

Drone Ready Cities Regulatory Framework for UK Local Authorities

DRAFT V0.1 22nd April 2024

delivered by the
Drone Ready Cities Project

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Introduction

This framework is intended for use by Local Authorities so that they can be cognisant of the regulations that will apply to the commercial use of drones in the urban environment. This can help them prepare for the anticipated expansion in the use of drones in UK towns and cities that developing aviation regulation will permit.

Drones have the potential to benefit our society by:

- Increasing safety & efficiency e.g. blue light services, infrastructure maintenance
- Reducing CO₂ emissions
- Delivering social benefits e.g. faster medical sample transport
- Reducing ground transport congestion
- Reducing costs of logistics deliveries
- Creating new business & job opportunities

Drone technology is already at the point where many valuable urban applications are feasible and can deliver social and economic benefit. Examples include the transfer of time sensitive medical samples between National Health Service (NHS) facilities and inspection of buildings and infrastructure without the need for scaffolding, working at height and road closures. A wider range of drone applications is identified in the Use Cases section.

Traditionally, most drone operations have been performed within Visual Line of Sight (VLOS). That is an operation in which the drone pilot can maintain continuous unaided visual contact with the drone. The key to unlocking many more applications is routine flight of drones Beyond Visual Line of Sight (BVLOS).

Current aviation regulation permits BVLOS operations by exception only and largely in segregated airspace. However, development of the means and regulation to permit qualifying operations using BVLOS routinely in unsegregated airspace is underway. The Civil Aviation Authority (CAA) is taking a phased approach to allowing for repeatable, scaled BVLOS. Over the period 2024 to 2027, operational constraints imposed on BVLOS operations will ease, as described in the Timeline section.

As the routine nature of BVLOS operations increases, so will the feasibility and the benefit of the Use Cases. The social and economic benefit case for many will improve meaning that the services being offered and taken up by end-users will increase. For local authorities this will mean an increasing number of drone operations and operators in their areas.

Although the regulation of UK airspace lies with the CAA, the operation of drones within the local authority area has regulatory and policy implications that relate to local airspace, ground infrastructure, supporting services, security, privacy, protecting the environment and maintaining social equity. These and the relevant regulations are identified in

| | | | Regulation Area Having Implications (S - Significant, P - Possible Implications) - generic, not intended to indicate specific legislation or standards | | | | | | | | Strategy & Policy (S - Significant, P - Possible Implications) - generic, not intended to indicate specific policies | | |
|--|--|--|--|---------------|---------------|---------|----------------------------|-----------------------|-------------------|----------|--|---------------------------|----------------------|
| | Local Government Activity | Specifics | Planning | Building Regs | Environmental | Privacy | Electronic Communication s | Electrical Inspection | Carriage of Goods | Aviation | Strategic Plan | Integrated Transport Plan | Decarbonisation Plan |
| In collaboration with Civil Aviation Authority | Location of Air Corridors | Considering critical infrastructure, secure facilities, hazards from specific land uses, social equity, noise sensitive areas e.g. hospitals, wildlife, etc | | | S | S | P | | | S | S | S | P |
| | Provision of Aeronautical Data | Static - on location of buildings, antennas, trees, migratory routes, critical infrastructure Dynamic - Movements of people, high-altitude platforms (such as cranes), blowing debris, construction staging, etc. | S | | | | | | | S | | | |
| | Defining no-fly zones | Considering critical infrastructure, secure facilities, hazards from specific land uses, noise sensitive areas e.g. hospitals, wildlife, etc | | | S | S | | | | S | | | |
| | Developing Byelaws | Ensuring byelaws relating to drone operations are consistent with civil aviation regulations | | | | | | | | S | | | |
| | Determining Vertiport/Take off and Landing Areas | Location - Critical infrastructure, Fire station locality, Transport interconnection, Local land use, Maturing vegetation, Hazards from specific land uses e.g. birds at landfills, ash from burning, Property under approach and departure paths, Noise sensitive area, Nearby animals (zoo, domestic), Protected wildlife habitats, Future property values, Impact of traffic, Privacy, Distraction to other activities e.g. drivers | S | S | S | S | | | | S | S | S | |
| | | Integration with other transport modes | S | | | | | | | | S | S | S |
| | | Design | S | S | S | | | | | P | | | |
| | Providing Supporting Services | Ensuring appropriate fire services | | | | | | | | S | S | | |
| | | Police enforcement in the Case of Improper Drone Use | | | | | | | | S | S | | |
| | Accommodating Drone Infrastructure | Utilities - Electricity, data, water, waste water, gas | S | S | S | | | | | | S | | S |
| | | Battery Storage & Charging/Refuelling | S | S | S | | | S | | | S | | |
| | Ensuring Security | Ground-Based Transceivers | S | S | | | S | | | | | | |
| | | Reporting suspicious activity or usage that presents a threat | | | | | | | | S | | | |
| | The carriage of goods | Risk assessments and mitigation of nefarious drone use and on critical entities | | | | | | | | S | | | |
| | | | | | | P | | | S | S | | | |
| | Protecting the Environment | Sustainability - life-cycle impact | S | | S | | | | | | | | S |
| | | Wildlife protection | S | | S | | | | | | | | |
| | | Noise pollution | S | | S | | | | | | | | |
| | | Visual impact | S | | S | | | | | | | | |
| | Non-regulatory Activities | Community/stakeholder consultation/engagement | | | | | | | | | | | |
| | | Equity - evaluate impacts to enable positive outcomes | | | | | | | | | S | | |
| | | Data - Support standards development and processes to facilitate sharing of AAM data | | | | | P | | | | | | |

S = Significant implications
P = Possible implications

The Regulatory Framework.

The project to create and disseminate this framework is being delivered by Coventry City Council in partnership with Midlands Aerospace Alliance (MAA) and is funded by the Department of Science, Innovation and Technology's (DSIT) Regulators' Pioneer Fund.

Objectives

- Provide a regulatory framework for use by Local Authorities so that they can be cognisant of the regulations that will apply to the commercial use of drones in the urban environment.
- Thereby, prepare them for the anticipated expansion in the use of drones in UK.
- Ultimately, enable innovative organisations in emerging drone sector to deliver goods and services faster, cheaper, more safely and with lower environmental impact.

Scope and Applicability

This framework applies to the commercial and public sector use of drones, also referred to as Remotely Piloted Aircraft Systems (RPAS), in the urban environment in the UK.

It is intended for use by local authorities and private or public organisations utilising drones or drone services.

It is not intended to address aviation regulation. Despite this, there are local authority activities identified that do relate to aviation regulation and will require working with the CAA. For the purpose of illustrating the boundaries of airspace regulation, a framework for aviation regulation is included.

Use Cases

Through review of public materials and engagement with stakeholders, more than 30 significant use cases have been identified with some duplicated across sectors.

This use case list is provided to support the identification of applicable non-aviation regulation.

| Name | User | Purpose | Typical distance | Typical payload | Benefits | Challenges |
|----------------------------|------|---|-------------------------------|---------------------|--|--|
| Medical Cargo | NHS | Tissue/organ/blood Transport between facilities | Few-10s of miles ¹ | <20kg ¹ | Reduced delays ² Cost avoidance ² Time saving ² | Airspace integration ² Noise and privacy ² Carrying dangerous goods ² |
| Medical Last Mile Delivery | NHS | Medicine delivery to remote/ immobile patients | Few km ³ | <3.5kg ³ | Ease of access Cost reduction ³ Better health outcomes ¹ | Information sharing Carriage of goods Flight routing |

¹ [Northumbria Healthcare, 2023](#)

² ROSS, H, 2024

³ [CURRAN, 2023](#)

| Name | User | Purpose | Typical distance | Typical payload | Benefits | Challenges |
|-------------------------------|---------------------|---|----------------------------|---------------------------------|--|--|
| Last Mile Logistics | Commercial | B2C Delivery/ Collection C2C Delivery/ Collection | Few km ^{1,3,4} | <3.5kg ³ | Ease of access ¹ Cost reduction ^{1,4} £10bn UK TAM ⁴ | Information sharing ¹ Carriage of goods ^{1, 4} Flight routing ¹ Airspace management ⁴ Public acceptance ⁴ |
| Middle Mile Logistics | Commercial | Mail delivery, manufacturing logistics | 10s-100s km ^{5,6} | 10s-100s of kg ^{4,5,6} | Reduced time ^{4,7} Reduced emissions ^{4,7} Reduced wastage of perishables ⁷ Cost reduction ⁴ | |
| Reconnaissance & Surveillance | Commercial | Site Security | 100s m | Sensors only | Surveillance and Professional Services GDP impact £7.0bn, cost savings £3.0bn | Routine BVLOS in unsegregated airspace ⁴ Public Privacy ⁴ |
| | Blue Light Services | Search and Rescue Emergency Situational Awareness Fire Surveillance Secure Site Security Public Gathering Situational Awareness Suspect Search & Pursuit Traffic Control Flood Impact Assessment | 100s m | Sensors only | Reduced Risk to Personnel ⁴ Reduced time ⁴ Increased Effectiveness ⁴ Cost reduction ⁴ Emergency Response and Building Inspection GDP impact £14.1bn, cost saving £4.6bn ⁴ | Routine BVLOS in unsegregated airspace ⁴ |
| | Local Authority | Compliance e.g. fly tipping, noise, pollution | 100s m – few km | Sensors only | Reduced time Reduced cost Increased coverage | Routine BVLOS in unsegregated airspace |

⁴ PWC, 2022

⁵ Apian.aero, 2024

⁶ Dronamics.com, 2024

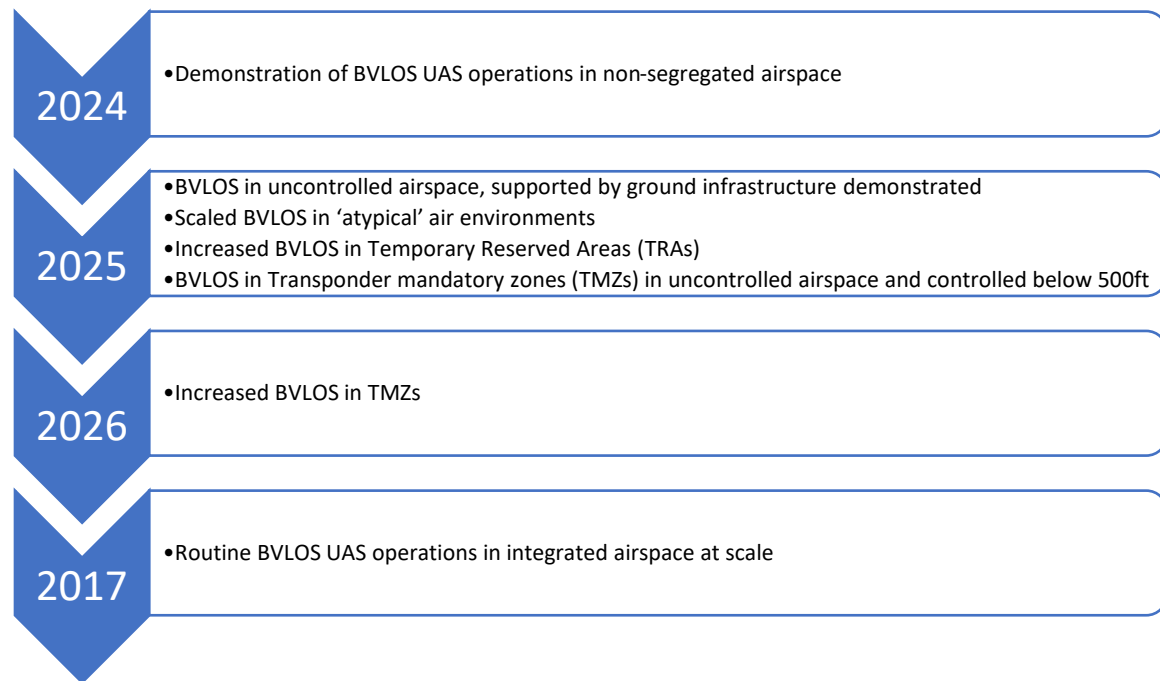
⁷ England.NHS.uk, accessed 6th February 2024

| Name | User | Purpose | Typical distance | Typical payload | Benefits | Challenges |
|----------------|-----------------|---|-----------------------------|-----------------|---|---|
| Data Gathering | Commercial | Asset Management Land Analysis Mapping | VLOS-10s of km ⁴ | Sensors only | Reduced Risk to Personnel ⁴ Reduced time ⁴ Reduced disruption ⁴ Reduced Emissions ⁴ Cost reduction ⁴ | Routine BVLOS in unsegregated airspace ⁴ Data integration with business as usual ⁴ |
| | Local Authority | Surveys – Thermal, Noise, Air Quality, Traffic Survey | | | Emergency Response and Building Inspection GDP impact £14.1bn, cost saving £4.6bn ⁴ Agriculture, Mining, Water, Gas and electricity GDP impact £3.0bn, Cost savings £4.4bn ⁴ | |

| Name | User | Purpose | Typical distance | Typical payload | Benefits | Challenges |
|-----------------------|------------|---|-----------------------------|--------------------|---|---|
| Inspection | Commercial | Maintenance Inspection Safety Inspection Construction Progress Inspection | VLOS-10s of km ⁴ | Sensors only | <p>Reduced Risk to Personnel⁴ Reduced time⁴ Reduced disruption⁴ Cost reduction⁴ Reduced Emissions⁴</p> <p>Emergency Response and Building Inspection GDP impact £14.1bn, cost saving £4.6bn⁴</p> <p>Infrastructure Inspection GDP impact £2.4bn, cost saving £0.9bn⁴</p> <p>Construction and manufacturing GDP impact £2.8bn, cost saving £1.6bn⁴</p> | Routine BVLOS in unsegregated airspace ⁴ Data integration with business as usual ⁴ |
| Media & Entertainment | Commercial | Light Show Film | VLOS | Camera Lighting | | |

Timeline

In the easing of constraints imposed on BVLOS operations, the DfT has published a Uncrewed Aircraft System (UAS) Pathway in its [UK Future of Flight Action Plan](#). This calls for the following timeline:



DfT 2024, CAA 2024b

The Role of Local Authorities

The Drone Ready Cities project research revealed that there is a significant collection of activities that will involve local authorities as commercial drone operations in increase in the authority's area (LEWIS, 2024).

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|--|--|--|---------------|---------------|---------|----------------------------|-----------------------|-------------------|----------|--|---------------------------|----------------------|
| Local Government Activity | Specifics | Planning | Building Regs | Environmental | Privacy | Electronic Communication s | Electrical Inspection | Carriage of Goods | Aviation | Strategic Plan | Integrated Transport Plan | Decarbonisation Plan |
| In collaboration with Civil Aviation Authority | Location of Air Corridors | | | S | S | P | | | S | S | S | P |
| | Provision of Aeronautical Data | S | | | | | | | S | | | |
| | Defining no-fly zones | | | S | S | | | | S | | | |
| | Developing Byelaws | | | | | | | | S | | | |
| | Determining Vertiport/Take-off and Landing Areas | | | | | | | | | | | |
| | Integration with other transport modes | S | S | S | S | | | | S | S | S | S |
| | Design | S | S | S | | | | | P | | | |
| | Providing Supporting Services | | | | | | | | S | S | | |
| | Accommodating Drone Infrastructure | | | | | | | | S | S | | |
| | Ensuring Security | | | | | | | | S | | | |
| | The carriage of goods | | | | P | | | S | S | | | |
| | Protecting the Environment | | | | | | | | | | | |
| | Non-regulatory Activities | | | | | P | | | | S | | |

S = Significant implications
P = Possible implications

The Regulatory Framework

| The regulatory framework summary table | |
|---|--|
| <p>Aviation Regulation: The UK Government, Civil Aviation Authority (CAA) (national aviation regulator), and police</p> <p>Reproduced from Jackman & Hooper 2023</p> | <p>The UK Government is responsible for laws governing drones</p> <p>The national aviation regulator, the Civil Aviation Authority (CAA) work to ensure the aviation industry meets the highest safety standards</p> <p>The police lead on action against the misuse of drones</p> <p>Drones fall under two separate legislative frameworks:</p> <ul style="list-style-type: none"> • (1) The 'Basic regulation', which outlines the common rules for civil aviation within the UK, makes provisions for Implementing Regulations or Delegated Regulations, and includes a 'UAS regulation package' • (2) The Air Navigation Order 2016(as amended), within the Civil Aviation Act 1982. The ANO covers airspace in the UK (excluding flight indoors), sets out the main civil requirements for UK aviation, and provides regulatory and enforcement powers for the CAA in relation to retained aviation safety legislation. Articles 240 and 241 are particularly pertinent <p>Regulatory requirements are supported by Acceptable Means of Compliance and Guidance Material, and the CAA also provides guidance on regulation through Civil Air Publication (CAP) documents</p> <p>Existing drone regulations and legislation have a focus on safety</p> |
| <p>Privacy and data protection: The CAA, Information Commissioner's Office (ICO), Biometrics and Surveillance Camera Commissioner</p> <p>Reproduced from Jackman & Hooper 2023</p> | <p>The Civil Aviation Authority's remit is limited to safety and does not include concerns over privacy, though advises that pilots using drones with cameras should be aware of relevant Data Protection Regulation. The Drone and Model Aircraft Code offers multi-faceted advice regarding respecting people and their privacy</p> <p>The Information Commissioner's Office (ICO) is an independent body responsible for upholding information rights. The ICO recognises that drone flight can involve collecting, using and/or sharing personal data, and poses the potential for collateral intrusion. The ICO distinguishes between hobbyists and professional or commercial flyers, describing compliance with data protection law (e.g., provision of privacy information, undertaking a Data Protection Impact Assessment) and asserting that where required, drone pilots must comply with the Surveillance Camera Code</p> <p>The Biometrics and Surveillance Camera Commissioner advise that the use of drones with cameras by 'relevant authorities' is covered by the Surveillance Camera Code. The Code is not technology specific, rather is principles based and applies to the use of surveillance cameras in public places. It encourages other operators and users of surveillance camera systems to adopt voluntarily. The code specifies that covert surveillance by public authorities is not covered and is instead regulated by Regulation of Investigatory Powers Act 2000.</p> |
| <p>Planning: The Governments of England, Wales,</p> | <ul style="list-style-type: none"> • Each of England, Wales, Scotland and Northern Ireland have a 'plan-led' system overseen by the country's Secretary of State responsible |

| | |
|--|--|
| <p>Scotland and Northern Ireland, The Department for Transport (DfT), The CAA</p> | <p>for national policy, guidance and a framework for local planning. The four countries' policies are, respectively,</p> <ul style="list-style-type: none"> ○ England - National Planning Policy Framework ○ Scotland - National Planning Framework 4 ○ Wales – Planning Policy Wales ○ Northern Ireland - Policy Statement for Northern Ireland (SPPS) <ul style="list-style-type: none"> • Planning policy for any given area is set out in a Local Development Plan developed and overseen by the relevant Local Planning Authority (LPA) • Aviation matters within Local Development Plans are assessed against the UK wide Aviation Policy Framework • The planning policy hierarchy is summarised as <ul style="list-style-type: none"> ○ National aviation policy <ul style="list-style-type: none"> ▪ Aviation Policy Framework 2013 ▪ Jet Zero Strategy 2022 ○ National planning policy <ul style="list-style-type: none"> ▪ National Planning Policy Framework (for the country) ▪ Planning Practice Guidance (for the country) ○ Spatial Strategy ○ Local Development Plans |
| <p>Building Regulations England & Wales: The UK Government. The Welsh Government</p> | <ul style="list-style-type: none"> • The Building Act 1984 is the most wide-reaching law controlling building in England and Wales. It sets the enforcement powers. • The Building Regulations 2010 go into more detail about building work. • Building work generally includes building new buildings, making buildings bigger, altering buildings and changing what they are used for. It is highly likely that the installation of drone infrastructure will fall into one of these categories. • The Building Safety Act 2022 amends the Building Act 1984 in the case of Higher-Risk Residential Buildings (HRRB) in the wake of the Grenfell Tower tragedy and could have implications for drone infrastructure installed on or around HRRBs. • HM Government has published a Manual to the Building Regulations in two volumes. Volume 1 is a high level guide to the building regulations system and Volume 2 provides more detailed guidance. |
| <p>Building Regulations Scotland: The Scottish Government</p> | <ul style="list-style-type: none"> • The Building (Scotland) Act 2003 gives Scottish Ministers to power to make building regulations with respect to the design, construction, demolition and conversion of buildings and the provision of services, fittings and equipment in or in connection with buildings • Building regulations that apply across Scotland are set out in the Building (Scotland) Regulations 2004 • Scottish Government publishes technical handbooks which explain how to achieve the requirements set out in the regulations |

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|---|---|
| <p>Building Regulations Northern Ireland: The Northern Irish Government</p> | <ul style="list-style-type: none"> • The current system was established by the enactment of the Building Regulations (Northern Ireland) Order 1972, which was subsequently amended in 1978, before being replaced by the Building Regulations (Northern Ireland) Order 1979 (as amended 1990 and 2009). This is the primary legislation. (Department of Finance, Northern Ireland, n.d.) • The Department of Finance is responsible for the development and the implementation of policy and for legislation relating to the Building Regulations. (Department of Finance, Northern Ireland, n.d.) • The secondary legislation of the Building Regulations (Northern Ireland) 2012 sets requirements and standards for building that can reasonably be attained. |
| <p>Electrical Inspection Health and Safety Executive, BSI (re: battery charging)</p> | <ul style="list-style-type: none"> • The Electricity at Work Regulations 1989: This regulation requires that all electrical systems, equipment, and installations are maintained to prevent danger. This includes regular inspections to ensure that they are safe to use. • The Health and Safety at Work Act 1974: This regulation places a duty on employers to ensure the health and safety of their employees while at work. This includes providing a safe working environment, which requires electrical inspections to be carried out regularly. • The Management of Health and Safety at Work Regulations 1999: This regulation requires employers to assess and manage the risks associated with their work activities. This includes identifying and controlling risks associated with electrical systems and equipment, which require regular inspections. • The Provision and Use of Work Equipment Regulations 1998: This regulation requires that all work equipment, including electrical equipment, is suitable for its intended use and is maintained in a safe condition. This includes regular inspections to ensure that equipment is safe to use. • The Wiring Regulations (BS 7671:2018+A2:2022): This standard sets out the requirements for the design, installation, and maintenance of electrical systems in the UK. It requires that electrical installations are inspected and tested at regular intervals to ensure that they are safe to use. |
| <p>Electronic Communications: The United Nations, The UK Government, Ofcom</p> | <ul style="list-style-type: none"> • The United Nation's International Telecommunications Union (ITU) maintains the Radio Regulations which contracting States, including the UK, are required to ensure compliance with. • The UK electronic communications regulatory framework is mainly contained within: <ul style="list-style-type: none"> ○ the Communications Act 2003 ○ the Wireless Telegraphy Act 2006 • This domestic legislation governs the regulation of the telecoms markets, guarantees basic user rights, and sets out the powers and duties of the Office of Communications (Ofcom) as the national regulator, including how radio spectrum in the UK is managed. |

| | |
|---|---|
| | <ul style="list-style-type: none"> • The EU Common Regulatory Framework is implemented through the above legislation. • European Electronic Communications Code (EECC) - was adopted by the EU in December 2018 with EU countries applying the new directive to their national law by 21 December 2020. • The UK transposed the European Electronic Communications Code (EECC) Directive into UK law ahead of the transposition deadline of 21st December 2020. • The Electronic Communications and Wireless Telegraphy (Amendment etc.) (EU Exit) Regulations 2019 is secondary legislation made in February 2019 to ensure that the UK telecoms regulatory framework remained operable when the UK left the EU. <p style="text-align: right;">HMG 2020</p> <ul style="list-style-type: none"> • The Radio Equipment Regulations 2017: Great Britain, applies to radio equipment supplied in or into Great Britain • The Radio Equipment Regulations 2017: Northern Ireland, applies to radio equipment supplied in or into Northern Ireland • CAA - Under agreement with Ofcom and the Ministry of Defence, CAA is the band manager for several sets of radio spectrum frequencies |
| Carriage of dangerous goods: International Air Transport Association (IATA), CAA | <ul style="list-style-type: none"> • “The global principles governing the safe transport of DG by air are described in Annex 18 to the Convention on International Civil Aviation (the Chicago Convention) • These broad principles have been amplified into the detailed ‘Technical Instructions for the Safe Transport of Dangerous Goods by Air’ (Doc 9284) • These technical instructions are reproduced in the Dangerous Goods Regulations (DGR) published by the International Air Transport Association (IATA)” GROTE et al 2021 • EU Regulation (EU) 2002/2786 was retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 and amended by the CAA’s Air Navigation (Dangerous Goods) Regulations 2002 • CAP2248 Fundamentals: Carriage of Dangerous Goods by Remotely Piloted Aircraft Systems gives guidance for carrying dangerous goods falling within UN3373 Biological Substances, Category B as cargo • In 2023, the CAA published CAP2555 Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category – note that this is guidance rather than regulation |
| Environment: The CAA, ICAO, Environment Agency | <p>The section below provides an overview of domestic and international regulatory frameworks which relates to environment protection in relation to the CAA and Environmental Agency within the United Kingdom. As there is no set Environmental Act’ towards drone aviation within urban environments it is not intended that this should be taken as the only policy/legislation which applies to environmental protection.</p> |

- The [Environment Act 2021](#) Provides a legal framework for environmental governance and brings in measures for the improvement of the environment in relation to waste, resource efficiency, air quality, water, nature and biodiversity, and conservation. It does so by providing the Government with powers to set new binding targets, including for air quality, water, biodiversity and waste reduction. The Department for Environment, Food and Rural Affairs (DEFRA) published these targets in 2022 after consultation.
- The UK is a founding member of the International Civil Aviation Organisation's (ICAO) [Committee on Aviation Environmental Protection](#) (CAEP). As the UK is a founding member the operator must adhere to ICAO and 'Standards and Recommended Practices' SARPs for uniformity in regulations, standards and procedures.
- CAEP established assists the ICAO Council in developing new policies and SARPs in relation to aviation noise, emissions and other environmental impacts. The ICAO Council subsequently reviews and adopts CAEP recommendations, including amendments to the SARPs, and in turn reports directly to the ICAO Assembly where the main policies on environmental protection are defined. The UK is represented in ICAO and CAEP by the 'Department for Transport' (DfT), while the CAA and other specialists are nominated by the UK to CAEP's technical working groups.
- Nature Conservation (Scotland) Act 2004. The Bill for this Act of the Scottish Parliament was passed by the Parliament on 5th May 2004 and received Royal Assent on 11th June 2004. An Act of the Scottish Parliament to make provision in relation to the conservation of biodiversity; to make further provision in relation to the conservation and enhancement of Scotland's natural features; to amend the law relating to the protection of certain birds, animals and plants; and for connected purposes.
- Byelaws apply to many areas of the UK that specifically restrict the use of drones for the protection of wildlife.

Aviation Regulation

Domestic Framework: Rules and regulations for drones in the UK (Reproduced from Jackman & Hooper 2023)

As is expanded upon below:

| |
|--|
| <ul style="list-style-type: none"> • The Civil Aviation Authority (CAA) regulates drone use in the UK. |
| <ul style="list-style-type: none"> • Drones are divided into different operation categories: Open, Specific and Certified. |
| <ul style="list-style-type: none"> • In the UK, drones fall 'under two separate legislative frameworks', namely: <ul style="list-style-type: none"> • 'Regulations within the framework of UK Regulation (EU) 2018/1139 (the Basic regulation)' and • 'The Air Navigation Order 2016, as amended, within the framework of the Civil Aviation Act 1982' (CAP 722: 14-15). |

Civil Aviation Authority (CAA)

The Civil Aviation Authority is the UK's aviation regulator, a public corporation established by Parliament in 1972 and working to ensure that the 'aviation industry meets the highest safety standards' (Civil Aviation Authority n.d). Regarding drones, the CAA's responsibilities include 'providing permissions for drone operators when required', 'providing advice to the general public and industry on how to fly drones safely and reduce risk to aviation', and ensuring that 'any risks' that potential 'future uses pose to aviation are managed effectively and proportionately' (Civil Aviation Authority n.d). The CAA is not responsible for 'proposals for new Domestic legislative framework laws governing drones' which are a 'matter for Government', nor for 'action against the misuse of drones', which the police lead on (Civil Aviation Authority n.d).

The Civil Aviation Authority provide a range of information on flying drones safely, including rules around drone flight which are 'based on the risk of the flight – where you fly, the proximity to 12 other people, and the size and weight of your drone' (Civil Aviation Authority n.d.a). The drone rules are based around the three categories set out in the Basic regulation at Articles 4-6 (the open category, specific category and certified category) (CAP 1789A). There is 'no distinction between flying commercially and flying for pleasure or recreation', i.e. an 'approval just to operate commercially is not required' (Civil Aviation Authority n.d.a).

Understanding Drone Categories

| Summary: Drone operation categories | |
|-------------------------------------|--|
| The Open Category | <ul style="list-style-type: none">• Low-risk drone flights• Guidance: Drone and Model Aircraft Code; CAP 2012 Drone rules: Requirements for flying in the open category; CAP 722 Unmanned Aircraft Systems in UK airspace; the CAA's webpage under 'Flying in the Open Category' |
| The Specific Category | <ul style="list-style-type: none">• Higher risk drone flights• Requires operational authorisation from the CAA• Guidance: CAP 722 Unmanned Aircraft System Operations in UK airspace; the CAA's webpage under 'Flying in the Specific Category' |
| The Certified Category | <ul style="list-style-type: none">• Large drones which have to meet specific safety certifications along the lines of aircraft• Regulations under development and not yet published• Guidance: CAP 722 Unmanned Aircraft System Operations in UK airspace; the CAA's webpage under 'Flying in the Certified Category' |

| The Open Category |
|---|
| The Open Category is 'intended for low-risk drone flights' and covers drones weighing both under 250 grams and between 250 grams and 25 kilograms (Civil Aviation Authority n.d.a). There are various requirements and restrictions for flights in the Open category. These depend on the drone's weight, when the drone was built and/or placed on the market, and whether the drone has a camera |

onboard. Drones are divided into three categories – A1, A2 and A3, depending on these factors (CAP 2012).

If a drone weighs over 250 grams, drone users are required to obtain a 'flyer ID' which shows they have passed a 'basic flying test' and are responsible for 'flying safely and legally' (Drone and Model Aircraft Code n.d). If a drone weighs under 250 grams and has a camera, or weighs over 250 grams, drone users also need to obtain an 'operator ID' which must be labelled on the drone and indicates that they are 'responsible for the drone or model aircraft, and who they allow to fly it' (Drone and Model Aircraft Code n.d).

Drones flying in the Open Category must not exceed 120 metres (400 feet), are not permitted to drop articles nor to carry dangerous goods, must be kept within the operator's visual line of sight, and must adhere to all applicable airspace restrictions (CAP 2012). In addition to flight restrictions and requirements around 'prisons, military ranges, royal palaces, government buildings' and 'emergency service incidents', drone flyers are required to stay 'well away' from 'airports, airfields or spaceports' as most of these 'have a flight restriction zone (FRZ)' and permitted flight therein would likely require permissions (Drone and Model Aircraft Code n.d; see also CAP 722). Flights in the Open Category are also subject to further restrictions around proximity to 'uninvolved persons' and distance from residential, commercial, industrial or recreational areas (Drone and Model Aircraft Code n.d.; CAP2012).

Guidance can be found in the [Drone and Model Aircraft Code](#), on the CAA's website, in [CAP722 Unmanned Aircraft System Operations in UK airspace](#), and in [CAP2012 Drone rules: Requirements for flying in the open category](#).

The Specific Category

The Specific category is intended for 'higher risk flights' and/or for those that fall outside the boundaries of the open category (Civil Aviation Authority n.d.a). In distinction to the Open Category, operations in the Specific Category require an '**operational authorisation**' issued by the CAA (Civil Aviation Authority n.d.b). This authorisation is based upon the CAA's 'evaluation of a safety risk assessment' (Civil Aviation Authority n.d.b). It is also 'only permissible to carry dangerous goods by drone in the Specific category', wherein operators need 'approval to carry items that are classified as dangerous goods' (CAP 2248: 2).

The Certified Category

The Certified category is 'for large drones which have to meet specific safety certifications along the lines of' manned aircraft and aviation (Civil Aviation Authority n.d.a). It 'covers operations that present an equivalent risk to that of manned aviation' and are 'subjected to the same regulatory regime' (Civil Aviation Authority n.d.c). The UK's regulations for drone flights in the certified category 'are still being developed are **not yet published**' (Civil Aviation Authority n.d.c).

Domestic legislative framework (Reproduced from Jackman & Hooper 2023)

As above, in the UK, drones fall under two separate legislative frameworks: 'Regulations within the framework of UK Regulation (EU) 2018/1139 (the Basic regulation)' and 'The Air Navigation Order 2016, as amended, within the framework of the Civil Aviation Act 1982' (CAP 722: 14-15). Regulations are

supplemented with Acceptable Means of Compliance and Guidance Materials, and the CAA provides guidance on regulation through Civil Air Publications (CAPs).

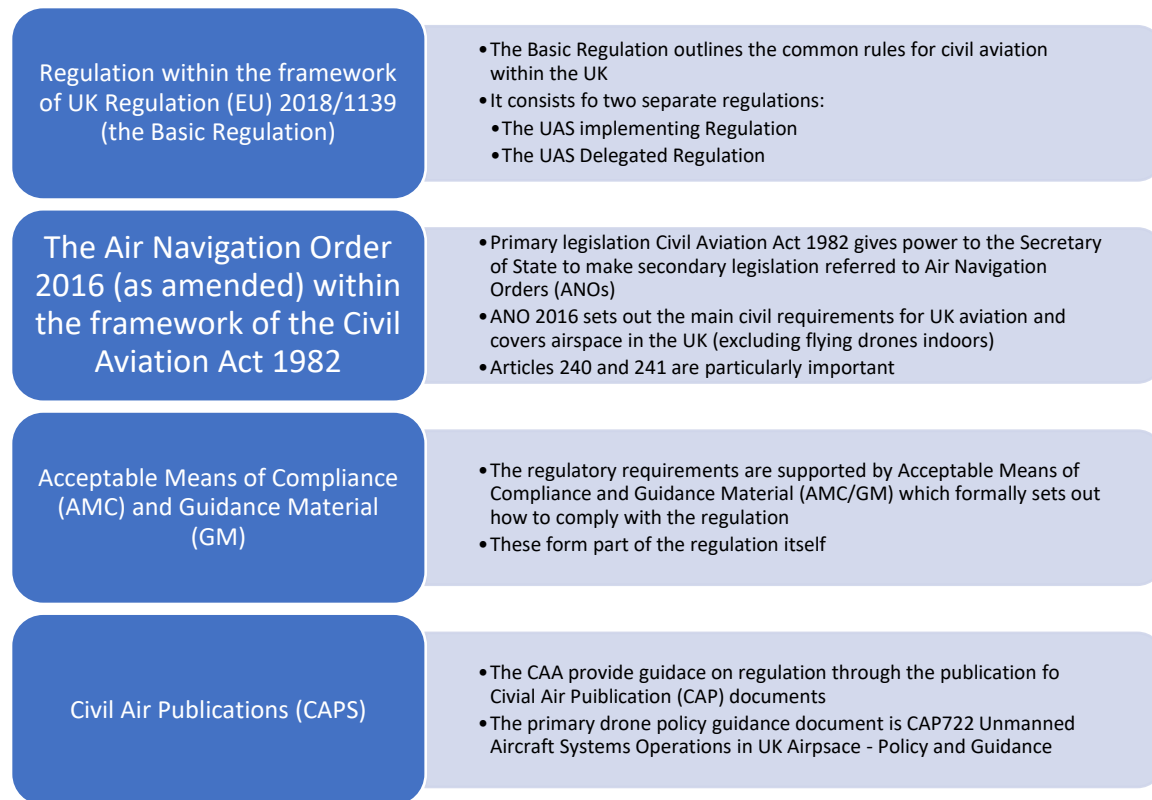


Figure 1 UK regulatory framework. Source JACKMAN & HOOPER 2023 (see also CAP 722)

The 'Basic regulation'

The 'Basic Regulation' outlines the 'common rules for civil aviation within the UK' (CAP722: 16). Delegated legislation from the Basic Regulation (BR) is referred to as the 'UAS regulation package' (UAS, or Unmanned Aerial Systems, is another term for aerial drones), which consists of 'two separate but interlinked regulations' that were 'transferred into UK law at the end of the EU exit transition period' (CAP 722: 17). These include:

- "Regulation (EU) 2019/947 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 on the procedures and rules for the operation of unmanned aircraft" (known as the '**UAS Implementing regulation**' and is found in [CAP1789A](#)), and
- "Regulation (EU) 2019/945 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 on unmanned aircraft and on third country operators of unmanned aircraft systems" (known as the '**UAS Delegated Regulation**' and found in [CAP1789B](#)) (CAP 722: 17).

The relevant EU regulations were transferred across into UK domestic law, as UK regulations. These regulations became 'retained EU law' after the end of the EU-UK transition period following Brexit (Practical Law 2023: 8), and will be 'amended as necessary' (CAP 722: 15). Changes made by the EU are not automatically adopted by the UK and both the EU and UK have amended both regulations since their adoption (CAP 722: 17).

The Air Navigation Order 2016

Under UK primary legislation the [Civil Aviation Act 1982](#) gives ‘power to the Secretary of State to make secondary legislation referred to as Air Navigation Orders’ (Feild 2019). The ‘key legislation is the [Air Navigation Order 2016](#) (S.I. 2016/765), which ‘replaced the Air Navigation Order 2009’, and has subsequently been amended (Feild 2019).

The ANO 2016 sets out the main civil requirements for UK aviation and covers airspace in the UK (excluding flying drones indoors). The ANO 2016 also provides ‘regulatory and enforcement powers for the Civil Aviation Authority needed in respect of retained aviation safety legislation’ (House of Commons 2022). The ‘provisions in the ANO concerning equipment requirements, operational rules, personnel licensing, aerodrome regulation and regulation of air traffic services apply to all non-military aircraft, organisations, individuals and facilities’ (CAP 722: 18). Of particular note are Articles 240 and 241:

- ‘Article 240 applies to all persons and stipulates that a person must not recklessly or negligently act in a manner likely to endanger an aircraft or a person within an aircraft’ and
- ‘Article 241 applies to all operating categories and stipulates that a person must not recklessly or negligently cause or permit an aircraft (manned or unmanned) to endanger any person or property (which includes other aircraft and their occupants)’ (CAP 722: 18).

With regards to drones specifically, the ANO provides additional regulatory content that is either:

- ‘not covered by other regulations– for example, specific national requirements such as carriage of radio equipment, endangerment regulations and legal penalties for breaches of these regulations; or
- in support of a more general requirement stated within other regulations – for example, airspace restrictions around aerodromes and other ‘protected’ locations’ (CAP 722: 18).

It can be noted that ‘only certain parts of the ANO apply to UAS [drones] within the Specific and Open categories’ whereas ‘Certified category operations and certified unmanned aircraft are subject to the whole of the ANO, unless specifically exempted by the CAA’ (CAP 722: 18-19).

The ‘regulatory requirements are supported by Acceptable Means of Compliance and Guidance Material (AMC/GM)’ which ‘formally set out how to comply with the regulation’ (CAP 722: 18). These form part of the Regulation itself.

The Civil Aviation Authority also provides guidance on regulation through the publication of Civil Air Publication (CAP) documents. The ‘primary’ drone ‘policy and guidance document’ is [CAP722 Unmanned Aircraft System Operations in UK Airspace – Policy and Guidance](#), which ‘provides policy and guidance in relation to the operation of UAS [drones] to assist in compliance with the applicable regulatory requirements’ (CAP 722: 6). The CAA underscores that CAP documents are not regulation, rather they summarise and reference regulation throughout (CAP 722: 6). Further information about drone-related publications and can be found in the CAA’s publications library (Civil Aviation Authority n.d.i).

In August 2023, the Civil Aviation Authority launched a call for input into its review of UK drone regulations (CAP 2569). The review sought feedback on wide-ranging issues, including ‘standards adoption’ and ‘operational categories’, including current ‘exclusions for users of UAS [drones] weighing below 250 grams’ (CAP 2569). On November 22 2023, the CAA published the Call for Input Response Summary (CAP 2609). This document details that the Call for Input received ‘2,629 responses in total’ and that analysis of these responses validated the CAA’s ‘view that there are opportunities to improve,

simplify and strengthen UAS regulation. However, there was limited support for overhauling existing regulatory frameworks, such as operational categorisations and class-marking, due to the cost and wider impacts of change. Collectively, this feedback enabled us [the CAA] to develop a set of proposals that make incremental and targeted improvements to the regulations, while maintaining stability in the overall regulatory framework where possible'. Further information can be found in the Review of UK UAS Regulation Consultation (CAP 2610).

[Privacy and data protection \(Reproduced from Jackman & Hooper 2023\)](#)

Drone regulation globally has historically 'been focused primarily upon safety considerations' but as drone usage grows and is anticipated to scale, 'increasing attention will need to be paid to privacy and data protection laws' (Clyde & Co 2022).

[UK Data Protection Act 2018 and General Data Protection Regulation 2016](#)

Post Brexit, data protection and privacy in the UK is governed by the [Data Protection Act 2018](#) (as amended) and the version of the General Data Protection Regulation (EU) 2016/679 'EU GDPR' as retained in domestic law which is known as the 'UK GDPR' (as amended by Schedule 1 to the [Data Protection, Privacy and Electronic Communications \(Amendments etc.\) \(EU Exit\) Regulations 2019, \(SI 2019/419\)](#)). The Government intends to replace this with new legislation currently before parliament as the Data Protection and Digital Information Bill (No. 2) 2023 (Parliamentary Bills n.d).

The UK data protection laws apply to information processed through the use of drones, although exceptions may apply to hobbyists. Where data protection law does apply, strict adherence to the data protection principles must be ensured. In some limited cases, an exemption from compliance with GDPR may apply. These are considered on a case-by-case basis and include, for example, provisions relating to:

- Crime, law and public protection
- Regulation, parliament and the judiciary
- Journalism, research and archiving
- Health, social work, education and child abuse
- Finance, management and negotiations
- References and exams
- Subject access requests where information about other people is requested
- National security and defence

(Information Commissioner's Office n.d.a).

See also Annex 1: Further information about Data Protection law in the UK

[UK GDPR Guidance: The Information Commissioner's Office \(ICO\)](#)

In the UK, the Information Commissioner's Office (ICO) is the independent body set up to 'uphold information rights in the public interest' (Information Commissioner's Office n.d.b). The ICO has produced UK GDPR Guidance relating to CCTV and video surveillance and included within this is [Additional Considerations for Technologies other than CCTV](#).

The ICO observes that drone flight 'can result in the collection, use, or sharing of **personal data**, including information about individuals who are not the intended focus of the recordings' (Information Commissioner's Office n.d.c). The ICO notes that the growing popularity of drones has 'raised privacy concerns due to their manoeuvrability and enhanced capabilities of taking photos, videos and sensing

the environment’ and that drones pose the “potential for ‘collateral intrusion’ by recording images of other individuals unnecessarily”, including indirect or inadvertent identification as individuals can ‘still be identified through the context they are captured in or by using the device’s ability to zoom in on a specific person’ (Information Commissioner’s Office n.d.c).

The ICO observe a ‘**distinction** between...individuals who can be considered as **hobbyists** and are therefore generally using their device for purely personal activities, and those individuals or organisations who use the device for **professional or commercial** purposes’ (Information Commissioner’s Office n.d.c). They specify that ‘organisations using drones are clearly controllers for any personal data that the drone captures, and therefore are required to comply with data protection law’ (Information Commissioner’s Office n.d.c).

The ICO explains the requirement to provide **privacy information**. They note that a ‘key issue with using drones is that, on many occasions, individuals are unlikely to realise they are being recorded or be able to identify who is in control. If you are a controller, you must address the challenge of providing privacy information if you decide to purchase and use such surveillance systems’ (Information Commissioner’s Office n.d.c). They add that innovative ways of providing this information such as ‘placing signage in the area you are operating a drone explaining its use’ or having a ‘privacy notice...so individuals can access further information’ may be needed (Information Commissioner’s Office n.d.c). The ICO also suggest that ‘if doing that is very difficult or would involve disproportionate effort, document this information in a way that is readily available’ (Information Commissioner’s Office n.d.c).

In discussion of **data security**, the ICO urges a consideration of whether the drone ‘connects or interfaces with other systems’, highlighting measures such as ‘encryption or another appropriate method of restricting access to the stored information’, and of the retention period requirements to ‘ensure that you retain data for the shortest time necessary for its purpose and dispose of it appropriately, when you no longer require it’ (Information Commissioner’s Office n.d.c).

The ICO provides a checklist for drone flyers to consider to help them comply with data protection law including:

- ‘We have considered whether there is a genuine need for us to use a drone if alternative systems or methods of surveillance are not suitable to solve a particular problem;
- We have conducted a Data Protection Impact Assessment (DPIA) which includes the risks associated with recording at altitude and capturing footage of individuals that are not intended to be the focus of our surveillance;
- We have registered our drone if the system falls within the specific criteria set by the Civil Aviation Authority (CAA);
- We have robust policies and procedures in place for the use of drones and our operators are appropriately trained with documented credentials;
- We inform individuals that we are using a drone where possible and we have an accessible privacy notice that individuals can read to learn more about our use; We comply with the Surveillance Camera code of practice where required’

Source: Information Commissioner’s Office (n.d.c)

The ICO’s guidance on drones sits under its wider **CCTV and Video Surveillance Guidance**, which includes information on ‘handling personal information using video surveillance’ from a range of technologies, including CCTV, automatic number plate recognition, smart doorbell cameras, and drones (see [Video surveillance \(including guidance for organisations using CCTV\)](#) on Information Commissioner’s

Office n.d.d). The ICO recognises that as video surveillance ‘becomes more mainstream and affordable’ some uses ‘can be particularly intrusive’ and confirms ‘organisations using surveillance systems that process the personal data of identifiable individuals need to comply with the UK GDPR and DPA [Data Protection Act] 2018’ (Information Commissioner’s Office n.d.d). The ICO highlights that drone flyers must ‘comply with the Surveillance Camera code of practice where required’ (Information Commissioner’s Office n.d.c) (see Biometrics and Surveillance Camera Commissioner).

Further information about **personal data, data subjects, data controllers** and data processors, and **Data Protection Impact Assessments (DPIAs)** and the requirements of data protection laws generally can be found in Annex 2: UK General Data Protection Regulation (GDPR) guidance: The Information Commissioner’s Office.

Biometrics and Surveillance Camera Commissioner

The Biometrics and Surveillance Camera Commissioner (BSCC) is ‘an independent monitoring body of the Home Office’ and the BSCC’s role is to ‘encourage compliance with the surveillance camera code of practice’ (Gov.UK n.d). The BSCC observed that from ‘drones to body worn video, dashcams and doorbells’, ‘in recent years we have seen an explosion of surveillance technology in the public and private realms’ (Gov.UK 2023). They advise that where drones include cameras, they “are necessarily involved in the ‘surveillance’ of public space” and as such, ‘their use by relevant authorities will often be covered by the provisions of the SC [Surveillance Camera] Code’ (Office of Biometrics and Surveillance Camera 2023: 78-79).

The **Surveillance Camera Code** presents a ‘single set of guiding principles that are applicable to all surveillance camera systems in public places’ and ‘allows a system operator to establish a clear rationale’ for deployment ‘which helps ensure compliance with other legal duties’ (Home Office 2021: 8). This ‘covers technology systems that are associated with, or otherwise connected with, surveillance cameras’ and ‘applies to the use of surveillance camera systems as defined by Section 29(6)’ of [the Protection of Freedoms Act 2012](#) (Home Office 2021: 6, 7).⁸ Wider discussions of the Code specify both that specific technologies (such as drones) are ‘already covered under the general definition of surveillance camera systems’ and that ‘the fact that **the Code is principles based rather than technology specific** helps to ensure it does not rapidly get out of date as technologies and use cases develop’ (Gov.UK 2021).⁹

⁸ The Protection of Freedoms Act 2012 defines surveillance camera systems as: ‘(a) closed circuit television or automatic number plate recognition systems, (b) any other systems for recording or viewing visual images for surveillance purposes, (c) any systems for storing, receiving, transmitting, processing or checking images or information obtained by systems falling within paragraph (a) or (b), or (d) any other systems associated with, or otherwise connected with, systems falling within paragraph (a), (b) or (c)’ (Protection of Freedoms Act 2012).

⁹ The 12 principles of the Surveillance Camera Code concern: use for a ‘specified purpose’ in ‘pursuit of a legitimate aim’, taking ‘into account’ the ‘effects on individuals and their privacy’, ‘transparency’ around the deployment and a ‘published contact point for access to information and complaints’, ‘clear responsibility and accountability’ for ‘system activities’, ‘clear rules and procedures in place’, ‘no more images and information should be stored than that which is strictly required for the stated purpose’, access restricted to ‘retained images and information’, a consideration of any relevant ‘approved operational, technical and competency standards’, ‘security measures’ in place to ‘safeguard against unauthorised access and use’, ‘mechanisms to ensure legal requirements, policies and standards are complied with in practice’, the use should be ‘in pursuit of a legitimate aim’, and information supporting a surveillance camera system should be ‘accurate and kept up to date’ (Home Office 2019: 10).

The Code 'provides guidance on the appropriate and effective use of surveillance camera systems by relevant authorities' (Home Office 2021: 6).¹⁰ It also states that 'other operators and users of surveillance camera systems in England and Wales are *encouraged to adopt the code voluntarily*' (Home Office 2021: 6, emphasis added).

The Code applies to overt surveillance, and notes that the 'government is fully supportive of the use of overt surveillance camera systems in a public place whenever that use is: in pursuit of a legitimate aim; necessary to meet a pressing need; proportionate; effective, and compliant with any relevant legal obligations' (Home Office 2021: 6).

The Code specifies that 'covert surveillance by public authorities (as defined in Part II of RIPA 2000) is not covered by this code but is regulated by [RIPA 2000](#)' (Home Office 2021: 7).

The Civil Aviation Authority (CAA), data protection and privacy

CAP722 Unmanned Aircraft System Operations in UK Airspace notes that the 'CAA's remit is limited to safety' and 'does not include concerns over privacy or broadcast rights' (CAP 722: 23). It continues that while the 'capture of images or other data solely for the use of controlling or monitoring the aircraft is not considered to be applicable to the meaning of 'a sensor able to capture personal data'', drone flyers should 'be aware that the collection of images of identifiable individuals, even inadvertently, when using surveillance cameras mounted on [drones], may be subject to the General Data Protection Regulation and the Data Protection Act 2018' (CAP 722: 20). It advises that 'further information about these regulations and the circumstances in which they apply can be obtained from the Information Commissioner's Office' (CAP 722: 20).

In the **Drone and Model Aircraft Code** (applying to flights in the Open category, A1 and A3), the CAA provides guidance on 'protecting people's privacy', advising flyers to:

- 'Respect other people and their privacy: 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', adding that 'it's against the law to take photographs or record video or sound for criminal or terrorist purposes' and 'any photos or recordings you take may be covered by the General Data Protection Regulation (GDPR)';
- To understand what your camera 'can do and the kind of images it can take' (e.g., 'what quality you can record, how close your camera can zoom in, if you can start and stop recording when you are flying'), a step which it states 'will help reduce the risk of taking photos or recording videos that invade privacy'; 2 3 19
- Alongside being 'clearly seen when you're outside flying' so that people are aware of who is 'responsible for' the drone, flyers should 'let people know' before they 'start recording or taking pictures', though acknowledge that this can be 'less practical' in some instances;
- That flyers should 'think before sharing photos and videos' (e.g., to 'social media'), and 'avoid sharing anything that could be unfair or harmful to anyone'

¹⁰ Relevant authorities are defined in Article 33(5) in the Protection of Freedoms Act 2012, and includes entities such as (but not limited to): local authorities, 'a police and crime commissioner', 'any chief officer of a police force in England and Wales', and any 'person specified or described by the Secretary of State in an order made by statutory instrument' (Protection of Freedoms Act 2012).

- And that drone imagery should be ‘stored safely’ and anything that is not needed should be deleted, adding that ‘if you record images for commercial use, you’ll need to meet further specific requirements as a data controller’.

Source: Drones and Model Aircraft Code (n.d)

Transportation of clinical samples- *Author’s note*

In the case of transporting clinical samples, these will identify patients and measures must be taken to ensure that the patient’s data is protected in the event of incident.

Planning

(Reproduced from UKRI Future Flight Challenge 2024 with references to out of scope Advanced Air Mobility removed and additions made for the recently published DfT [Future of Flight Action Plan](#))

A hierarchy of plans and policies form the planning policy framework. This begins at the local level, with the LPA local Development Plan and includes regionally and nationally set planning policies. Sector specific policies may also be identified as a material consideration. The aviation sector has its own suite of aviation policies that are applicable to the planning framework. Further commentary on this is provided below.

Development Plans typically set out strategic and non-strategic policies. Strategic policies establish an overall strategy for the pattern, scale and design of development in an area and the quantum of housing, employment and infrastructure required. Non-strategic policies support the strategic policies and relate to more detailed and site-specific matters including amenity, nature conservation, biodiversity, flooding, vehicle parking standards etc.

All plans when drafted need to be justified, with relevant and up-to-date evidence informing the Development Plan production process. Policies in local Development Plans should be reviewed and updated on a regular basis, for example in England, this should happen every five years.

The below sets out an example planning policy hierarchy, comprising national planning and aviation policy; the regional spatial strategy; and local planning policy. In practice, the set of policy applied to any drone proposals coming forward, would depend on where within the UK the proposals are to be located. These examples are considered representative of an existing framework with an established aviation and aviation related policy position.

- 1) National aviation policy
 - a) Aviation Policy Framework 2013
 - b) Jet Zero Strategy 2022
- 2) National planning policy
 - a) National Planning Policy Framework (England) 2023
 - b) Planning Practice Guidance (England) 2016 (last updated 2024)
- 3) Spatial Strategy (for London only)
 - a) The London Plan 2021
- 4) Local Development Plans (examples)
 - a) London Borough of Hillingdon
 - b) London Borough of Bromley
 - c) Cambridge City Council

From a national perspective, regardless of location across the UK, the same national aviation policy would apply to any aviation development coming forward.

Each of the four countries have their own national planning policy framework. This report has reviewed the national planning framework for England, as a case study, given the policy framework includes aviation specific policies.

The London Plan has been selected, as an example regional spatial strategy, given it has an existing policy on aviation, which has come about in response to Greater London's established network of aviation uses (e.g., Heathrow Airport, London Biggin Hill Airport, RAF Northolt, London City Airport and the London Heliport).

The local Development Plans selected represent local planning authority areas with an established aviation use within its boundary, and a known aviation policy position:

- Hillingdon: Heathrow Airport and RAF Northolt;
- Bromley: London Biggin Hill Airport; and
- Cambridge City Council: Cambridge Airport.

It is acknowledged that these aviation uses are examples of traditional aviation, and as such the corresponding planning policy will likely be cognisant of their 'traditional' nature – however, it is considered an appropriate 'test' as means to ascertain the current planning policy approach for aviation uses coming forward.

National Aviation Policy (relating to planning)

Aviation Policy Framework

The [Aviation Policy Framework](#) (APF) (2013) applies to the whole UK and is largely a 'Reserved Matter' that rests with the DfT and CAA. Reserved matters include safety regulation, economic regulation, aviation security, competition issues and international aspects of aviation policy (para. 5.2 and 5.23).

Land-use planning and airport surface access policies are devolved matters, and as such the APF sets out that, in preparing Development Plans, LPAs "...are required to have regard to policies and advice issued by the Secretary of State. This includes the Aviation Policy Framework." (para. 5.6).

The Aviation Policy Framework is therefore a material consideration in planning decisions in the context of drone infrastructure and operations. Whilst the APF does not contain specific policies relating to this technology, the policy objectives are relevant, including:

- A balanced approach to securing the benefits of aviation, whilst managing aviation's environmental impacts;
- Supporting growth and benefits of aviation – including benefits relating to UK GDP, employment, imports and exports, skills development and tourism (paras. 1.4-1.19);
- Tackling Climate Change – the objective is to ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions (para. 2.4);
- Noise and other environmental impacts – the Government's overall policy on aviation noise is to limit and, where possible, reduce the number of people significantly affected by aircraft noise.
- Working together – encouraging the aviation industry and local stakeholders to strengthen and streamline the way in which they work together.

Aviation Strategy

In 2018, the UK government commenced a review of its framework for aviation and the preparation of a new aviation strategy. The aim of the strategy is to achieve a 'safe, secure and sustainable aviation sector that meets the needs of consumers and a global, outward looking Britain'. The aviation strategy is supported by a series of consultations and documents. Those considered of most relevance to this paper include:

- [Flightpath to the future](#): a strategic framework for the aviation sector (May 2022)
- [Jet Zero strategy](#): delivering net zero aviation by 2050 (July 2022)
- [Future of Flight Action Plan](#) (March 2024)

Flightpath to the Future: a strategic framework for the aviation sector

Flightpath to the Future is a strategic framework to support the Department for Transport's (DfT) vision for a modern innovate and efficient aviation sector over the next 10 years. It sets out a 10-point plan on how government and industry can work together to deliver a successful aviation sector in the future. The 10-point plan covers the following areas:

Enhancing global impact for sustainable recovery

- 1) Recover, learn lessons from the pandemic and sustainably grow the sector.
- 2) Enhance the UK's global aviation impact and leadership.
- 3) Support growth in airport capacity where it is justified, ensuring that capacity is used in a way that delivers for the UK.

Embracing innovation for a sustainable future

- 4) Put the sector on course to achieve jet zero by 2050.
- 5) Capture the potential of new technology and its uses.

Realising benefits for the UK

- 6) Unlock local benefits and level up.
- 7) Unleash the potential of the next generation of aviation professionals.
- 8) Make the UK the best place in the world for general aviation.

Delivering for users

- 9) Improve the consumer experience.
- 10) Retain our world-leading record on security and safety with a world-leading regulator.

With respect to the fifth point, and specific to drones and AAM, the framework confirms that government will set out a direction, working closely with industry and the regulator, to develop and publish a plan for the Future of Flight. See Future of Flight Action Plan below.

This strategic framework confirms continued support for sustainable airport growth. The framework notes that government's existing policy frameworks on airport planning are considered to provide a robust and balanced framework for sustainable growth and continue to have full effect as a material consideration in decision-taking on applications for planning permission for airport expansion.

Specifically for drones, it commits to a joint statement with the Drones Industry Action Group that will set out commitment “to deliver the necessary policy and regulatory framework to realise the economic, social, and environmental benefits for the sector.” This is not yet published.

DfT 2022a

[Jet Zero Strategy](#)

The [Jet Zero Strategy](#) (JZS) (2022) sets out the Government’s strategic framework for decarbonising UK aviation by 2050. The JZS recognises the importance of zero emission aircraft and sets a strategic objective for zero emission routes connecting different parts of the UK by 2030 (p.43). It is also recognised that the adoption of novel new technologies will require the establishment of ground infrastructure at airports to handle new types of aircraft and fuel (para. 3.33). It makes specific reference to drones, noting:

‘Maximising opportunities: The Jet Zero transition presents unique opportunities to create new jobs, industries and technologies across the entire sector and UK whilst also decarbonising air travel. It also complements our vision to be a world leader in innovative technology and its uses, such as drones and advanced air mobility’ (para. 2.19).

At that time, Government stated that its plans to capture the potential of these technologies will be set out in the forthcoming Future of Flight Plan. See Future of Flight Action Plan below.

Similar to the ‘Flightpath to the Future: a strategic framework for the aviation sector’, the Jet Zero Strategy confirms continued support of airport growth where it is justified, and that the existing policy frameworks for airport planning provide a robust and balanced framework for airports to grow sustainably, within a set of strict environmental criteria.

The Jet Zero Strategy also confirms that ‘Government’s existing planning policy frameworks, along with the Jet Zero Strategy and the Flightpath to the Future strategic framework for aviation, have full effect and are material considerations in the statutory planning process for proposed airport development’ (para 3.61).

The Jet Zero Strategy states the following policy position with respect to ‘airport development’ coming forward (which would be relevant to drone proposals at airports):

“It is vital that local communities and the wider public have confidence that the impacts of airport expansion have been properly considered. Applicants should therefore provide sufficient detail regarding the likely environmental and other effects of airport development to enable communities and planning decision-makers to give these impacts proper consideration. Applicants should engage with the relevant planning authority at an early stage of the planning process to agree an appropriate approach” (para 3.62); and

“Planning authorities and applicants should consider all relevant policy, guidance and other material considerations that may assist appraisal for airport development proposals and decision-making. Applicants should clearly set out their approach and findings in an accessible way that can be easily understood by the general public and decision-makers. The Government recognises the importance of a clear and consistent approach in relation to the assessment of a development’s impacts in the process,

and will keep under review whether further guidance is needed to assist airport planning decision-making, with particular reference to environmental impacts” (para 3.63).

The Jet Zero Strategy does not expressly state whether these policies have been crafted using the lens of traditional aviation or whether they also contemplate new technology and its uses; much of the language suggests the former but there is also no rational reason why the policies would not apply to all ‘airport development’ – we consider, they do.

Future of Flight Action Plan

The DfT’s [Future of Flight Action Plan](#) 2024 sets out a pathway for achieving its strategic outcomes for UAS. These include:

- a framework for addressing legal implications of Future of Flight technologies, including over privacy and overflight in 2024
- Consider how the planning system can support delivery of infrastructure needed to enable the Future of Flight and make it work for communities through 2024 and 2025
- A National noise policy for UAS – To ensure UAS services are safe and acceptable for communities in 2025

DfT 2024

At this time, the legal frameworks that already exist will apply to planning applications for drone use until after these actions are complete.

Building Regulations

England and Wales (reproduced from HMG, 2020 with author comments on drone applicability) [The Building Act 1984](#) (the Building Act) is the most wide-reaching law controlling building in England. It sets the enforcement powers. [The Building Regulations 2010](#) (the Building Regulations) go into more detail about building work. Most building work carried out in England must comply with the [Building Regulations](#). The legal term ‘building work’ generally includes building new buildings, making buildings bigger, altering buildings and changing what they are used for. It also covers installing a ‘controlled service’ or a ‘controlled fitting’. These are defined in Annex 3 Controlled Service or Controlled Fitting. A replacement window is an example of a controlled fitting. A boiler is an example of a controlled service. ‘Renovation of thermal elements’ is also building work. This includes roofs or external walls. Those responsible for carrying out building work have a duty to meet the requirements of the [Building Regulations](#).

Generally, the [Building Regulations](#) set out the required standards for the building work. For example, a home must be insulated, but the [Building Regulations](#) do not tell you how you should do it. The approved documents give help for some common problems.

There are 15 technical requirements in Schedule 1 to the [Building Regulations](#). Each technical requirement corresponds to a letter – for example, Part B is fire safety. These set out some of the legal requirements of the [Building Regulations](#) – these are rules that must be followed. They are often referred to as technical requirements. In addition to these, there are some other requirements in the [Building Regulations](#). Some of these are about keeping energy use low. The people planning the work can decide how best to meet the rules, and there is guidance to help them (see the next section on

approved documents). Everyone involved in carrying out building work must obey the rules. That includes: the building owner, agents, designers, builders and installers. The [Building Regulations](#) also allow inspections and enforcement to take place. Building control bodies or building inspectors will need to be satisfied too. Building control bodies is the term used for the organisations which check or inspect building work.

Approved documents

The Building Act allows the government to publish approved documents. The government may also approve other guidance. The approved documents give more detailed advice on how to meet the legal requirements of the [Building Regulations](#) for some common situations. The approved documents should be useful for most domestic projects. The approved documents may not be relevant for all situations. Limitations on using the approved documents are discussed in Chapter 7 of volume 1 and Chapter F in Volume 2 of the [Manual to the Building Regulations](#). You do not have to follow the guidance in approved documents, but if you don't you need to be sure that your building work meets the legal rules.

Following the approved documents does not always guarantee that you are complying with the [Building Regulations](#). A list of the approved documents is set out in Table 1.1 of the [Manual to the Building Regulations](#) reproduced below. When working on a building that is already there, you should agree with the building control body the approach to standards.

Table 1.1 List of the approved documents and what they cover

| Dwellings | | Other buildings | |
|--|---|---|--|
| New | Existing ¹ | New | Existing ¹ |
| A: Structure | | | |
| B: Fire safety, Volume 1: Dwellings | | B: Fire safety, Volume 2: Buildings other than dwellings | |
| C: Site preparation and resistance to contaminants and moisture | | | |
| D: Toxic substances | | | |
| E: Resistance to the passage of sound | | | |
| F: Ventilation | | | |
| G: Sanitation, hot water safety and water efficiency | | | |
| H: Drainage and waste disposal | | | |
| J: Combustion appliances and fuel storage systems | | | |
| K: Protection from falling, collision and impact | | | |
| L: Conservation of fuel and power L1A New dwellings | L: Conservation of fuel and power L1B Existing dwellings | L: Conservation of fuel and power L2A New buildings other than dwellings | L: Conservation of fuel and power L2B Existing buildings other than dwellings |
| M: Access to and use of buildings Volume 1: Dwellings | | M: Access to and use of buildings Volume 2: Buildings other than dwellings | |
| P: Electrical safety – dwellings ² | | P: No approved document | |
| Q: Security – dwellings | Q: No requirement | Q: No requirement | |
| R: Physical infrastructure for high-speed electronic communications networks | | | |

NOTES:

1. The requirements that apply to material changes of use are covered in Table A2 in Volume 2.

2. Approved Document P provides guidance for other buildings if the supply is shared with a dwelling.

The regulation does not identify any specific measures for buildings accommodating the operation of drones. Considering the use of Lithium-Ion batteries and/or flammable fuels to power drones, [Approved Document B, Fire Safety Volume 2](#), is likely to be of significant importance to buildings used for drone operations. In particular, the requirements to manage the spread of fire in requirements B2 to B4 and provide access and facilities for the fire service in requirement B5 will be of key importance for drone operations.

Statutory undertakers and airport operators

Statutory undertakers are bodies that have been given statutory powers in relation to functions that are of a public character. Generally, they are utilities, telecoms companies or companies such as Network Rail, but you should check. Gas and electricity suppliers are not regarded as statutory undertakers under Section 4 of the Building Act.

A building that belongs to a statutory undertaker, the Civil Aviation Authority or an airport operator is exempt from the [Building Regulations](#) if both of the following apply:

- 1) The company uses the building for the purposes of its undertaking.
- 2) Any building owned by a statutory undertaker is not used as either of the following:
 - a) a house or hotel

- b) an office or showroom, unless it is part of a railway station or airport.

Exempt buildings

Regulation 9 of the [Building Regulations](#) exempts some small buildings, extensions, and buildings used for specific purposes from the [Building Regulations](#). Exempt buildings are defined in Schedule 2 to the [Building Regulations](#) and 31tilize313131 in Table A1 (reproduced below). The buildings must continue to meet the definitions in Schedule 2 after the works are complete.

| Table A1 Buildings exempt from the Building Regulations | |
|--|---|
| Class 1 | Buildings controlled under legislation for explosives, nuclear facilities or ancient monuments |
| Class 2 | Certain buildings not visited by people, such as plant rooms |
| Class 3 | Certain greenhouses, agricultural buildings and buildings for animals |
| Class 4 | Temporary buildings not intended to remain in situ for more than 28 days |
| Class 5 | Buildings used for site accommodation |
| Class 6 | Certain small detached buildings, generally without sleeping accommodation |
| Class 7 | Includes certain conservatories, porches and open-sided carports (see paragraphs A12 and A13). Any glazing in a Class 7 building must comply with the safety requirements of Schedule 1 to the Building Regulations, which are set out in Approved Document K (see K4 and K5) |
| <p>NOTE: If any water or electricity in an exempt greenhouse or building exempted under Class 6 or 7 is supplied from or shared with a dwelling, the work must comply with the requirements of Schedule 1 for water supply and electricity. See Regulation 9 of the Building Regulations and Approved Documents G (G1 and G3) and P (P1). Certain works may be carried out under a competent person scheme, and these works will not require Building Regulations approval.</p> | |

Scotland

[Building \(Scotland\) Act 2003](#) (the Building Act) is the most wide-reaching law controlling building in Scotland. It sets the enforcement powers. [The Building \(Scotland\) Regulations 2004](#) (the Building Regulations) go into more detail about building work.

The regulation does not identify any specific measures for buildings accommodating the operation of drones.

Amongst exempted buildings listed in Schedule 1 of the [Building Regulations](#), are temporary buildings which are defined as:

A building which, during any period of 12 months, is either erected or used on a site—

- (a) for a period not exceeding 28 consecutive days; or
- (b) for a number of days not exceeding 60,

and any alterations to such buildings.

If works change the occupancy or use of a building this may be considered a Conversion as listed in Schedule 2 of the [Building Regulations](#) and require compliance with the [Building Regulations](#).

An exemption from the [Building Regulations](#) that could be of note for drone related developments applies for a non-residential detached single- storey building having an area not exceeding 8 square metres.

A warrant may be required before starting building work. Exemptions for some simpler work are identified in Schedule 3 of the [Building Regulations](#), although the regulations still apply. Exceptions that could be of note for drone related developments are for non-residential building to which the public does not have access and single-storey buildings, having an area exceeding 8 square metres but not exceeding 30 square metres.

Regulation 6 of the [Building Regulations](#) gives some concessions to Limited Life Buildings that are intended to have only a life span of less than five years. These concessions only apply to buildings which are not dwellings. The concessions are:

- Standard 3.1 Site preparation – harmful and dangerous substances in schedule 5 allows a lesser standard for the treatment of the site;
- Section 6 Energy, indicates that less demanding U-values can be adopted for the insulation envelope of certain types of limited life buildings, other than dwellings and residential buildings and
- Section 7 Sustainability, does not apply.

Building standards applicable to design and construction are identified in Schedule 5 of the [Building Regulations](#). Considering the use of Lithium-Ion batteries and/or flammable fuels to power drones, those relating to fire in Section 2 and noise in Section 5 are likely to be of significance for landing, take-off, storage and charging facilities.

Guidance on how to comply with the [Building Regulations](#) is provided in the [Domestic Technical Handbook April 2024](#) and the [Non-domestic Technical Handbook April 2024](#). Each includes Sections 1 to 7 giving guidance on how to achieve the standards set by the regulations. The seven sections each cover a number of related standards. They are:

- Section 1 Structure
- Section 2 Fire
- Section 3 Environment
- Section 4 Safety
- Section 5 Noise
- Section 6 Energy
- Section 7 Sustainability

Northern Ireland

[The Building Regulations \(Northern Ireland\) Order 1979](#)

[The Building Regulations \(Northern Ireland\) Order 1979](#) (the Order) gives the Department of Finance, Northern Ireland (the Department), the power to make building regulations. It permits the Department of Finance to prepare and publish guidance with respect to the requirements and sets out its responsibilities of consultation.

The Order sets out the approval and enforcement powers of district councils and the powers of relaxation of the Department.

Schedule 1 of the Order sets out the matters in regard to which building regulations may be made. Likely to be of particular interest relating to drone infrastructure are the following paragraphs:

- 4 – Fire precautions;
- 7 – Measures affecting the transmission of sound;
- 13 – Installations utilizing solid fuel, oil, gas, electricity or any other fuel or power;
- 14 – Communications services] (including telephones and radio and television wiring installations) and

Department of Finance, Northern Ireland, (1979)

[*The Building Regulations \(Northern Ireland\) 2012*](#)

[The Building Regulations \(Northern Ireland\) 2012](#) (the Regulations) define “work” as the erection of a building, the alteration or extension of a building, the execution of works, the installation of a fitting or the making of a material change of use (within the meaning of the [Building Regulations \(Northern Ireland\) 1990\(1\)](#)).

Considering the use of Lithium-Ion batteries and/or flammable fuels to power drones, Part E – Fire Safety likely to be of significance for landing, take-off, storage and charging facilities.

Notably, Part G – Resistance to the passage of sound, applies to dwelling or residential properties. It is considered to apply only if drone operations were conducted to or from buildings for these uses. Although regulation 49 requires provision for reasonable resistance to the passage of sound from other parts of the same building outside the dwelling or room for residential purposes and from adjoining buildings, no regulation protects other buildings from sound emanating from the building subject to the regulation.

If liquid fuel storage is required to support drone operations, Regulation 76, “An oil storage tank and connecting pipework shall be so constructed and protected as to utilize the risk of an escape of oil causing pollution to the environment.”, may apply.

Schedule 2 identifies classes of buildings exempted from the Regulations. Exemptions of note for particular drone applications are:

- Class 2 – Buildings used for the purpose of national security;
- Class 3 – Buildings not frequented by people
- Class 5 – Temporary buildings (not intended to remain where it is erected for more than 28 days)
- Class 6 – Ancillary buildings (to construction, mines or quarries)
- Class 7 – Small detached buildings
- Class 8 – Certain extensions
- Class 8(f) – Any part of an airfield which does not form part of, give support to or gain support from, a building to which these regulations apply and which is not required for the purposes of Part R (Access to and use of buildings) of the Regulations

- Class 8(g) – A structure (other than a chimney) not incorporating any covered space with headroom exceeding 1.5 m, except where the structure is attached to or within a building to which the regulations apply; a tower mast not attached to a building to which these regulations apply

Airports

Although it is anticipated that the majority of drone operations will not involve take off or landing at an airport, special regulations apply to airports that may be relevant.

[UK Reg \(EU\) No 139/2014](#) as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018 (CAA 2024c), sets out design requirements for Aerodromes and related [Guidance Material and Certification Specifications](#) (CAA n.d.j.), Chapter set out guidance and design rules for Aerodromes. Guidance is provided for the physical characteristics of the operating environment such as the design of operating areas, obstacle limitation surfaces and visual aids, as well as rescue and firefighting services rather than the regulate building works. These are relevant to operations of passenger aircraft and aircraft larger than drones. As such, they have little applicability. Further, it is envisaged that a minority of drone operations will be to or from aerodromes.

The CAA has recently consulted on proposals for existing aerodromes that wish to accommodate Vertical Take-Off and Landing (VTOL) aircraft (CAA n.d.k.) as it anticipates that flights of electric VTOL (eVTOL) aircraft will be from existing infrastructure. The findings of this consultation are expected to lead a performance-based design standard, which may require increased or decreased dimensions to those in [UK Reg \(EU\) No 139/2014](#). CAA n.d.k indicates that “The design proposals set out in this consultation will also form the initial basis of bespoke vertiport design ...”. As with current aerodrome regulation, planned regulation is expected to address the physical characteristics of the operating environment rather than regulate building work.

Electrical Inspection

Re: Battery charging regulations, on the basis that charging is via a standard type G socket on existing, single phase electrical infrastructure, the primary consideration is on the electrical inspection requirements (summarised in The Regulatory Framework table). There are recommendations for batteries to have health monitoring systems and 'safe' storage solutions, and especially for multiple charging stations, regulations may follow to meet fire regulations discussed above.

Electronic Communications

International Telecommunications Union (ITU)

The ITU and contracting States are required to ensure compliance with these requirements, typically through national legal instruments and enforcement. The ITU maintains the Radio Regulations, which among other things define:

- the allocation of different frequency bands to different radio services;
- technical parameters to be observed by radio stations, especially transmitters;
- procedures for coordination and notification of frequency assignments by States

CAA n.d.l.

The Communications Act 2003

The [Communications Act 2003](#), confers functions on Ofcom, amongst others: to make provision about the regulation of the provision of electronic communications networks and services and of the use of the electro-magnetic spectrum. (HMG 2003)

It requires Ofcom to take into account the different needs and interests, so far as the use of the spectrum for wireless telegraphy is concerned, of all those who may wish to make use of it.

Wireless Telegraphy Act 2006

[Wireless Telegraphy Act 2006](#) (the WTA) is the most relevant Act concerning enforcement.

Ofcom must have regard, amongst other things, to the extent to which the spectrum is available for use for wireless telegraphy and the demand for such use. It must also take into account the desirability of promoting the efficient management and use of the spectrum that is available for use for wireless telegraphy.

The way many different users utilize the spectrum has the potential to interfere with one another. Ofcom's statutory duties require it to balance the needs and interests of the different spectrum users and uses. Importantly, none of these duties require it to eradicate all interference and guarantee any particular user interference-free spectrum use. The WTA sets up a statutory scheme for managing that issue.

Section 8 of the WTA sets up a scheme for licensing spectrum use. Users must either have a licence for their spectrum use, issued by Ofcom, or be exempt from the need for a licence under regulations we have made.

Under section 54 of the WTA, Ofcom can make regulations which set requirements to ensure that, when it is used, apparatus does not cause undue interference to wireless telegraphy. Ofcom has made the [Wireless Telegraphy \(Control of Interference from Apparatus\) Regulations 2016](#). Very broadly, these apply to certain kinds of apparatus. Under section 55, Ofcom can serve prohibition notices which prevent a person using equipment that causes certain kinds of undue interference. Failure to comply is a criminal offence under section 58.

The WTA contains specific definitions of "Interference" and "undue" and "harmful" interference. Those are quite detailed, but the former covers situations where electromagnetic energy or signals cause all or part of a wireless communication to be compromised. Such interference is "undue" and "harmful" if it endangers navigation or safety of life services or degrades, obstructs or repeatedly interrupts lawful wireless telegraphy transmissions.

(Ofcom n.d.)

Radio Equipment Regulations 2017: Great Britain and Radio Equipment Regulations 2017: Northern Ireland

The [Radio Equipment Regulations 2017: Great Britain](#), applies to radio equipment supplied in or into Great Britain.

The Radio Equipment Regulations 2017 implemented Directive 2014/53/EU on radio equipment. The EU Withdrawal Act 2018 preserved the Regulations and enabled them to be amended so as to continue to function effectively now the UK has left the EU.

HMG 2023a

The [Radio Equipment Regulations 2017: Northern Ireland](#), applies to radio equipment supplied in or into Northern Ireland.

Radio equipment placed on the NI market must follow UK law as it applies to NI. The relevant law is the Radio Equipment Regulations 2017, which apply across the UK but some of their provisions apply differently in NI so that they implement in NI Directive 2014/53/EU on radio equipment.

HMG 2023b

These set essential requirements for safety and health, electromagnetic compatibility, and the efficient use of the radio spectrum. It also provides the basis for further regulation governing some additional aspects. These include technical features for the protection of privacy, personal data and against fraud. Furthermore, additional aspects cover interoperability, access to emergency services, and compliance regarding the combination of radio equipment and software.

As such, the regulations are largely concerned with the design and labelling of equipment and software.

EU 2014

[The Civil Aviation Authority](#)

Under agreement with Ofcom and the Ministry of Defence, CAA is the band manager for several sets of radio spectrum frequencies, including:

- 117.975 – 137.000 MHz (VHF Aeronautical communications)
- 960-1164 MHz (Distance Measuring Equipment and Secondary Surveillance Radar)
- 2.7-2.9 GHz (Primary Surveillance Radar)

As band manager, CAA assigns frequencies for UK aeronautical use in these bands and ensure that users of this band meet the safety requirements of the aeronautical sector, including the UK's international obligations under ICAO.

In the event Secondary Surveillance Radar (SSR) being used to detect and track drones, operators must apply to the CAA to operate them using [DAP 1910](#) for ground based platforms and [DAP 1911](#) for maritime or airborne platforms (CAA n.d.I.). The application procedures and the basic planning principles are set out in CAP 761 (CAP 761).

CAA n.d.I.

Automatic dependent surveillance—broadcast (ADS-B) is a means by which aircraft, aerodrome vehicles and other objects can automatically transmit and/or receive data such as identification, position and additional data, as appropriate, in a broadcast mode via a data link (Skybrary n.d.). Other aircraft electronic conspicuity systems exist including [FLARM](#), Power FLARM, [Pilot Aware Rosetta](#), [Sky Echo 2](#).

In ground applications, such devices are likely to be receivers only and therefore not the concern of the CAA regulation.

[CAP 670](#) is applicable if the receiver data is to be used for Air Traffic Control (ATC) purposes as ‘assured surveillance data’.

Carriage of dangerous goods

Technical Instructions for the Safe Transport of Dangerous Goods by Air’ (Doc 9284)

Doc 9284 amplifies the principles governing the safe transport of DG by air are described in Annex 18 to the Convention on International Civil Aviation (the Chicago Convention) (the Technical Instructions).

These technical instructions are reproduced in the Dangerous Goods Regulations (DGR) published by the International Air Transport Association (IATA).

IATA Dangerous Goods Regulations (DGR)

The DGR sets out:

- **Applicability** - (shipper and operator responsibilities, training, security, incident reporting)
- **Limitations** - (forbidden and hidden goods, storage and transport quantities, transport by post, transport by passengers/crew)
- **Classification** - (explosives, gases, flammable, toxic, oxidizing, radioactive and corrosive and multiple hazard material)
- **Packing Instructions** - (explosives, gases, flammable, toxic, infectious, oxidizing, radioactive and corrosive and multiple hazard material)
- **Packaging Specifications** - (inner, UN, construction and testing, limited quantity)
- **Documentation** - (shipper’s declaration, air waybill)
- **Handling** - (storage, loading, inspection, information provision, reporting, training, document retention)
- **Radioactive material** - (transport, limitations, classification, identification, packing, testing, labelling, documentation, handling)

IATA 2024a

The DGR defines what cannot be carried by air and dangerous goods (DG) that can with appropriate procedures, training, packaging, labelling and declarations. These are offered by material name and United Nations (UN) ID number. Materials not listed are classified by properties.

Exceptions to the DGR may be applicable when carrying small quantities of DG.

IATA 2024b

GROTE et al 2021, observed that at the time, these DG regulation had been developed “...exclusively from the perspective of their application to crewed aircraft. Consequently, carriage of DG by uncrewed aircraft is a new area in terms of regulation and governance, and it is unclear how the current DG regulations should apply.” At this time, CAP2248 Fundamentals: Carriage of Dangerous Goods by Remotely Piloted Aircraft Systems, had been issued but not CAP2555 Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category.

Air Navigation (Dangerous Goods) Regulations 2002

The Air Navigation (Dangerous Goods) Regulations 2002 effectively enacts the IATA DGR in the UK and sets out requirements relevant to carriage of DG by drone for:

- Approval of operator
- Prohibition of carriage of dangerous goods and exceptions
- Provision of information to crew (including ground crew) etc
- Acceptance of dangerous goods by the operator
- Method of loading
- Inspections by the operator for damage, leakage or contamination
- Removal of contamination
- Shipper's responsibilities
- Pilot in Command's duty to inform air traffic services in the event of an in-flight emergency
- Provision of training
- Keeping of documents and records
- Production of documents and records
- Powers of enforcement
- Occurrence reporting
- Exceptions for
 - dropping articles for agricultural, horticultural, forestry or pollution control purposes
 - Police aircraft

CAP2248 Fundamentals: Carriage of Dangerous Goods by Remotely Piloted Aircraft Systems [CAP 2248 - Carriage of Dangerous Goods by Remotely Piloted Aircraft Systems \(CAP 2248\)](#) was created by CAA Innovation to support carriage of UN3373, Biological Substances, Category B, during COVID relief efforts.

CAP2555 Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category

In 2023, the CAA published [CAP2555 Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category](#). This is guidance rather than regulation and it is the CAA's intention to update the relevant regulations so that they are also applicable to the carriage of DG by air with UAS/RPAS with due regard to proportionality.

It expands the scope and content of CAP 2248 to enable the carriage of DG, in addition to UN3373 Biological Substances, Category B by UAS.

Since drones not in the Certified Category carrying DG fall into the Specified Category, (see Understanding Drone Categories, they would be covered by CAP2555.

It relies upon the Technical Instructions to define DG and states that:

"To the extent possible, the full scope of Technical Instructions should be complied with. However, considering the differences in the type of operations carried out by UAS\RPAS and the type/s of aircraft involved, there may be circumstances when the full provisions of the Technical Instructions are not appropriate or necessary.

In such circumstances and when appropriate, the CAA may grant an alleviation in the Operational Authorisation to permit the carriage of DG without all the requirements of the Technical Instructions being fulfilled, provided an equivalent level of safety can be achieved. The applicable conditions will be described in the approval document (Operational Authorisation)."

CAP255 sets out the guidance for:

- use of a crash-protected container where there is a high risk to third parties in the event of a crash. A crash-protected container is not required if the excepted quantities of DG in Division 6.2, Category B as defined by the Technical Instructions are carried;
- applying the national regulations for each of the other modes of transport in the case of multimodal transport;
- recommended structure and content for a Dangerous Goods Procedures Manual;
- a risk assessment in accordance with the requirements of [UK Regulations \(EU\) 2019/947](#), Article 11 to obtain approval to carry DG in the Specific Category;
- documenting and implementing an Emergency Response Plan (ERP) in accordance with Part 7; 4.7 and 7; 4.9 of the Technical Instructions;
- training and
- documents to be held.

CAP2555

Environmental

[Environment Act \(2021\) Chapter 30](#)

(Reproduced from ('[Legislation.gov.uk Environment Act 2021](#)'))

The '[environment act](#)' is to make provisions about target plans and policies for improving the natural environment as well as statements and reports about general environmental protection and office for environmental protection about waste and resource efficiency; air quality for products for such which do not meet the environmental standards; water, nature and biodiversity; for conservation covenants about regulation of chemicals and for connected purposes.

[Nature Conservation Scotland \(2004\) Act](#)

(Reproduced from ('[Legislation.gov.uk Nature Conservation \(Scotland\) Act 2004](#)'))

The '[nature conservation \(Scotland\) Act 2004](#)' is designed to conserve the biodiversity as well as protecting as well as enhancing the geological natural heritage of Scotland. With this current act it provides the principle legislative components of a newer integrated system for nature conservation within Scotland.

The act has been incremented to five parts and contributions to the new system for nature conservation by means of the new measures as well as the amendments to the existing legislation.

Transport Act 2000

[Section 70\(2\) of the Transport Act 2000](#) requires the Civil Aviation Authority (CAA) to take account of any guidance on environmental objectives given to it by the Secretary of State (SoS) when carrying out its air

navigation functions. These functions are set out in the SoS's Air Navigation Directions, made under [sections 66\(1\) and 68 of the Transport Act 2000](#).

The general noise overview for aviation / aircrafts as for the [Transport Act 2000 \(more info under section 66\)](#) has been directed on behalf for the CAA meaning the CAA states for rule has to be followed in aircraft noise.

The Civil Aviation Authority

The CAA helps with regulation relating to noise. The work on aviation is divided into 3 main categories:

- Regulatory Function - Questions as to decision of changing controlled airspace in accordance with the CAA statutory functions which includes obligation to consider the Air Navigation Guidance 2017 (set for in CAP1616).
- Commercial Function – Monitoring of noise around UK airports. Publishing the information around noise. Advising the noise management and mitigation.
- Advisory Functions – Collaboration and review of research of effects of noise and how it can be minimised and providing guidance on the effects and other relevant material.

CAA n.d.m

The CAA does not make decisions about the amount of noise which is measured to be damaging or annoying to people or make decisions about plans for airports for example, expansions.

The CAA has an expertise in the area:

- Monitoring Noise
- Noise contours
- Noise effects
- The development and analysis of noise
- Assessment of the environmental impacts of noise along with the certification

Within the government aviation policy framework, the aim is stated to be “...limit and where possible to reduce the number of people in the UK significantly affected by aircraft noise”

The way in which it is plans are being worked through includes:

- Planning Decisions – different planning policies throughout the country covering Scotland, England and Wales. All broadly aimed to limit the impact of noise in any new development.
- Working closely with aviation industry this development of quieter aircrafts as well as supporting the airport operators to enforce a quite environment.
- Through the CAA's work to license airports and airlines, applying laws on the aircrafts and managing airspace – all to help reduce the impact of aircraft noise.

Central Government is responsible for managing noise at three large UK airports which are designated as for the strategic importance. The airports are Heathrow, Gatwick and Stansted.

[Air Navigation Guidance 2017](#)

There is currently no specific noise regulation on drone aviation however there is '[Air Navigation Guidance 2017](#)' which is produced by Department for Transport.

The Air Navigation Guidance 2017 gives no guidance for drone aviation. The majority of the noise issues are measured for only airports and aviation surrounding airports being focussed on more traditional forms of aviation.

This guidance is for the CAA on the environmental objectives when air space functions are carried out as well as the CAA in general and wider industry on airspace and noise management. This covers noise and other general aviation functions.

When proposing an airspace change, CAP 1616 provides guidance to change sponsors, including how to explain the consideration and assessment the likely noise impact of proposals. (CAP 1616)

CAP 2505 provides an overview of current state of knowledge concerning eVTOL aircraft noise and the potential impacts it has on people. The information and findings are summarised from conferences including Internoise and [Quiet Drones](#) as well as publications.

CAP 2506 states it "...presents a review of literature on noise emissions from eVTOL aircraft. The outcome of the review is the provision of suitable data to support the development of a CAA noise modelling capability for UAS operations. Information obtained from the review will also inform CAA guidance to assist airspace change sponsors with noise assessments for their UAS activities."

It points out that "eVTOL...aircraft in the UK, for example, are not subject to noise certification requirements... as a result limited data exists on their noise characteristics"

It is stated that this is ongoing research, more findings are due to be expected with effects of eVTOL at further conferences with attendance from the CAA. The further research will help prove importance for developing noise policy and legislations for eVTOL aircrafts. (CAP2506)

CAP 2620 is largely focused on large commercial aircraft. However, it does recommend "...that further research is conducted into the environmental impacts associated with new and emerging technology so that future environmental policy is informed by an extensive evidence base." This is without specifically mentioning drones. It points at that ICAO is considering developing noise standards for 'Emerging Aircraft Technology' and cites the ICAO "[Noise from Emerging Technology Aircraft](#)" webpage.

In the area of "...aircraft noise, ICAO is following up possible environmental issues from the operation of Emerging Technology Aircraft (ETA), including urban air mobility concepts, unmanned aircraft and remotely piloted aircraft... This information will be consolidated as a potential best practice guidance for States." (ICAO n.d.a)

The Air Navigation Order 2016

Prohibited Areas are established by secondary legislation under article 239 of the Air Navigation Order 2016 (ANO) and usually apply to all aircraft as defined in the ANO.

There are number of Prohibited Areas throughout the UK which apply to both unmanned and manned aircrafts. Some of these are for environmental reasons.

Some prohibited areas include:

- Airports
- Heliports
- National Parks
- Wildlife Refuges

On the disturbance of wildlife and animals, the CAA states that flights may be restricted at 'Sites of Special Scientific Interest' (SSSI).

Byelaws

Local authorities and some many landowners prohibit the use of drones over their land without permission, some with the power of byelaws. This is very often for environmental reasons, largely, the protection of wildlife. For example, "National Park Byelaws prohibit the use of drones and model aircraft on or over any common land within the National Park, except with prior written authority from the National Park Authority."

Abbreviations

| | |
|-------|---|
| AAM | Advanced Air Mobility |
| ADS-B | automatic dependent surveillance—broadcast |
| ANO | Air Navigation Order |
| APF | Aviation Policy Framework 2013 |
| BSCC | Biometrics and Surveillance Camera Commissioner |
| BVLOS | Beyond Visual Line of Sight |
| CAA | Civil Aviation Authority |
| CAEP | Committee on Aviation Environmental Protection |
| CAP | Civil Aviation Publication |
| DAA | Detect and Avoid |
| DfT | Department for Transport |
| DPA | Data Protection Act 2018 |
| DPIA | Data Protection Impact Assessment |

| | |
|-----------|--|
| DEFRA | Department for Environment, Food and Rural Areas |
| DSIT | Department of Science, Innovation and Technology |
| EC | Electronic Conspicuity |
| EECC | European Electronic Communications Code |
| EU | European Union |
| eVTOL | Electronic Vertical Take-Off Landing |
| GPDO | General Permitted Development Order |
| GDPR | General Data Protection Regulation |
| HRRB | Higher-Risk Residential Building |
| ICAO | International Civil Aviation Organisation |
| ICO | The Information Commissioner's Office |
| ITA | International Telecommunications Union (of the United Nations) |
| JZS | Jet Zero Strategy 2022 |
| LPA | Local Planning Authority |
| MAA | Midlands Aerospace Alliance |
| Ofcom | Office of Communications |
| PD rights | Permitted development rights |
| RIPA | Regulation of Investigatory Powers |
| RPAS | Remotely Piloted Aircraft Systems |
| SARP | Standards and Recommended Practice |
| SoS | Secretary of State (SoS) |
| SSR | Secondary Surveillance Radar |
| SSSI | Site of Special Scientific Interest |
| TCPA | Town and Country Planning Act 1947 |
| TMZ | Transponder mandatory zone – an airspace of defined dimensions wherein the carriage and operation of pressure-altitude reporting transponders is mandatory (CAP 2533) |
| TRA | Temporary Reserved Areas – an airspace that is temporarily reserved and allocated for the specific use of a particular user during a determined period of time and through which other traffic may or may not be allowed to transit in accordance with the air traffic management arrangements notified for that volume of airspace (CAP 2533) |

| | |
|------|---|
| UAS | Uncrewed Aircraft System/Unmanned Aerial System |
| UN | United Nations |
| VLOS | Visual Line of Sight |
| VTOL | Vertical Take-Off and Landing |
| WTA | Wireless Telegraphy Act 2006 |

References

[Apian.aero/solent](https://apian.aero/solent), accessed 6th February 2024

BSI (2022) BS 7671:2018+A2:2022 <https://knowledge.bsigroup.com/products/requirements-for-electrical-installations-iet-wiring-regulations-3?version=standard>

CAP1616 (2023) CAP 1616: Airspace Change Request - [CAP 1616 - Airspace Change Process \(caa.co.uk\)](https://www.caa.co.uk/publications/cap1616)

CAP 1789A (2022) Unmanned Aircraft Systems – Consolidated version of Regulation (EU) 2019/947 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018
https://publicapps.caa.co.uk/docs/33/CAP_1789A_UAS_IR2019_947.pdf

CAP 1789B (2022) Unmanned Aircraft Systems – Consolidated version of Regulation (EU) 2019/945 as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018
<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=9655>

CAP2012 (2022) CAP2012: Drone Rules: REQUIREMENTS FOR FLYING IN THE OPEN CATEGORY
<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=9954>

CAP2248 (2021) Carriage of dangerous goods by Remotely Piloted Aircraft Systems. The Civil Aviation Authority <https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=10842>

CAP 2505 (2023) CAP 2505: Emerging Technologies: the effects of eVTOL aircraft noise on humans - <https://www.caa.co.uk/publication/download/20247>

CAP 2506 (2023) CAP 2506: Noise measurements from eVTOL aircraft: A review of available data - [Noise measurements from eVTOL aircraft: A review of available data \(caa.co.uk\)](https://www.caa.co.uk/publication/download/20248)

CAP2533 (2023) Airspace Policy Concept: Airspace Requirements for the Integration of Beyond Visual Line of Sight (BVLOS) Unmanned Aircraft
[https://www.caa.co.uk/publication/download/20293#:~:text='Temporary%20Reserved%20Area%20\(TRA\),management%20arrangements%20notified%20for%20that](https://www.caa.co.uk/publication/download/20293#:~:text='Temporary%20Reserved%20Area%20(TRA),management%20arrangements%20notified%20for%20that)

CAP2555 Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category
<https://www.caa.co.uk/publication/download/20558>

CAP2569 (2023) Call for Input: Review of UK UAS Regulations
<https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=12283>

CAP2609: Call for Input Response Summary

<https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=12449>

CAP2610: Consultation Review of UK Unmanned Aircraft Systems (UAS) Regulations

<https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&pagetype=65&appid=11&mode=detail&id=12450>

CAP2620 (2023) CAP2620: UK Aviation Environmental Review 2023

[UK Aviation Environmental Review 2023 \(caa.co.uk\)](https://www.caa.co.uk/uk-aviation-environmental-review-2023)

CAP670 (2019) Air Traffic Services Safety Requirements

<https://www.caa.co.uk/our-work/publications/documents/content/cap-670/>

CAP 722 (2022) CAP 722: Unmanned Aircraft System Operations in UK Airspace – Guidance

<https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415#:~:text=Description%3ACAP%20722%20provides%20guidance,development%20and%20operation%20of%20UAS>

CAP 761 Operation of IFF/SSR interrogators in the UK: Planning principles and procedures

<https://www.caa.co.uk/publication/download/13116>

Civil Aviation Act 1982 <https://www.legislation.gov.uk/ukpga/1982/16/contents>

Civil Aviation Act 1982 <https://www.legislation.gov.uk/ukpga/1982/16/contents>

Civil Aviation Authority (2022), Air Navigation (Dangerous Goods) Regulations 2002, last accessed 9th

April 2024 <https://www.caa.co.uk/media/5u0pkgch/2002-2786-dangerous-goods-regulation-31-january-2023-version.pdf>

Civil Aviation Authority 2024a UK Future of Flight Action Plan

<https://assets.publishing.service.gov.uk/media/66018a4fa6c0f7bb15ef920a/future-flight-action-plan.pdf>

Civil Aviation Authority (2024b) Beyond Visual Line of Sight (BVLOS) challenge accessed 21st February 2024

<https://www.caa.co.uk/our-work/innovation/beyond-visual-line-of-sight-bvlos-challenge/>

Civil Aviation Authority 2024c Aerodromes

<https://regulatorylibrary.caa.co.uk/139-2014-pdf/PDF.pdf>

Civil Aviation Authority (n.d.) Our role (drones) <https://www.caa.co.uk/our-work/about-us/our-role/> (last accessed 18 July 2023)

Civil Aviation Authority (n.d.a) Introduction to drone flying and the UK rules

<https://www.caa.co.uk/drones/rules-and-categories-of-drone-flying/introduction-to-drone-flying-and-the-ukrules/> (last accessed 18 July 2023)

Civil Aviation Authority (n.d.b) Flying in the specific category <https://www.caa.co.uk/drones/rules-and-categories-of-drone-flying/flying-in-the-specific-category/> (last accessed 10 July 2023)

Civil Aviation Authority (n.d.c) Flying in the certified category <https://www.caa.co.uk/drones/rules-and-categories-of-drone-flying/flying-in-the-certified-category/> (last accessed 10 July 2023)

Civil Aviation Authority (n.d.i) Drone and remote piloted aircraft publications

<https://www.caa.co.uk/drones/updates-and-publications/drone-and-remote-piloted-aircraft-publications/> (last accessed 10 July 2023)

Civil Aviation Authority (n.d.j) CS and GM For Aerodromes Design

<https://regulatorylibrary.caa.co.uk/139-2014/Content/MC%20CS%20ADR%20GM/CERTIFICATION%20SPECIFICATIONS.htm>

Civil Aviation Authority (n.d.k) Vertiport Design Proposal for Existing Aerodrome

<https://consultations.caa.co.uk/air-traffic-management/vertiport-design-proposal-for-existing-aerodrome/>

Civil Aviation Authority (n.d.l.) Spectrum and Frequency Management

<https://www.caa.co.uk/commercial-industry/airspace/communication-navigation-and-surveillance/spectrum/spectrum-and-frequency-management/>

Civil Aviation Authority (n.d.m.) CAA noise advisory functions

<https://www.caa.co.uk/consumers/environment/noise/caa-noise-advisory-functions/>

Civil Aviation Authority (n.d.n) Airspace restrictions for remotely piloted aircraft and drones

<https://www.caa.co.uk/drones/airspace-and-restrictions/airspace-restrictions-for-remotely-piloted-aircraft-and-drones/>

Civil Aviation Authority (n.d.o) Procedure for coordination with service provider for operation in controlled airspace; AMC1 UAS.SPEC.040(1)(b) Operational Authorisation

[https://regulatorylibrary.caa.co.uk/2019-947/Content/AMC-GM/AMC1%20UAS%20SPEC%20040%201%20b%20Operational.htm#:~:text=AMC1%20UAS.-,SPEC.,1\)\(b\)%20Operational%20Authorisation&text=Any%20application%20for%20operation%20in,when%20operating%20within%20controlled%20airspace](https://regulatorylibrary.caa.co.uk/2019-947/Content/AMC-GM/AMC1%20UAS%20SPEC%20040%201%20b%20Operational.htm#:~:text=AMC1%20UAS.-,SPEC.,1)(b)%20Operational%20Authorisation&text=Any%20application%20for%20operation%20in,when%20operating%20within%20controlled%20airspace)

Civil Aviation Authority (n.d.o) Noise – Overview

<https://www.caa.co.uk/consumers/environment/noise/noise/>

Clyde & Co (2022, 23 March) Global Regulation of Drones

<https://www.clydeco.com/en/insights/2022/03/global-regulation-of-drones>

CURRAN, F., 2023, “‘World’s largest’ drone delivery trial to start in Blanchardstown”, newsTALK.com, 18th July 2023 (Manna)

Data Protection Act 2018 <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>

Dronamics.com. accessed 6th February 2024

Department of Finance, Northern Ireland, (1979) Building Regulations (Northern Ireland) Order 1979

<https://www.legislation.gov.uk/nisi/1979/1709/contents>

Department of Finance, Northern Ireland, (n.d.) Building Regulations in Northern Ireland

<https://www.finance-ni.gov.uk/articles/building-regulations-northern-ireland>

DfT (2017) Air Navigation Guidance 2017

<https://assets.publishing.service.gov.uk/media/5f624adae90e072bbae22c2c/air-navigation-guidance-2017.pdf>

DfT (2022a) Flightpath to the Future

<https://assets.publishing.service.gov.uk/media/628f7d26e90e07039f799ebc/flightpath-to-the-future.pdf>

DfT (2022b) Jet Zero Strategy. Delivery Net Zero by 2050

<https://assets.publishing.service.gov.uk/media/62e931d48fa8f5033896888a/jet-zero-strategy.pdf>

DfT (2024) UK Future of Flight Action Plan

<https://assets.publishing.service.gov.uk/media/66018a4fa6c0f7bb15ef920a/future-flight-action-plan.pdf>

Drone and Model Aircraft Code (n.d.) The Drone and Model Aircraft Code. The Civil Aviation Authority

https://register-drones.caa.co.uk/drone-code/the_drone_code.pdf

[England.NHS.uk](https://www.nhs.uk), accessed 6th February 2024

EU (2014) Radio Equipment Directive (RED)

https://single-market-economy.ec.europa.eu/sectors/electrical-and-electronic-engineering-industries-eei/radio-equipment-directive-red_en

Feild P (2019) Drones & Enforcement 2019 Legal Framework

<https://www.rtpi.org.uk/media/4069/paul-field-drones-royal-town-planning-2019.pdf>

GDPR-info.eu (n.d.) General Data Protection Regulation <https://gdpr-info.eu/>

Gov.UK (n.d.) Biometrics and Surveillance Camera Commissioner

<https://www.gov.uk/government/organisations/biometrics-and-surveillance-camera-commissioner>

Gov.UK (n.d.a) Data Protection <https://www.gov.uk/data-protection>

Gov.UK (2021) Surveillance Camera Code – summary of consultation responses

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/103507/8/SC_Code_-_summary_of_consultation_responses_2021.pdf

Grote, M.; Cherrett, T.; Oakey, A.; Royall, P.G.; Whalley, S.; Dickinson, J., 2021, “How Do Dangerous Goods Regulations Apply to Uncrewed Aerial Vehicles Transporting Medical Cargos?” Drones 2021, 5, 38.

<https://www.mdpi.com/2504-446X/5/2/38>

Health and Safety Executive (1989) The Electricity at Work Regulations 1989

<https://www.hse.gov.uk/pubns/priced/hsr25.pdf>

Health and Safety Executive (1998) Provision and Use of Work Equipment Regulations 1998 (PUWER)

<https://www.hse.gov.uk/work-equipment-machinery/puwer.htm#:~:text=PUWER%20requires%20that%20equipment%20provided,adequate%20information%2C%20instruction%20and%20training>

HMG (1974) Health and Safety at Work etc. Act 1974

<https://www.legislation.gov.uk/ukpga/1974/37/contents>

HMG (1984) Building Act 1984 <https://www.legislation.gov.uk/ukpga/1984/55>

HMG (1999) The Management of Health and Safety at Work Regulations 1999
<https://www.legislation.gov.uk/uksi/1999/3242/contents/made>

HMG (2000) Transport Act 2000 [Transport Act 2000 \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2000/2214/contents/made)

HMG (2003) Communications Act <https://www.legislation.gov.uk/ukpga/2003/21/contents>

HMG (2004) Nature Conservation (Scotland) Act 2004 [Nature Conservation \(Scotland\) Act 2004 - Explanatory Notes \(legislation.gov.uk\)](https://www.legislation.gov.uk/uksi/2004/2214/contents/made)

HMG 2010 Building Regulations 2010 <https://www.legislation.gov.uk/uksi/2010/2214/contents/made>

HMG (2013) Aviation Policy Framework
<https://assets.publishing.service.gov.uk/media/5a7aa94b40f0b66eab99bc3e/aviation-policy-framework.pdf>

HMG (2016) Air Navigation Order 2016
<https://www.legislation.gov.uk/uksi/2016/765/part/10/chapter/1/made?view=plain>

HMG (2017a) Radio Equipment Regulations 2017: Great Britain (2023) , Updated 7 November 2023
<https://www.gov.uk/government/publications/radio-equipment-regulations-2017/radio-equipment-regulations-2017-great-britain>

HMG (2017b) Radio Equipment Regulations 2017: Northern Ireland, Updated 7 November 2023
<https://www.gov.uk/government/publications/radio-equipment-regulations-2017/radio-equipment-regulations-2017-northern-ireland>

HMG (2018a) Aviation 2050 - The future of UK aviation
<https://assets.publishing.service.gov.uk/media/5c34aba0e5274a65b8ec7919/aviation-2050-web.pdf> ,
 last accessed 4th April 2024

HMG (2018b) Data Protection Act 2018 <https://www.legislation.gov.uk/ukpga/2018/12>

HMG (2020) The telecoms regulatory framework in the UK
<https://www.gov.uk/guidance/the-telecoms-regulatory-framework-in-the-uk>

HMG (2021) Environment Act 2021 [Environment Act 2021 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted)

HMG 2022 Building Safety Act 2022 <https://www.legislation.gov.uk/ukpga/2022/30/contents/enacted>

HMG (2022b) Manual to the Building Regulations
https://assets.publishing.service.gov.uk/media/64a59267c531eb000c64ff12/Manual_to_building_regs_-_July_2020.pdf

Home Office (2021) Surveillance Camera Code of Practice
https://assets.publishing.service.gov.uk/media/619b7b50e90e07044a559c9b/Surveillance_Camera_CoP_Accessible_PDF.pdf

House of Commons (2022) Draft legislation: The Air Navigation (Amendment) Order 2022
<https://www.gov.uk/government/speeches/draft-legislation-the-air-navigation-amendment-order-2022>

IATA 2024a, Dangerous Goods Regulations (DGR) webpage, last accessed 9th April 2024
<https://www.iata.org/en/publications/dgr>

IATA 2024b, Dangerous Goods Regulations (DGR) Edition 65

Available to purchase at <https://www.iata.org/en/publications/dgr>

ICAO (n.d.) Committee on Aviation Environmental Protection (CAEP)

<https://www.icao.int/environmental-protection/Pages/Caep.aspx>

ICAO (n.d.a) Noise from Emerging Technology Aircraft

https://www.icao.int/environmental-protection/Pages/noise_new_concepts.aspx, last accessed 15th April 2024

ICAO (n.d.b) Convention on International Civil Aviation - Doc 7300

<https://www.icao.int/publications/Pages/doc7300.aspx>

Information Commissioner's Office (n.d.a) A guide to the data protection exemptions

<https://ico.org.uk/fororganisations/uk-gdpr-guidance-and-resources/exemptions/a-guide-to-the-data-protection-exemptions/>

Information Commissioner's Office (n.d.b) What we do <https://ico.org.uk/about-the-ico/what-we-do/>

Information Commissioner's Office (n.d.c) Additional considerations for technologies other than CCTV

<https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/cctv-and-video-surveillance/guidanceon-video-surveillance-including-cctv/additional-considerations-for-technologies-other-than-cctv/#uas>

Information Commissioner's Office (n.d.d) CCTV and Video Surveillance

<https://ico.org.uk/fororganisations/uk-gdpr-guidance-and-resources/cctv-and-video-surveillance/>

Information Commissioner's Office (n.d.e) A guide to controllers and processors

<https://ico.org.uk/fororganisations/uk-gdpr-guidance-and-resources/controllers-and-processors/controllers-and-processors-aguide/>

Information Commissioner's Office (n.d.f) Right to erasure [https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/individual-rights/right-to-erasure/#:~:text=individual%20for%20ID%3F-](https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/individual-rights/right-to-erasure/#:~:text=individual%20for%20ID%3F-,What%20is%20the%20right%20to%20erasure%3F,time%20the%20request%20is%20received.)

[,What%20is%20the%20right%20to%20erasure%3F,time%20the%20request%20is%20received.](https://ico.org.uk/for-organisations/uk-gdpr-guidance-and-resources/individual-rights/individual-rights/right-to-erasure/#:~:text=individual%20for%20ID%3F-,What%20is%20the%20right%20to%20erasure%3F,time%20the%20request%20is%20received.)

Information Commissioner's Office (n.d.g) Special Category data [https://ico.org.uk/for-](https://ico.org.uk/for-organisations/ukgdpr-guidance-and-resources/lawful-basis/a-guide-to-lawful-basis/lawful-basis-for-processing/specialcategory-data/)

[organisations/ukgdpr-guidance-and-resources/lawful-basis/a-guide-to-lawful-basis/lawful-basis-for-processing/specialcategory-data/](https://ico.org.uk/for-organisations/ukgdpr-guidance-and-resources/lawful-basis/a-guide-to-lawful-basis/lawful-basis-for-processing/specialcategory-data/)

Information Commissioner's Office (n.d.h) Guidance on AI and data protection

<https://ico.org.uk/fororganisations/uk-gdpr-guidance-and-resources/artificial-intelligence/guidance-on-ai-and-data-protection/>

Informational Commissioner's Office (n.d.i) What is personal data? [https://ico.org.uk/for-](https://ico.org.uk/for-organisations/ukgdpr-guidance-and-resources/personal-information-what-is-it/what-is-personal-data/what-is-personal-data/)

[organisations/ukgdpr-guidance-and-resources/personal-information-what-is-it/what-is-personal-data/what-is-personal-data/](https://ico.org.uk/for-organisations/ukgdpr-guidance-and-resources/personal-information-what-is-it/what-is-personal-data/what-is-personal-data/) (last accessed 14 August 2023)

Information Commissioner's Office (n.d.j) Key data protection terms you need to know <https://ico.org.uk/for-organisations/sme-web-hub/key-data-protection-terms-you-need-to-know/> (last accessed 15 August 2023)

Information Commissioner's Office (n.d.k) What is a DPIA? <https://ico.org.uk/for-organisations/uk-gdprguidance-and-resources/accountability-and-governance/data-protection-impact-assessments-dpias/whatis-a-dpia/> (last accessed 4 August 2023)

International Telecommunications Union (ITU) About International Telecommunication Union, last accessed 26th March 2024
<https://www.itu.int/en/about/Pages/default.aspx>

[Jackman, A., Hooper, L \(2023\), "Drone incidents and misuse: Legal considerations", University of Reading, December 2023](#)

LEWIS, C., 2024, "Benchmarking Non-Aviation Regulation Relating to Urban Drone Use", Coventry City Council/Midlands Aerospace Alliance, 31st January 2024

Nature Scot (n.d.) Sites of Special Scientific Interest (SSSIs) <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest-sssis>

NO FLY DRONES, 2023, "No Fly Zones for Drones in the UK", <https://www.noflydrones.co.uk/> last accessed 6th November 2023

Northumbria Healthcare, 2023, "Key milestone for trail-blazing medical drones project as test flights start", 13th February 2023 <https://www.northumbria.nhs.uk>

Ofcom (n.d.) Rules on using radio equipment <https://www.ofcom.org.uk/spectrum/rules>

Office of the biometrics and surveillance camera commissioner (2023) Commissioner for the Retention and Use of Biometric Material Annual Report January 2021 – March 2022 And Surveillance Camera Commissioner Annual Report March 2021 – March 2022
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1135384/Biometrics_Surveillance_Camera_Commissioner_Annual_Report_21-22.pdf

Parliamentary Bills (n.d) Data Protection and Digital Information (No. 2) Bill
<https://bills.parliament.uk/bills/3430>

Practical Law (2023) Drones: Law in the UK. Simon Phippard, Bird & Bird
[https://uk.practicallaw.thomsonreuters.com/8-618-5239?transitionType=Default&contextData=\(sc.Default\)&firstPage=true](https://uk.practicallaw.thomsonreuters.com/8-618-5239?transitionType=Default&contextData=(sc.Default)&firstPage=true)

Protection of Freedoms Act (2012) <https://www.legislation.gov.uk/ukpga/2012/9/contents>
PWC, 2022, "Skies Without Limits V2.0", PWC, July 2022

Regulation of Investigatory Powers Act (2000) <https://www.legislation.gov.uk/ukpga/2000/23/contents>

ROSS, H., 2024, Future Flight Challenge, 2024, 3 Mile

Skybrary, (n.d.), "Automatic Dependent Surveillance - Broadcast (ADS-B)", last accessed 3rd April 2024
<https://skybrary.aero/articles/automatic-dependent-surveillance-broadcast-ads-b>

UKRI Future Flight Challenge (2024), FFC Community Integration Local Planning Guidance Paper - Draft
Iss 1. [Unpublished report]

Annex 1: Further information about Data Protection law in the UK

- The General Data Protection Regulation 'lays down rules relating to the protection of natural persons with regard to the processing of personal data and rules relating to the free movement of personal data' and 'protects fundamental rights and freedoms of natural persons and in particular their right to the protection of personal data' (Article 1, Regulation (EU) 2016/679). The GDPR 'does not apply to: the processing of personal data by an individual in the course of a purely personal or household activity' (Article 2, Regulation (EU) 2016/679) (GDPR-info n.d).
- In the context of drones, the Data Protection Act 2018 adds that 'part 2 supplements the GDPR' and 'applies a broadly equivalent regime to certain types of processing to which the GDPR does not apply (see Chapter 3)'. Chapter 3 (21) states that 'this Chapter does not apply to the processing of personal data by an individual in the course of a purely personal or household activity' (Data Protection act 2018).
- The 'Data Protection Act 2018 controls how your personal information is used by organisations, businesses or the government' (Gov.UK n.d.a). Those 'responsible for using personal data' must 'follow strict rules called data protection principles', which ensure that personal data is used:
 - fairly, lawfully and transparently;
 - for specified, explicit purposes;
 - in a way that is adequate, relevant and limited to only what is necessary;
 - accurate and, where necessary, kept up to date;
 - Kept in a form which permits identification of the data subject for no longer than is necessary and
 - handled in a way that ensures appropriate security, including protection against unlawful or unauthorised processing, access, loss, destruction or damage.

(Gov.UK n.d.a, (Article 5 GDPR)).

- As with GDPR, under the Data Protection Act 2018, 'you have the right to find out what information the government and other organisations store about you' (Gov.UK n.d.a). This includes the right to:
 - Be informed about how your data is being used
 - Access your personal data
 - Have incorrect data updated
 - Have data erased
 - Stop or restrict the processing of your data
 - Data portability
 - Object to how your data is being processed.
- There are additional rights where data is being used for automated processing or profiling.
- Where an exemption applies, compliance with GDPR is not required. Whether or not you can rely on an exemption often depends on why you process personal data' and 'if no exemption covers what you do with personal data, you need to comply with the UK GDPR as normal' (Information Commissioner's Office n.d.a). Exemptions are considered on a case by case basis and include provisions relating to:
 - Crime, law and public protection
 - Regulation, parliament and the judiciary

- Journalism, research and archiving
- Health, social work, education and child abuse
- Finance, management and negotiations
- References and exams
- Subject access requests where information about other people is requested
- National security and defence.

(Information Commissioner's Office n.d.a).

The exemptions most likely to affect drone usage are those relating to journalism, academia, art and literature and research.

Annex 2: UK General Data Protection Regulation (GDPR) guidance: The Information Commissioner's Office

- **'Personal data'** is 'information relating to an identified or identifiable natural person ('data subject')'. An 'identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person' (Information Commissioner's Office n.d.i). (UK GDPR article 4(1)).
- A **'data subject'** refers to 'someone who can be identified from personal data', they are the 'subject of that data' (Information Commissioner's Office n.d.j) (UK GDPR Article 4(1), Data Protection Act 2018 section 3(5)).
- The Information Commissioner's Office (ICO) distinguishes between a 'data controller' and a 'data processor'. A data controller 'has the responsibility of deciding how personal data is processed and protecting it from harm' (Information Commissioner's Office n.d.j). The data processor processes the data 'on behalf of the data controller', but still needs to 'protect people's private data' (Information Commissioner's Office n.d.j). 'Controllers can delegate the processing of personal data to data processors, but the responsibility for keeping it safe will still rest with the controller' (Information Commissioner's Office n.d.j).
- The ICO provides further information about **Data Protection Impact Assessments (DPIA)**, stating that 'a DPIA is a process designed to help you systematically analyse, identify and minimise the data protection risks of a project or plan. It is a key part of your accountability obligations under the UK GDPR, and when done properly helps you assess and demonstrate how you comply with all of your data protection obligations' (Information Commissioner's Office n.d.k). Crucially, conducting a DPIA is 'a legal requirement for any type of processing, including certain specified types of processing that are likely to result in a high risk to the rights and freedoms of individuals. Under UK GDPR, failure to carry out a DPIA when required may leave you open to enforcement action' (Information Commissioner's Office n.d.c). Undertaking a DPIA and 'considering the risks related to your intended processing before you begin' supports compliance with another general obligation under UK GDPR: data protection by design and default, which per article 25 states that: 'the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organisational measures... and... integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects' (Information Commissioner's Office n.d.k). Please note that the proposed Data Protection and Digital Information (No. 2) Bill would replace DPIAs with risk assessments, but at present the law remains DPIAs

Annex 3 Controlled Service or Controlled Fitting

The controlled service or fitting is defined in as:

- Sanitation, hot water safety and water efficiency – this includes hot water systems, WCs and washing facilities.
- Drainage and waste disposal – this includes drainage systems and septic tanks.
- Combustion appliances and fuel storage systems – this includes boilers, fireplaces, flues, air supply to combustion appliances and fuel tanks.
- Conservation of fuel and power – this includes heating and air conditioning systems, mechanical ventilation systems, external windows and doors and solar panels.
- Electrical safety – dwellings – this covers the fixed electrical system in dwellings or common parts of blocks of flats