Guidance Note, GN038

USE OF DRONES – GUIDANCE DOCUMENT

University Staff / Students Flying a Drone

The University uses a variety of different unmanned vehicles, or drones, for research purposes and these can be used in the air (aerial), on the land (ground) and in water (aquatic). The most common of these is the aerial drone. This document gives general guidance to in order ensure safe use of unmanned vehicles.

There are a number of points that should be considered for all drone operations:

- All drone users must have completed an appropriate course of training including simulator time and/or supervision by a competent experienced trainer
- Propeller guards, if available, should be used at all times
- Drones with propellers should not be handled when the propellers are active
- An appropriately equipped first aid kit should be available
- A log book, charting operations (training, research, etc) should be kept and should include names of operators, date, location, weather conditions, etc
- All drones must be maintained according to the manufacturer's instructions / recommendations
- The operator of the drone must only operate the drone if it they are reasonably satisfied that the operation can be completed safely

As part of our commitment to raise awareness, educate and to ensure safe operation of drones by staff and students, we will provide access to a number of online reference sources and appropriate documents *e.g.* operations manuals. The Aberdeen Institute for Coastal Science and Management's UAV/UAS Centre for Environmental Monitoring and Mapping (UCEMM) should be contacted prior to the use of drones for advice and guidance.

In addition to the general points, guidance for aerial, ground and aquatic drones is described below.

Definitions

- UAV – Unmanned Aerial Vehicles
- UAS – Unmanned Airborne System
- SUA – Small Unmanned Aircraft
- SUSA – Small Unmanned Surveillance Aircraft
- CAA – Civil Aviation Authority
- UCEMM - UAV/UAS Centre for Environmental Monitoring and Mapping
- Valuable Consideration – conferring a benefit *e.g.* money, work, etc
- Aerial Work – any purpose for which an aircraft is flown if valuable consideration is given or promised in respect of the purpose of the flight

Aerial Drones

Aerial drones are the most common type of drone and there are a number of regulations set out by the Civil Aviation Authority (CAA) that cover their use. The philosophy underpinning the regulations is that the pilot of the aerial drone is legally responsible for every flight.

The most common drones used at the University will be less than 20kg and are termed small unmanned aircraft (SUA) by the CAA. SUA are exempt from the majority of regulations applicable to manned aircraft.

If a SUA is equipped to undertake any form of surveillance or data acquisition is defined as a 'Small Unmanned Surveillance Aircraft' (SUSA).

Basically, for both SUA and SUSA, the regulations state:

- The operation must not endanger anyone or anything
- The aircraft must be kept within the visual line of sight of the pilot (normally taken to be within 500 m horizontally and 400 ft. vertically)
- The aircraft must not be flown within 50m of any person and should not be within 30m of any person during take-off and landing

Operations beyond these distances must be approved by the CAA, with the basic premise being for the operator to prove that he/she can do this safely.

If using a SUSA, then tighter restrictions apply for the distances that you can fly near people or properties, these being:

- Not closer than 150m of any congested area
- Not closer than 150m of an organised open-air assembly of more than 1000 persons
- Not closer than 50m of any vessel, vehicle or structure which is not under the control of the person in charge of the aircraft
- Not closer than 50m of any person
- If you wish to fly within these minima, permission is required from the CAA before operations are commenced

In addition, it should be noted that any images of identifiable individuals taken when using SUSA will be subject to the Data Protection Act. As this Act contains requirements concerning the collection, storage and use of such images, SUSA operators should ensure that they are complying with any such applicable requirements.

The CAA has developed a drone aware campaign (www.caa.co.uk/droneaware) which summarises the regulations in the following points:

- You have control
- You are responsible for each flight
- Keep your drone in sight
- Keep your distance from people, congested areas and vehicles
- You are responsible for avoiding collisions
- Learn to fly your drone
- Consider rights of privacy

The full regulations can be found at: http://www.caa.co.uk/Commercial-industry/Aircraft/Unmanned-aircraft/Small-unmanned-aircraft/

It is expected that the use of SUA by University staff or students will be for non-profit work. If there is any valuable consideration arising from the flight (*i.e.* simply put, there is payment for the flight), then permission must be sought from the CAA.

Ground Drones

When using ground drones, the operator of the drone is ultimately responsible for each use of the drone. Additionally, the following points must be considered:

- Keep your drone in sight
- Keep your distance from people, congested areas and vehicles
- You are responsible for avoiding collisions
- Seek the landowner's/ leaseholder's or other occupier's permission
- Keep a responsible distance away from wildlife
- Keep a responsible distance away from domestic animals, pets and working animals (e.g. assistance dogs)
- Do not operate in a road or on a pedestrian or cycle path

Aquatic Drones

When using aquatic drones, the operator of the drone is ultimately responsible for each use of the drone. Additionally, the following points must be considered:

- Where possible, keep your drone in sight
- Avoid operating in harbours, marinas and navigation channels, unless with express permission from the appropriate authorities
- Avoid operating in areas where there are leisure craft *e.g.* dinghies, jet-skis, kayaks, yachts, motorboats, etc
- Keep out of areas with swimmers, body boarders and surfers
- Keep a responsible distance away from wildlife

Risk assessment / Site Survey

Prior to any use of drones on behalf of the University of Aberdeen, the operator must conduct a specific risk assessment and conduct a survey of the site to identify any additional hazards. If at all possible, a pre-site survey of the area where the drone will be used is beneficial. This will assist the operator to identify a number of important parameters for the use of the drone including, but not limited to:

- access requirements
- terrain

- hazards
- restrictions on drone use
- livestock
- domesticated animals and pets

Note that for flying in areas where there may be an impact on wildlife, livestock, *etc.* appropriate permissions should be sought from the relevant bodies *e.g.* Scottish Natural Heritage, National Trust for Scotland, Scottish Natural Heritage, landowners, leaseholders *etc.*

A risk assessment must be completed for the activity for which the drone will be used. The assessment should, as a minimum, refer to the following:

- Loss of radio contact with drone
- Battery failure
- Environmental conditions impacting on operation of drone
- Other drones in the area
- Emergency arrangements
- Proximity of structures and other obstructions *e.g.* roads, powerlines, *etc*.
- Livestock or other animals
- Communication requirements
- Proximity of people

When undertaking flying of aerial drones, there are a number of factors to consider which could be considered as good practice. These are:

- Use specific ground equipment to surround and secure the take-off / landing zone. This can include cones & barrier tape, specific landing mats, appropriate signage to inform the public, etc.
- Ensure that the take-off / landing zone is large enough for the drone's automatic return to home functionality (remember GPS is only accurate to within a few metres)
- Once take-off has occurred, undertake some low level flying checks to ensure that all functions are operating as expected
- Manual flying of the drone is recommended and autonomous flight is only recommended when there is adequate open space with no obstructions
- Ensure manual control is used for take-off and landing and prevent contact with the drone until it has landed and the rotors have stopped rotating

Commercial Companies Flying on Behalf of the University

There may be occasions where commercial companies are contracted to operate flights of aerial drones on behalf of University Schools or Departments. Additionally, there may be occasions where commercial companies wish to take images of the University buildings or campus.

On these occasions it is essential that those contracting, or are contacted by, commercial companies confirm that the company in question is competent. This can be achieved by ensuring that you confirm that the company in question has, and that someone in the School / Department has viewed the following:

- The drone pilot's commercial licence
- The operator's certification
- The operator's insurance
- The operator's drone manual
- Risk assessment specific for the activity being conducted
- Flight plan for the activity being conducted

Additionally, it is essential that any proposed flights around / inside buildings are discussed with the building occupants. Finally, permission for flights on the University premises must be sought from the Estates Department prior to any flight.