

# **REVISED (2021) GUIDANCE ON THE USE OF UNMANNED AIRCRAFT SYSTEMS (DRONES)**

## **I INTRODUCTION**

### **1.1 Regulatory background**

The updating of EU regulations for unmanned aircraft systems (UAS) applies to the UK, and came into effect on 31 December 2020. These regulations represent a significant change for the use of UAS (commonly known as drones), and have implications for their use in English cathedral precincts. Key differences include no restrictions on flying near buildings and no differentiation between commercial and non-commercial usage. This AEC guidance has been drafted to reflect the new rules, and replaces earlier guidance.

The regulations effective from 31 December 2020 are summarised in the Civil Aviation Authority (CAA) document [CAP 722](#) (the CAA being the designated competent authority for all civil aviation matters within the UK).

### **1.2 Use of UAS at cathedrals: opportunities and challenges**

The regulations for UAS effective from 31 December 2020 extend the range of operators and uses at cathedrals. Previously, use was typically limited to contractors undertaking metric surveys or less stringent condition surveys, and photography or filming for publicity, television or cinema. In addition to qualifications and training, the pilots of UA for such purposes often needed to gain specific authorisation from the CAA for projects. Many post-2020 projects involve classes of UA or activities that require similarly trained pilots and authorisation, but the Open category allows for a new range of uses and users, and – within carefully defined parameters relating to classes of UA – fewer constraints. In relation to cathedrals, for example, this allows cathedral archaeologists, architects and surveyors to use a suitable UA for high-level surveys and inspections on an *ad hoc* basis, extending options for the care of cathedral churches and other buildings within the precincts. The regulatory changes increase the scope for entirely legal commercial and non-commercial flights within (or over) precincts by those not contracted or granted permission by a cathedral: this represents a potential challenge to those managing cathedral precincts.

### **1.3 Structure of this guidance**

The diversity of UAS, activities and types of users, coupled with the diversity in applicable regulations, means that there can no longer be simple guidance that applies to all. Accordingly, this guidance is largely structured by type of activity (sections 2-5), followed by general conditions and good practice (section 6), and operation (section 7).

## **2 METRIC SURVEY**

### **2.1 Introduction**

A significant use of UAS at English cathedrals is for high-resolution photography, which forms part of data acquisition for metric survey, to produce orthophotographic images, CAD line drawings and 3D models, usually in advance of conservation works. Cameras used for such work are typically mirrorless APSC and full-frame models, with flying weights in the 2-4kg range. The nature of such surveys requires flying close to buildings, and, for high parts of the cathedral itself (for example towers and spires), launch and control will often be from roofs. Often, UAS involved in such

surveys will follow a pre-defined flight plan to ensure the imagery captured covers 100% of the survey area and has suitable overlaps.

## **2.2 Requirements**

UAS for metric survey can continue to be operated (as before 31 December 2020) under a CAA Permission for Commercial Operations (PfCO): from 31 December 2020 equivalent privileges to a PfCO are obtainable via a Pre-Defined Risk Assessment UKPDRA01.

Alternatively, UA for metric survey can operate under Open subcategory A2 (needing no prior authorisation by the CAA), where they are likely to fall into Class C2 (<4kg) or Class A2 Transitional (<2kg weight: not after 31 December 2022). If these conditions cannot be met, then the UA operator will need to apply for an Operational Authorisation in the Specific category.

*Refer to section 7 for a summary of the operating areas, constraints and UA classes that are relevant to operation of UAS under PfCO, Open subcategory A2 or Specific category.*

The UAS operator must provide a method statement that sets out whether the UA will be flying under a PfCO, equivalent Operational Authorisation, or Open subcategory A2 or Specific category, and which clearly identifies the operational limits of such permissions (and any additional permissions necessary, such as an Operating Safety Case) and any additional measures, such as cordoning off areas at ground level, that a cathedral or its tenants will be required to undertake.

As with any activity, the UAS operator will need to provide a risk assessment and details of appropriate insurance.

The cathedral should give advance warning to tenants or other users and staff in the vicinity, especially where they will be directly affected (for example through cordoning off areas or access routes).

Metric survey is unlikely to require use of a UA inside the cathedral itself, but should this be necessary refer to section 7.5.

## **3 PUBLICITY, BROADCAST & PRODUCTIONS**

### **3.1 Introduction**

UAS are increasingly used for publicity filming and photography, recording and broadcast of events, and for television and cinema productions. The classes of UA used for such activities can vary significantly: for example a website designer, wedding photographer or commercial photographer or videographer may use one of the smallest <250g UA, while many will use larger legacy (transitional) UA and UA in Classes 1-4. Cinematic filming is likely to use the largest UA (for example 10-25kg flying weight). As a consequence, operation is likely to fall into three categories, ranging from Open subcategories A1 and A2 (subcategory A3 is not applicable to cathedral precincts), and Specific category. Some users will continue to operate under a CAA Permission for Commercial Operations (PfCO) or equivalent operational authorisation.

### **3.2 Requirements**

UAS for publicity filming and photography, broadcast events and for television and cinema productions can continue to be operated (as before 31 December 2020) under a CAA PfCO: from 31 December 2020 equivalent privileges to a PfCO are obtainable via a Pre-Defined Risk Assessment UKPDRA01.

Alternatively, UAS for such purposes can operate under Open subcategories A1 and A2 (i.e. needing no prior authorisation by the CAA). If these conditions cannot be met, then the UAS operator will need to apply for an Operational Authorisation in the Specific category.

*Refer to section 7 for a summary of the operating areas, constraints and UA classes that are relevant to operation of UAS under PfCO, Open subcategory A2 or Specific category.*

The UAS operator must provide a method statement that sets out whether the UA will be flying under a PfCO, equivalent Operational Authorisation, or Open subcategory A2 or Specific category, and which clearly identifies the operational limits of such permissions (and any additional permissions necessary, such as an Operating Safety Case) and any additional measures, such as cordoning off areas at ground level, that a cathedral or its tenants will be required to undertake.

As with any activity, the UAS operator will need to provide a risk assessment and details of appropriate insurance.

The cathedral should give advance warning to tenants or other users and staff in the vicinity, especially where they will be directly affected (for example through cordoning off areas and access routes).

Since photographic (still) and film or video images for distribution are a specific product of this type of activity, the cathedral will need to be especially aware of the implications in relation to privacy and data protection, and to ensure that these are covered in specifications and method statements (see section 6).

## **4 OTHER PROFESSIONAL SURVEYS & INSPECTIONS**

### **4.1 Introduction**

UAS for other surveys of the cathedral or precinct buildings and open areas may be contracted under the same requirements as those for metric survey (see section 2), although, as described in section 1.2, the regulations from 31 December 2020 allow staff, cathedral archaeologists, architects, surveyors, and contractors to use a suitable UAS for high-level surveys and inspections on an *ad hoc* basis.

### **4.2 Requirements**

For such surveys, staff, professional advisers to a cathedral or contractors are most likely to be operating in Open subcategory A1, either using one of the <250g classes, Class C1 (<900g weight or <80 J), or Class A1 Transitional (<500g weight: not after 31 December 2022).

*Refer to section 7 for a summary of the operating areas, constraints and UA classes that are relevant to operation of UAS under Open subcategory A1.*

Staff, cathedral archaeologists, architects and surveyors, and any other professional advisers can operate <250g UA without specific permission or training, while those operating Class C1 and 'A1 Transitional Class' UA should provide the cathedral with copies of their documentation and relevant details of insurance. Beyond regulated matters, the cathedral's professional advisers should follow the good practice set out in section 6.

Contractors, such as conservators, masons, steeplejacks and organ builders, or those with an otherwise legitimate reason (for example academic research) for wishing to undertake a limited survey in Open subcategory A1 must provide their method statements, risk assessments, and insurance details, and will be required to follow the good practice set out in section 6.

*NB If such operatives wish to use UAS larger than those covered by Open subcategory A1, or wish to operate under a PfCO, they must follow the requirements as set out for metric survey (see section 2.2).*

## **5 UNINVITED FLIGHTS**

### **5.1 Introduction**

There is often an assumption that flying over private land requires permission and is otherwise trespass; this is not true. Section 76(1) of the Civil Aviation Act 1982, which covers liability of aircraft in respect of trespass, nuisance and surface damage and states that:

*No action shall lie in respect of trespass or in respect of nuisance, by reason only of the flight of an aircraft over any property at a height above the ground which, having regard to wind, weather and all the*

*circumstances of the case is reasonable, or the ordinary incidents of such flight, so long as the provisions of any Air Navigation Order and of any orders under section 62 above have been duly complied with.*

Where entrance to a cathedral precinct is controlled by ticketing, those cathedrals may wish to consider making no use of UAS a condition of entry. Otherwise, the regulations for UAS effective from 31 December 2020 increase the scope for 'uninvited' flights within cathedral precincts, particularly by flyers operating under Open subcategory A1 using one of the <250g classes.

Uninvited flights are those not given specific permission or directly authorised by the cathedral. These flights might include commercial and non-commercial operation of UAS by or for tenants (for example their own surveys), recording of events (for example weddings), acquisition of commercial video or photographs, and recreational use by amateurs.

Even where strictly legal – both in terms of UAS regulations and any other legal requirements (for example in relation to privacy) – such usage can be intrusive for residents and other users of cathedral precincts even if flights under the Open categories are 'operations that present a low risk to third parties' ([CAP 722](#)). There is widespread dislike and distrust of UAS, or drones. They can be perceived as unfamiliar or alien, noisy, and intrusive (it can be very difficult for the uninformed or visually impaired to understand the orientation of a UA camera). High-profile cases involving illegal use of UAS at airports and to make deliveries to prisons have contributed to the public's distrust of UAS.

## **5.2 Strategies for controlling uninvited flights**

There are some measures that can be easily implemented by a cathedral to reduce uninvited flights or bring them under its control. These include:

- **Events:** cathedral precincts are used for a wide number of events, organised directly by cathedral staff or outside bodies with cathedral consent. These include Christmas markets, outdoor theatrical performances, weddings and graduations. Planning for these should routinely address use of UAS, so that prohibition of such flights or control of them (and provision of suitable method statements, risk assessments and insurances) is addressed in advance.
- **Tenants:** many cathedral precincts include tenants, with some of them, such as schools, occupying buildings of significant scale and employing their own building staff, architects and surveyors, and having their own promotional needs. The cathedral should agree a policy and procedure with such tenants so that any UAS operation follows these guidelines.

Uninvited flights for acquisition of commercial video or photographs, or recreational use by amateurs, for which no permission has been granted may occur. Unless the flight is infringing UAS or other regulations (including byelaws), these can be difficult to address and strategies are likely to be specific to the scale of any problem and the nature of individual cathedral precincts.

Signage advertising bans of what is an entirely legal activity should not be put up. Signage requesting good conduct and consideration could be intrusive, and may be counter-productive in that it may stimulate use; people may otherwise assume that UAS usage is not permitted within the precinct. Where signage is considered appropriate, it may be advisable to make this general, reminding visitors of the penalties for disturbing protected wildlife, breaching data protection legislation, or causing harm to an historic building by any means including UAS. 'Policing' in person, should there be an issue, is likely to be most effective, as with any other antisocial or privacy-infringing activity in the cathedral precinct. Each cathedral should determine a consistent, fair and educative approach, taking into account the legalities of use of UAS (including those for data protection and wildlife): this should be monitored and the approach refined as necessary.

## **6 GENERAL CONDITIONS & GOOD PRACTICE**

### **6.1 Introduction**

The regulations effective from 31 December 2020 permit many different uses for and users of UAS, and allow more *ad hoc* and unregulated flying. This may be of direct benefit to the care of cathedrals and their precincts. In addition to the regulations for UAS, there are other legal requirements which must be observed, as well as non-legally binding considerations such as courtesy and respect for the privacy of residents, staff and other users of the precinct. More about these other requirements is set out below.

### **6.2 Data protection and privacy**

Use of UAS can have an impact on privacy; this can be a significant concern for uninvolved people in the vicinity and, on their behalf, a cathedral. UAS operatives and those commissioning them should comply with relevant legislation, chiefly the Data Protection Act 2018 and the GDPR.

Certain types of UAS operation within cathedral precincts have little to no implications for privacy. For example, photography of buildings by or for metric survey companies, or more *ad hoc* buildings surveys and inspections by the cathedral's professional advisers, staff or specialist contractors will rarely include identifiable photography of people. The product, if distributed (usually very limited and not publicly), will comprise technical images, including orthophotographs, CAD drawings and photographs, of building fabric only. There are two risks that need addressing with such use:

- collateral intrusion: that is inadvertent video or photography of individuals during recording of fabric (for example people in a neighbouring back garden while recording the roof of a precinct property). This risk should be reduced by recording only when at the subject area.
- a perception of intrusion: that is uninvolved people thinking they are being filmed even when the camera is not recording or is facing away from them.

Both are addressed by the measures described in sections 2.2 and 6.4.

Operation of UAS for other purposes within cathedral precincts is much more likely to come under the terms of the Data Protection Act 2018 and the GDPR. Permitted use for publicity filming or photography, recording or broadcast of events, and for television and cinema productions, involves recording people. Full account of data protection and privacy must be taken in planning, contracting, permitting and managing such use. Uninvited flights in the precincts might involve recording of uninvolved individuals, and reaction to this will form part of the 'policing' of such activities (see section 5.2).

The cathedral and, where relevant, any major tenants (such as a school) should have a privacy notice on a website to which the operator can direct people, or some other form of privacy notice, so that they can access further information.

### **6.3 Wildlife**

UAS have the potential to disturb wildlife within cathedral precincts so operators, and a cathedral in commissioning or permitting UAS use, must take the relevant legislation into account. The Wildlife and Countryside Act 1981 is the primary legislation that protects animals, plants and habitats in the UK. Given the nature of wildlife in cathedral precincts, the most likely offence is one that 'intentionally or recklessly disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird.'

UAS operations within precincts have a limited scope for such disturbance (for example, for obvious reasons, UA are not used close to trees or bushes), but a number of cathedrals have peregrine falcons with nests high up on cathedral towers and spires. Many cathedrals are already familiar with timing works to avoid disturbance of peregrine falcons, and work closely with local wildlife organisations, so that UAS use, where contracted or undertaken by the cathedral's professional advisers or staff, is timed accordingly. The most significant risk is from 'uninvited' flights (see section 5), especially where close viewing of peregrine falcons is the purpose of the flight: operators should

be advised to cease flying immediately and if necessary, for example if the operator cannot be located, the incident should be reported to the local police.

Bats are found in cathedral precincts and are afforded protection under the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007, in relation to disturbance likely to affect significantly the ability of any significant group of bats to survive, breed, or rear or nurture their young, or, simply if disturbing a bat while it is occupying a structure or place that it uses for shelter or protection. In practice, the potential for impact on bats from UAS is low as: UA flights occur almost entirely during daylight hours when bats are less active; use of UA inside roof spaces and other potential roosting sites is unlikely (although some cloisters provide roosting or swarming sites); and bats are not significantly disturbed by drones flying in their vicinity (for example within c.5m) in open flight. If there is a significant population of bats within a cathedral precinct, and these are likely to have an impact on UAS operation, its presence should be factored into contracts, permissions, method statements and risk assessments, and advice sought from an ecologist.

## 6.4 Good conduct

Beyond the specific considerations of the other legal constraints on operating a UAS in a cathedral precinct, a cathedral should foster broader good practice. This will include:

- Signage. For larger projects and larger UA (such as for metric survey, and television or cinema productions) signage requirements for warning or information signs or any other signs should be written into contracts and permissions. For many *ad hoc* surveys, such as those by cathedral's professional advisers and staff, a portable sign may be used.
- Identifiable operative. In most circumstances, wearing highly visible clothing identifying the UAS operator should be a condition of consent for the work.
- Advance warning of UAS survey. A cathedral should assume responsibility for informing tenants of upcoming surveys in or adjacent to their property. Where major tenants commission or permit UAS operations, a cathedral should ensure that these guidelines are followed and require the tenants to inform occupants, neighbours and the cathedral. For a cathedral's professional advisers and staff, a procedure should be agreed: for example, the head verger be forewarned of any survey or inspection on the cathedral itself, and the estates manager or clerk of works forewarned of any survey or inspection elsewhere in the precinct (so that immediate neighbours to be notified).
- Livestock and pets. Some cathedral precincts are used by livestock. All have pets living in or using the precincts. Contracts and permissions, method statements and the agreed procedure for the cathedral's professional advisers and staff, should include conditions relating to the need to avoid unnecessary disturbance of or causing distress to such animals.

## 7 OPERATION

Operation of UAS after 31 December 2020 falls under several categories as follows:

### 7.1 CAA Permission for Commercial Operations

UA can be flown under a CAA Permission for Commercial Operations (PfCO), which will continue to be valid for as long as renewed: renewal after 31 December 2020 means an existing PfCO will become an Operational Authorisation, but the terms will remain the same.

From 31 December 2020, any new operators wanting the equivalent privileges of a PfCO must apply for an Operational Authorisation and follow the requirements set out in UKPDRA01 as detailed in [CAP 722](#). These require remote pilots to complete the General Visual Line of Sight (VLOS) Certificate (GVC) and the operator must submit their operations manual to the CAA. The operator will then be issued with an Operational Authorisation.

## 7.2 Open category

As defined in [CAP 722](#), the Open category covers ‘operations that present a low risk to third parties. Operations within this category are conducted within a set of basic and pre-defined limitations and do not require any further authorisation by the CAA.’

The Open category is subdivided into three subcategories:

**A1** (Fly ‘over’ people) – Operations in subcategory A1 can only be conducted with UA that present a very low risk of harm or injury to other people due to their low weight (less than 250g), their type of construction, or because they are a ‘toy’. However, flight over open-air assemblies of people is not permitted.

**A2** (Fly ‘close to’ people) – Operations in subcategory A2 can only be conducted with a UA that is compliant with a specific product standard (and a maximum mass of less than 4kg), but this UA can be flown to a minimum safe horizontal distance of 30m from uninvolved people, or down to 5m horizontally when its ‘low speed mode’ is selected. The remote pilot must have successfully completed a competency examination in order to operate in this subcategory.

**A3** (Fly ‘far from’ people) – This category covers the more general types of UA operations. The intent is that the UA will only be flown in areas that are clear of uninvolved persons and will not be flown in areas that are used for residential, commercial, industrial or recreational purposes.

Given the nature of cathedral precincts, only subcategories A1 and A2 are applicable to this guidance, with the key operating areas, constraints and UA classes that apply as follows:

### Open subcategory A1

- For <250g UA the operator must have registered the UA and have read the manual
- Flights may be conducted within residential, commercial, industrial and recreational areas
- <250g UA may be flown over uninvolved persons, but not over assemblies of people
- Class C1 aircraft, and those UA within the ‘A1 Transitional Class’ must not be intentionally flown over uninvolved persons
- If a class C0 or any other <250g UA, or a Class C1 UA (<900g) has its ‘follow me mode’ activated, it may be flown up to a distance of 50m from the remote pilot, even if this means that the aircraft is no longer within visual line of sight
- Operators of C1 UA (<900g) are required to pass the remote pilot online ‘foundation test’ (and hold a ‘flyer ID’) before they can start flying
- Operators of the A1 Transitional Class (which consists of UA that are covered by the transitional provisions for UAs with ‘flying weight’ less than 500g until 31 December 2022) must have passed the ‘A2 CofC’ examination

### Open subcategory A2

- The operator of the UA must hold a ‘certificate of remote pilot competency’ which enables subcategory A2 operation (A2 CofC)
- Flights may be conducted within residential, commercial, industrial and recreational areas
- Uninvolved persons must not be overflown at any height
- C2 class UA (<4kg flying weight) must not be flown closer than 30m horizontally from uninvolved persons, but if the ‘low speed mode’ (if fitted) has been activated, this horizontal distance can be reduced to 5m
- A2 Transitional Class UA (which consists of UA that are covered by the transitional provisions for UA with ‘flying weight’ <2kg until 31 December 2022) must not be flown closer than 50m horizontally from uninvolved persons (there is no reduction for any ‘low speed mode’).



### **7.3 Specific category**

As defined in [CAP 722](#) the Specific category covers:

‘operations that present a greater risk than that of the Open category, or where one or more elements of the operation fall outside the boundaries of the Open category.

The key element of the Specific category is that the UAS operator is required to hold an Operational Authorisation, which has been issued by the CAA.

The Operational Authorisation will be based on the CAA’s evaluation of a safety risk assessment produced by the UAS operator or, in some circumstances, has been ‘pre-defined’ and published by the CAA. The Operational Authorisation document sets out the privileges and limits of the operation. Given the name of the category, each Operational Authorisation is specific to the named UAS operator and is dependent on the risk assessment and evidence supplied to the CAA by that operator.’

### **7.4 Certified category**

As defined in [CAP 722](#), the Certified category covers ‘operations that present an equivalent risk to that of manned aviation; because of this they are subjected to the same regulatory regime (i.e. certification of the unmanned aircraft, certification of the UAS operator, licensing of the remote pilot).’

This category is extremely unlikely to apply to use of UAS at English cathedrals.

### **7.5 Operation inside the cathedral church**

Operation of a UAS inside the cathedral church, or within any other building in the precinct, falls outside the remit of the CAA. Similar requirements to those for external flying should be applied as the risks to people and the building are essentially similar. There will be additional factors to take into account, such as noise disturbance (if quiet activities are taking place, such as services and private prayer), more delicate fixtures and fittings (vulnerable to impact by larger drones), and down-draft created by rotor blades (which can disturb delicate hangings such as laid up flags and stir up dust on ledges with potential impact on organs and aspirating smoke detection systems).

Any operation of a UA within the cathedral church should be limited to those with permission, and should follow the requirements set out for the professional activities set out in the relevant sections above. Method statements for specific activities or contracts, or generic agreements made with professional advisers and staff, should include reference to the additional hazards of and necessary arrangements for internal flights.

To avoid all uninvited flights of UA within cathedrals, cathedrals may wish to consider making entry conditional on no such activity (for example by signage at entry or via ticketing details). Where this is not possible or practical, or if it is ignored, ‘policing’ in person by vergers or cathedral guides will be most effective, as with any other antisocial or privacy-infringing activity.

*Thanks for considerable work in producing this guidance go to Dr Roland B Harris BA DPhil FSA MCIfA, Archaeologist at Ely and Norwich Cathedrals.*

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