

Safety Arrangements for the Flight of Drones, owned by the University of Nottingham

The scope of this document is to outline the arrangements that management units must put in place to ensure the safe use of University-owned drones (purchased or designed and constructed in-house) for research or commercial purposes.

For employment of third-party companies (supplying equipment and pilot) for commercial purposes on University property, please see this [link](#).

Please note: 'drone' is the common name for a class of aircraft known as Unmanned Aircraft Systems (UAS) or Unmanned Aerial Vehicle (UAV). The small (i.e. less than 20kg) aircraft used for civilian purposes are categorised by the Civil Aviation Authority (CAA) as either: Small Unmanned Aircraft (SUAs) if they do not have cameras or other sensors, or Small Unmanned Surveillance Aircraft (SUSAs) when cameras or other sensors are fitted. However, in this guidance the word 'drone' is used throughout.

1. Responsibilities

The Head of the Management Unit is responsible for ensuring that arrangements for the safe use, and where applicable, the safe design and construction, of drones are in place and understood by all those involved.

The Principal Investigator for a specific project involving drones is responsible for approving the design and construction methods if in-house design is involved (see Section 2 below). They are also responsible for ensuring that:

- risk assessments and safe operating procedures are in place,
- the pilot is suitably qualified and competent and
- the appropriate permissions are sought prior to any flights.

The above are relevant whether the flight involves a drone that is built in-house or one that is purchased; and whether the purpose of the flight is for testing, research or commercial reasons (see Section 3 onwards).

2. Design and Construction

It is recommended that in-house design and construction of drones comply in principle with the [CAA Model Aircraft: A Guide to Safety Flying Guidance](#). In all cases, the PI responsible for the project must approve the design or ensure that a competent person has approved the design. If for internal use only, formal CE marking and certificates of conformity are not essential. However, you must ensure that a technical file is compiled and that the requirements of the Provision and Use of Work Equipment Regulations are taken into account. Please see [University guidance](#) on this.

If you intend your drone to be used commercially, then the full requirements of the relevant Product Safety Regulations will apply and this may be best checked by a suitable third party. In addition, the CAA would want to approve the design to ensure all reasonable steps have been taken to enable safe flights.

A risk assessment must be carried out to cover any hazardous task related to the construction process of the drone.

3. Drone Flights - Risk Assessment

Refer to the [CAA Quick Start Flying Guide](#).

The organiser must be able to demonstrate that they have minimised the risks of potential harm that could be caused by the drone colliding with persons or property and these considerations must be recorded in a risk assessment.

The following apply whether the drone flight is for testing/demonstration purposes or for carrying out aerial work. Consider the location, the features (e.g. buildings, structures, trees, overhead power cables) that are present, the use of the premises (e.g. by vehicles, people, animals), the weather conditions and the time of day.

A site specific risk assessment must be completed for each different flight location and generic assessments for use of the drone must be reviewed to ensure they are valid for each occasion. The use of off-site locations for take-off or landing must be agreed with the site owner in advance, they are likely to ask for the risk assessment, standard operating procedures and proof of valid insurance.

An Operations Manual approach is recommended for bringing together all related documentation such as equipment specification, flight log, the pre-mission survey, a pre-flight checklist, a post-flight checklist, the risk assessment and safe operating procedure (method statement), details of the team brief and the site specific details. Please see the [CAA Operations Manual Template](#) that can be used as a starting point or the Safety Office has third party examples.

The drone must be flown in line of sight at all times unless other specific measures are taken (see the CAA website for further information).

4. Permission to Fly

The PI/Project lead must ensure the correct permissions are sought for the drone flight(s). Please note the different levels applicable:

4.1 CAA Permission for flying University-owned Drones Commercially (in the UK)

The pilot has full responsibility for the safe operation of the drone flight.

'Permission' is required from the CAA where the pilot intends to fly a Small Unmanned Aircraft (operating mass of < 20kg, drones would normally fall into this category) for

- (a) commercial purposes (e.g. conducting aerial work as part of University business)

or

- (b) a drone with camera or surveillance equipment fitted within in a congested area or closer (distances references on CAA website) to people or property that are not under your control.

CAA permission is not required for practice, demonstration flights or internal research but the pilot must still ensure that no one is endangered whilst flying the drone and take this into account in their risk assessment (see section above).

The CAA permission will include restrictions on height and distances from physical features and people and these must be complied with at all times. Please see **Appendix 3** for an example of a CAA Permission so the pilot can take note of the typical restrictions they place upon the flight of the drone.

For obtaining a Permission, please refer to the [CAA website](#).

4.2 University Permission (in the UK)

- a. The responsible person (flight organiser) must ensure that the [***Authorisation to Fly Drones on University Premises***](#) form has been completed. This includes the checks and permissions that must be obtained (see subsequent points below) and requires the pilot-in-command of the flight to formally accept the authorisation.
- b. If on University premises, organisers must request permission to have drone flights in a particular area of campus (include map of flight zone) from
 - i. University Estates (email estatesadmin@nottingham.ac.uk for the attention of Gavin Scott) and
 - ii. University Security (contact Security (security@nottingham.ac.uk, copying in stuart.croy@nottingham.ac.uk).
 - iii. Please allow at least 7 days' notice to enable a response to your request.
- c. If not on University premises, organisers must obtain written permission for any intended take-off, flight and landing sites from the landowner.
- d. Organisers must check that relevant parties external to the University such as local Air Traffic Control, the Police and/or Local Authority have been informed.

4.3 Flights Overseas

The flight organiser must take the local conditions and laws into account for the country where the drone is to be flown both in terms of air traffic, pilot approval and equipment suitability.

5. Pilot Competence and Qualifications

5.1 Flights for Commercial Purposes

Flight of the drone must only be carried out by competent and authorised individuals. There are no remotely-piloted aircraft pilot licenses recognised in aviation law but it is essential that pilots have an understanding of the applicable regulations (in particular the Air Navigation Order and the Rules of the Air Regulations) and are competent to control the drone.

Where a Permission is required to fly a drone (as per previous section), the CAA will require the pilot to demonstrate competence before issuing the Permission. The most common way to demonstrate competence is to complete a course where you are trained and assessed in the necessary skills and knowledge. These are offered by National Qualified Entities who do this on behalf of the CAA.

The Permission is either specific to a named person or to employees of the organisation as long as they are "holders of an appropriate qualification, issued by the UK National Qualified Entity for SUA/SUSA pilot competency or alternative pilot competency qualification acceptable to the CAA".

Overseas: The CAA do not have jurisdiction in other countries. The PI/project lead must ascertain from the local aviation authority whether there are any specific requirements for pilot competence and safe use of drones in the country being visited.

5.2 Flights that are either Tests, Demonstrations or Internal Research (UK)

Where a CAA Permission is not deemed applicable to the type of drone flight you intend to undertake (test, demonstration, research, i.e. non-commercial), you must still be deemed competent to fly the drone or be directly supervised by a competent pilot who can quickly take over the controls if necessary. This is best addressed by completing a suitable course as outlined above.

Overseas: The PI/Project Lead must ascertain from the local aviation authority whether there are any specific requirements for pilot competence and safe use of drones in the country being visited.

5.3 Staff or student using their own equipment at their own discretion for work/study purposes

Example: a Geography Undergraduate decides to use their own drone for aerial photography of their project; it is not an essential element but they feel it enhances their dissertation.

This type of use is to be subject to the same formal controls as outlined in this guidance. Operation outside of these controls would not be covered by the University's public liability insurance.

6. Insurance

To ensure that University insurance includes flight of your drone in the desired location, please refer to Appendix 2 for a summary of the insurance aspects and discuss your requirements with the University Insurance Manager if uncertain of how it applies to your situation. This is particularly important in relation to off-site locations and for commercial operations.

7. Data Protection

If a drone carries a camera, its use has the potential to be covered by the Data Protection Act and therefore this must be taken into account when considering the flight

location and what images are gathered of people that might be disrespectful of their privacy. This must be taken into account when considering the flight location and should be stated in the site specific risk assessment if applicable.

The Information Commissioner's Office has produced [guidance](#) in connection with the potential data protection issues relating to the use of drones; they recommend that users of drones with cameras should operate them in a responsible way to respect the privacy of others. For further guidance within the University, please contact the Information and Records Manager, Registrar's Department or refer to the University's [Data Protection webpages](#).

Appendix 1

Useful references:

1. [CAA Drone Safety](#)
2. [CAA Quick Start Flying Guide](#)
3. [Information Commissioner's Office](#) – Data Protection issues for the Public in connection with the use of Drones.
4. [National Air Traffic Control](#)
5. [CAA List of Companies with current CAA Permission](#)
6. [CAA Unmanned Aircraft Regulations from the Air Navigation Order](#)
7. [Unmanned Aircraft Systems: A guide to some of the terms used \(Grace, UoN\)](#)

Insurance Aspects

Appendix 2

- The equipment itself, i.e. any drones owned by the University, are not insured, either in flight or in storage.
- The University's public liability and employer's liability insurances would respond where damage and/or injury to 3rd property/persons was caused by flight of a drone and the University was found to be negligent.
- The Building and contents insurance would respond to damage to University owned building and property.
- The insurers require to be informed of any overseas use of university-owned equipment

Inclusions: Unmanned aerial vehicles

The insurer agrees to extend coverage under the Public liability insured section to indemnify the University in respect of liability arising out of or from the ownership, possession or use by or on behalf of the University of any unmanned aerial vehicle (UAV) provided that, as a condition precedent to liability of the insurer:

- a) the University (and any person acting on the University's behalf) complies with the operating and licensing provisions of the Civil Aviation Authority in respect of the use of the UAV in the United Kingdom, and

- b) the operator of the UAV has obtained the full qualification, where required, from a CAA-approved National Qualified Entity.

The coverage provided by this extension excludes and does **not** cover liability arising out of:

- (a) the use of any UAV:
 - (i) at an altitude higher than 120 metres;
 - (ii) at a range greater than 500 metres from the operator;
 - (iii) which has a maximum mass of more than 20kg including any payload; or
 - (iv) for personal or recreational purposes or any purpose other than on University-related Business & Research;
- (b) any UAV which is a military vehicle, or which carries weapons of any kind or is being used for military purposes or in any way involving military purposes;
- (c) the use of the UAV outside the airspace of the United Kingdom;
- (d) any UAV being used for crop-spraying purposes; or
- (e) any UAV being used for any criminal purposes.

Appendix 3

CAA Air Navigation Order 2009 Permissions for Small Unmanned Aircraft/Small Unmanned Surveillance Aircraft

See overleaf for a sample Permission document, issued by the CAA. You should check that this document clearly states the company/person it applies to and that the period of validity is appropriate for when the flight(s) is/are planned.

CIVIL AVIATION AUTHORITY
Air Navigation Order 2009



PERMISSION – Small Unmanned Aircraft / Small Unmanned Surveillance Aircraft

1. The Civil Aviation Authority, in exercise of its powers under Article 166(5) and Article 167(1) of the Air Navigation Order 2009, as amended, hereby permits [REDACTED], ("the person in charge") being the person in charge of a Small Unmanned Aircraft (SUA) / Small Unmanned Surveillance Aircraft (SUSA) ("the said aircraft") of the following class(es):

- (a) SUA multirotor with a Maximum Take-Off Mass (MTOM) not exceeding 7kg

to conduct aerial work with the said aircraft

2. This Permission is granted subject to the following conditions, namely, that the said aircraft shall not be flown:

Operational Conditions for all Classes:

- (a) other than by persons employed by or contracted to [REDACTED] whilst being holder(s) of an appropriate qualification issued by a UK National Qualified Entity for SUA/SUSA pilot competency, or an alternative pilot competency qualification acceptable to the CAA (IN 2015/008 www.caa.co.uk/in2015008 refers);
- (b) at a height exceeding 400 feet above ground level;
- (c) at a distance beyond the visual range of the person in charge of the said aircraft, or a maximum range of 500 metres unless a lesser radio transmission range has been specified by the manufacturer;
- (d) directly overhead or within 150 metres of an organised open-air assembly of more than 1,000 persons;
- (e) directly overhead or within 50 metres of any person, vessel, vehicle or structure that is not under the control of the person in charge of the said aircraft, except that during take-off and landing this distance may be reduced to 30 metres;
- (f) unless the permission of the landowner on whose land the said aircraft is intended to takeoff and land, has been obtained;
- (g) unless it is equipped with a mechanism that will cause the said aircraft to land in the event of disruption to or a failure of any of its control systems, including the radio link, and the person in charge of the said aircraft has satisfied himself that such mechanism is in working order before the aircraft commences its flight;
- (h) unless the person in charge of the said aircraft has reasonably satisfied himself that any load carried by the aircraft is properly secured, that the said aircraft is in an airworthy condition and that the flight can safely be made taking into account the wind and other significant weather conditions;
- (i) unless the flights are conducted in accordance with the current operations manual of the person in charge of the said aircraft and a site safety assessment has been completed. Site safety assessments are to be made available to the Authority on request;
- (j) unless the person in charge of the said aircraft maintains records of each flight made pursuant to this Permission and makes such records available to the Authority on request;

Additional Requirements for all Classes where the said aircraft has a MTOM greater than 7 kg but not exceeding 20 kg:

In addition to the conditions set out in paragraph 2(a-j) above, any SUA/SUSA with a MTOM greater than 7 kg but not exceeding 20 kg must not be flown:

- (k) in controlled airspace, except with the permission of the appropriate air traffic control unit;





(l) in any aerodrome traffic zone except with the permission either of the appropriate air traffic control unit or the person in charge of the aerodrome;

(m) directly overhead or within 150 metres of any congested area of a city, town or settlement.

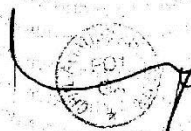
SUA/SUSA can also be defined as small Remotely Piloted Aircraft Systems (small RPAS). In airspace control terms, operations of Small RPAS (SUA/SUSA) with a MTOM greater than 7 kg but not exceeding 20 kg are considered Unusual Aerial Activities. If the flight is to take place within controlled airspace, the person in charge of the said aircraft is required to seek prior approval from the relevant Air Traffic Control (ATC) unit.

Such flights will be processed for NATS-administered controlled airspace under either Non-Standard Flight (NSF) or Enhanced Non-Standard Flight (ENSF) approval procedures. These procedures are set out on the NATS website at: www.nats.aero/nsf/rpas.aspx. Further details of the NSF/ENSF procedures are published at AIP ENR 1.1, section 4, paragraph 4.1.8 www.ais.org.uk

If approval is granted, the person in charge of the said aircraft is to fly the said aircraft entirely within the limits of the stated lateral and vertical operating area. No safety assurance against other Unusual Air Activities taking place in the same area is given or implied. NATS approval to fly within controlled airspace or an Aerodrome Traffic Zone does not absolve the operator from the responsibility for avoiding all other aircraft.

3. Within the London Restricted Areas EG R157 (Hyde Park), EG R158 (City of London) and EG R159 (Isle of Dogs), the person in charge of the said aircraft, of any MTOM, is required to obtain an ENSF clearance as referred to in paragraph 2 (above). This is mandatory for all flights below 1400 feet AMSL and will involve authorisation by the Diplomatic Protection Group (DPG).
4. Further detailed guidance on SUA operations within London and other towns and cities is available at: www.caa.co.uk/in2014190.
5. This Permission shall have effect during daylight hours from 29 April 2015 until and including 20 October 2015 unless previously varied, suspended or revoked.

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SSC Technical Services 01293 573528



for the Civil Aviation Authority

Distribution: [REDACTED]

NOTE:

Aircraft operators and pilots should be aware that the collection of images of identifiable individuals, even inadvertently, when using surveillance cameras mounted on a small unmanned surveillance aircraft, may be subject to the Data Protection Act. As this Act contains requirements concerning the collection, storage and use of such images, Small Unmanned Aircraft operators should ensure that they are complying with any such applicable requirements or exemptions. Further information about the Data Protection Act and the circumstances in which it applies can be obtained from the Information Commissioner's Office and website: <https://ico.org.uk/for-the-public/drones/>