University of Kent

Health, Safety and Environmental Sustainability

Use of Drones Policy

HSES 015

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1. Introduction

Drones are becoming more popular as a teaching and research tool. However, drones do have the potential to cause serious harm to people and property. This policy aims to make sure that use of drones by the University or that take place on University property are authorised, legal and safe.

Drones are called many different things in different documents. They may be referred to as Remote Piloted Aircraft Systems (RPA/RPAS), Unmanned Aerial Vehicles (UAV's), Unmanned Aircraft Systems (UAS's), Small Unmanned Aircraft (SUA's), Small Unmanned Surveillance Aircraft (SUSA's), multi-rotors, quadcopters, etc.; the list goes on. In this document we use the term 'drone' to refer to remotely operated multi-rotor vehicles weighing less than 25 kg. This policy applies to all use of such drones on behalf of the University, whether in teaching, research, or consultancy, or to hired external operators.

Fixed wing vehicles and those weighing more than 25 kg are subject to more stringent legal, safety and insurance requirements. Any member of the University wishing to use such equipment should contact the Health, Safety and Environmental Sustainability (HSES) Department in the first instance.

2. Legal Framework

In legal terms within the United Kingdom drones of any size, even those that we may think of as toys, are considered aircraft and are subject to the rules contained within the Air Navigation Order (ANO) 2019. The ANO is enforced by the Civil Aviation Authority (CAA). The CAA has also provided detailed guidance regarding drones in the document CAP 722, Unmanned Aircraft System Operations in UK Airspace: Guidance and Policy.

Aspects of Health and Safety legislation also apply. These include the general duties contained within the Health and Safety at Work Act, the need to carry out a risk assessment that comes from the Management of Health and Safety at Work Regulations, and the requirements of the Provision and Use of Work Equipment Regulations.

Use of drones is also restricted by limitations set by the University's Insurer.

If any drone operations collect data, operators should be aware of the requirements of the Data Protection Act. If your drone or model aircraft is fitted with a camera or listening device, you must respect other people's privacy whenever you use them. If you use these devices where people can expect privacy, such as inside their home or garden, you're likely to be breaking data protection laws. The surveillance camera code of practice must also be adhered to, please refer to section 7.3 of the CCTV code.

Anyone wishing to operate a drone abroad must check with the National Aviation Authority of the country they are visiting to see what rules apply. It is possible that a local permit will be required.

3. Use of Drones at the University

It is University policy that drones used on behalf of the University, in research, teaching, study, etc. must obey the relevant guidance as outlined in CAP 722. In addition, where insurance requirements place greater limitations on their use, the insurance restrictions must be followed.

The regulation relating to how and where a drone can be operated has been updated and as from 31st December 2020 these relate to the following risk factors, rather than the drone's direct use; the weight of the drone, the type of operations being carried out, risk level and pilot competence.

The use of drones and the related regulations are spilt into three categories: Open category, Specific category and Certificated category. Anyone who thinks that their use of a drone will fall in the specific or certified category should notify the HSES Department in the first instance.

Most drone operations being carried out at the University will be classified under the open category. Open category operations are bounded by three main factors:

- the maximum take-off mass/flying weight of the drone must be less than 250g.
- the drone must be operated within Visual line of sight (VLOS).
- the unmanned aircraft must not be flown further than 400 feet (120 metres) from the closest point of the surface of the earth.

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 instead.

To fly in the open category there are different levels of competency required depending on the weight of drone and which subcategory the drone falls into. Please use the following link to ensure you are competent to fly the drone you intend to, https://register-drones.caa.co.uk/drone-code/getting-what-you-need-to-fly.

The Open category is divided into Subcategories A1, A2 and A3. The table below shows the requirements for flying in the open category.
https://publicapps.caa.co.uk/docs/33/CAP2012_EU_Drone_Rules_Factsheet_V7%207.pdf

Operation		UAS			UAS Operator	Remote Pilot	
Subcategory	Operating Area	Class	Mass/KE/Speed	Operating date limitations	Registartion	Min age (Solo flight)	Competency
All	- Max height 120m/400ft (see UAS.OPEN.010 [3] & [4] for specific obstacle and sailplane limits) - No dropping of articles - No carriage of dangerous goods				Minimum age 18	If directly supervising another remote pilot -16	
A1	Fly over uninvolved people, but not over crowds	Privately built	<250g 'flying weight' and <19 m/s	Nil	Only if 'camera' equipped (but not toys)	Nil	Read user manual
		Legacy (placed on market before 1 Jan 23)	< 250g 'flying weight'			12	
		C0 (toy)	<250g MTOM and ≤19m/s			Nil	
		C0 (not a toy)				12	
	No intentional flight over uninvolved persons	C1	<900g MTOM or <80 J	Nil	Yes	12	- user manual - online training - online (foundation) test
		A1 Transitional (Article 22)	<4kg 'flying weight'	Not after 31/12/22			- A2 CofC Theoretical test
A2	No closer than 30m horizontally from univolved persons (5m in 'low speed' mode)	C2 (can also be used in A3)	<4kg MTOM	Nil	Yes	12	- user manual - online training - online (foundation) test - self-practical training - A2 CofC theoretial test
	No closer than 50m horizontally from uninvolved persons	A2 Transitional (Article 22)	<2kg 'flying weight'	Not after 31/12/22			
A3	- No uninvolved people present within the area of flight. Maintain 50m seperation from any uninvolved people - No flight within 150m horizontally of residential, commercial, industrial or recreational areas	C3	<25kg MTOM	Nil	Yes	12	- user manual - online training - online (foundation) test
		C4					
		Privately built	<25kg 'flying weight'				
		Legacy (placed on market before 1/1/23)					

When flying a drone, the CAA 'Drone and Model Aircraft Code' must always be adhered to (https://register-drones.caa.co.uk/drone-code). The following important points from this code must be noted:

- You are responsible for flying safely each time you fly. Always be ready in case something should go wrong. Always keep your drone in direct VLOS and make sure you can clearly see all surrounding airspace.

- An observer can be used to assist you when you fly. They must be next to you at all times and remember, you are still responsible for keeping the flight safe.

- If you fly using first person view (cameras that provide live video to devices such as smart phones, tablets and video goggles) then an observer must be present for the duration of the flight to maintain direct VLOS.

- Never fly more than 120m (400ft) above the earth's surface. Always look and listen out for other aircraft that may be flying below 120m (400ft), such as air ambulances, police helicopters, and low-flying military aircraft. If you fly where the ground falls or rises, such as over hills, mountains or cliffs, you may need to adjust your flight path so that your drone is never more than 120m (400ft) from the closest point of the earth's surface.

- You must not fly closer than 50m to people. This includes people in buildings or in any sort of vehicle. This rule creates a no-fly zone of 50 radius around people. You must not fly over people in this no-fly zone, even if you fly higher than 50m.

    - The rule on minimum distances to people is different when flying small drones that are below 250g, or in C0 or C1 class. If you're flying a drone that's lighter than 250g or is C0 class, you can fly closer to people than 50m and you can fly over them. When you're thinking about how close you can fly, remember, you must never put people in danger. Even small drones have the potential to injure people if you don't fly them safely.
    - If you're flying a drone or model aircraft that's between 250g and 500g, or is C1 class, you can fly closer to people than 50m, but you must not intentionally fly over them.

- Always keep a safe distance. Sometimes, you'll need to increase the 50m minimum distance from people to make sure that your flight remains safe. For example, keep 80m away if you fly at a height of 80m.

- Never fly over people who are crowded together, no matter the size of the drone. A crowd is any group of people who cannot move away quickly because of the number of other people around them.

- Keep at least 150m away from residential, recreational, commercial and industrial areas, unless the drone is lighter than 250g, or in the C0/C1 class. Note that the whole of central campus is classified as a residential, recreational and commercial area.

- Stay well away from airports, airfields, spaceports and aircraft. Most airports, airfields and spaceports have a flight restriction zone (FRZ). You can find details of FRZs and other airspace restrictions in the CAA's map of airspace restrictions: https://www.caa.co.uk/consumers/remotely-piloted-aircraft/our-role/airspace-restrictions-for-remotely-piloted-aircraft-and-drones/

- Landowner permission must be obtained for take-off and landing areas, and for any areas to be overflown. Always check for restrictions on drone flights before you fly. Restrictions may be in

place around prisons, palaces, government building's or be in place due to events or emergency incidents. Restrictions can sometimes be notified using signage or NOTAMs (Notices to Airmen) which many drone apps will include.

- Never endanger or disturb animals or wildlife.

4. Additional insurance requirements

The additional restrictions imposed by the University's current insurance arrangements are:

a) University owned drones must be logged on with the insurance team to allow them to maintain an up to date drone register

b) Drones must be used and operated at daylight with a minimum visibility of 3 miles

c) Drones must be operated with full compliance to the legal requirements and regulations (including but not limited to e.g. licensing of drone and operator, air traffic regulations and restrictions, privacy and data protection)

d) Drones will have a weight less than 20kg

e) University owned and operated drones must not be flown at a height of more than 400 ft above the surface. This is regardless of drone weight or whether permission from the CAA has been obtained

f) Drones must yield right-of-way to other aircraft, manned or unmanned

g) Drones must remain close enough to the operator for the operator to be capable of seeing the aircraft with vision unaided by any device other than corrective lenses

Any member of the University wishing to carry out a drone operation that conflicts with the restrictions imposed by the current University insurance cover should discuss this with the HSES Department in the first instance.

Note that only drones owned and operated by the University are covered by the University's Public Liability Insurance. For this reason, it is preferable that drones used in teaching or research activities are University owned. Divisions and Departments should register any drones that they may purchase with the HSES Department and the Insurance Office. Drones owned personally by staff or students / apprentices are not covered by university insurance. For this reason, personally owned drones must not be used in teaching, research, or study.

The University Public Liability Insurance covers drone operations carried out using University owned and operated equipment worldwide, except for the USA and Canada. However, anyone using drones outside of the UK should make themselves aware of the local rules for drone use. Please notify the insurance office and HSES of any planned drone flights outside of the UK in the first instance.

5. Use of Drones on the University's campuses

All drone flights from or over University property must have an appropriate permission issued by the HSES Department. The only circumstances for which permissions will be granted to fly on university property is where the drone is being used as part of the sanctioned research or teaching activities of a division or where a drone operator has been contracted to undertake a specific activity, such as a building survey or event filming. With respect to teaching and research, permissions will cover programmes of work and individual permissions will not be required for individual flights. Similar

permissions will apply to commercial drone operators that have been awarded Trusted Operator status by the HSES Department. In both cases, details of individual flights should be provided to the HSES Department and Campus Security in advance.

Permissions should be sought through contacting the Head of HSES in the first instance. In their absence contact the Health and Safety Officer. Permission to operate on university property will specify the area where the flight can take place. Where that area is managed by a specific Division or Professional Service Department, for example the Sports Fields, an additional permission must be obtained from that Division or Department.

To be clear, the University does not permit recreational use of drones on its property by any person, be they staff, student / apprentice or visitor.

6. Drone Flight Safety

All drone flights must be subject to a suitable and sufficient risk assessment. A good starting point for the risk assessment is consideration of the rules from the drone code. In addition, drone flights should never be carried out alone. It is university rule that a second person must always be present to enable the alarm to be raised in case of an incident.

The risk assessment should also consider the following:

1) **Training.** Do Pilots, Operators and observers have an appropriate level of training? Has this been documented?

2) **Planning.** Where is the take-off/landing zone sited? Has a formal permission from the landowner / manager been obtained? Are there any site-specific hazards or risks? What are the roles of the individuals present? Have they been briefed properly on their role? What is the weather going to be like? Will it cause any problems for the flight?

3) **Prior incidents.** Have the lessons learnt from previous accidents, near misses or deviation from a flight plan been considered?

4) **Equipment maintenance.** Has the drone been maintained properly? Have battery logs been consulted to ensure that there is no decline to battery performance?

5) **Fail-safes.** Are fail-safes in place to deal with loss of the control signal with and without GPS? Have they been tested recently? (When flying regularly, they should be tested monthly). Can any autonomous or semi-autonomous operations be overridden by a remote operator who is able to take direct control of the flight at any stage? Have operators practised flying without the aid of GPS?

6) **Emergency procedures.** Are there emergency procedures in place for accidents, drone fly away, operator incapacitation?

Checklists covering, for example, drone maintenance, pre-deployment operations, pre-flight operations and post-flight close out are a useful way of ensuring that all aspects of flight safety have been checked.

7. References

- The Air Navigation Order 2016 (ANO) (https://www.legislation.gov.uk/uksi/2016/765/contents/made)

- Unmanned Aircraft System Operations in UK Airspace – Guidance (https://publicapps.caa.co.uk/docs/33/CAP722%20Edition8(p).pdf)
- The Drone and Model Aircraft Code (https://register-drones.caa.co.uk/drone-code)
- Airspace restrictions for Remotely piloted aircraft (https://www.caa.co.uk/consumers/remotely-piloted-aircraft/our-role/airspace-restrictions-for-remotely-piloted-aircraft-and-drones/)
- The Data Protection Act (https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted)
- Surveillance code of practice (https://www.gov.uk/government/consultations/surveillance-camera-code-of-practice)