or on a model **aircraft terrain** you don't need to have a license of any kind.

In all other cases (**classes 2, 1b and 1a**) you need to comply with the requirements of the Royal Decree of April 10, 2016 regarding the use of drones in Belgian airspace.

For the remote pilot, this means that:

- o For all **operations in class 2**: you need a certificate of competence issued by the BCAA. To obtain this certificate, you need to follow a theoretical course and pass a practical skill test with an examiner recognized by the BCAA.
- o For all **operations in class 1b or 1a**: you need a remote pilot licence issued by the BCAA. To obtain this licence, you need to pass both a theoretical examination organised by the BCAA and a practical skill test with an examiner recognised by the BCAA.

#### 4. Do I need to have an operations manual and/or do I have to notify the authorities of the flight?

When you want to operate your drone on a **private terrain** or on a model **aircraft terrain** or for a **class 2 operation**, you don't need to send an operations manual or notify the flight to the BCAA.

If you use a drone for a **class 1b** operation, you need to:

- o Send a declaration of compliance with the national requirements to the BCAA ten days before the first time you intent to start operating your drone for this kind of operations.
- o Start operations only after receiving confirmation from the BCAA that the declaration of compliance was well received by the BCAA.
- o Notify each drone flight to the BCAA before take-off.

If you use a drone for a **class 1a** operation, you need to:

- o Ensure that the drone you will use has a certificate of conformity from the BCAA (or an equivalent document issued by a civil aviation authorities from an EU Member State). If not, obtain one prior to sending your request for authorisation.
- o Send an operations manual together with a request for authorisation to the BCAA ten days before the first time you intent to start operating your drone for this kind of operations.
- o Start operations only after receipt of the authorisation of the operation by the BCAA.
- o Notify each drone flight to the BCAA before take-off.

#### 5. Where will I conduct my drone flight?

And last but not least, check the area and the type of airspace you would like to fly in. This is especially important when operating in operating in class 2, 1b and 1a:

- o Check that the take-off site and the landing site as well as the area that will be overflown are cleared from obstacles, persons and goods on ground.
- o Make sure that you have a good and cleared view on the airspace where the drone will fly in to ensure keeping the drone within line of sight of the remote pilot during the whole flight.
- o Check that the airspace you will fly in is an airspace accessible for drones respecting the limitations as set in the Royal Decree of April 10, 2016.
- o Forbidden zones at all times are: all controlled airspaces, prohibited zones, danger zones, restricted zones, low flying areas, helicopter training areas and temporary segregated/reserved areas when these areas are active. Industrial complexes, nuclear power plants, military zones and other specific zones cannot be overflown unless otherwise described in the AIP. Flights within 1.5nm of an aerodromes or 1.5nm of an heliport are also prohibited unless expressly authorised by its operator.

## Other considerations:

- o Before each flight, check the condition of the drone and make sure that all safety features are operational and that maintenance is well done.
- o If any of the parameters to be checked during the pre-flight check is negative, do not proceed, ask advice, or await better conditions.
- o If visual contact is lost, recall the drone and go for landing, if needed for safety.
- o If radio contact is lost, proceed to emergency response to make the drone landing safely.
- o Pay attention to the sun! When the sun falls in the remote pilot's field of view (when looking at the drone), the remote pilot may get temporarily blinded, leading to loss of reference and possible mid-air collisions.
- o Check the weather conditions and avoid Instrument Meteorological Conditions (IMC), even for short periods, keep visual reference to the drone, the ground and remain clear of clouds, stay below the cloud base.



## Summary

### TYPE OF OPERATION

	Private use	Model aircraft <sup>1</sup>	Class 2	Class 1b	Class 1a
Max height	10m (32.8ft)	Check AIP for terrain restrictions	150ft (around 45m)	300ft (around 90m)	300ft (around 90m)
Max. weight	< 1kg (2.2lbs)	1kg - 150kg (2.2lbs - 330lbs)	< 5kg (11lbs)	< 150kg (330lbs)	< 150kg (330lbs)
Remote pilot's age	All ages	All ages	At least 16yo	At least 18yo	At least 18yo
Remote pilot qualification	None	None	Theoretical training + Practical skill test	Theoretical exam + Practical skill test	Theoretical exam + Practical skill test
Registration of the drone	No	No	Yes	Yes	Yes
Certificate of conformity for drone	No	No	No	No	Yes
Operations manual drafted by the operator	No	No	No	Yes	Yes
Risk assessment by the operator	No	No	No	Yes	Yes
Declaration of compliance made by operator	No	No	No	Yes	No
Authorization to operate received from BCAA	No	No	No	No	Yes
Flight notification to BCAA before start of flight	No	No	No	Yes	Yes

<sup>1</sup>When used on a model aircraft terrain

## Questions? Suggestions?

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