Monthly Threat in Focus
December
Threat from Drones

Wilson James

Threat from Drones

1 DEFINITIONS, CLASSIFICATIONS AND THE LAW

2 WHY HOW, WHAT,
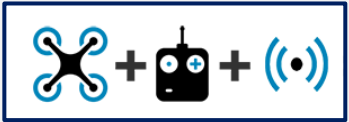
3 STATISTICS

4 CASE STUDIES

5 GUIDANCE

6 USEFUL RESPONSES

Wilson James

Unmanned Aerial Systems (UAS)

1. Unmanned Aircraft (UA)
2. Remotely Piloted Aircraft System (RPAS)
3. **Drones**

UAS are comprised of three key components:

1. An unmanned aerial vehicle (UAV) that operates without a pilot being on-board.
2. A ground control system (GCS) which allows the pilot to remotely control and or monitor the operation of the UAV.
3. A bi-directional link between the UAV and the GCS which provides control, status and imagery information.

CODE OF CONDUCT

Operators are:

1. Responsible for **flying safely** whenever they fly.
2. Responsible for keeping drones in **direct sight** and have full view of the surrounding airspace.
   - You must tell which way it's facing.
     - To steer and control it safely, especially if something happens unexpectedly.
3. **Flying with** the help of an **observer** - The observer does not need to have a flyer ID, but the operator must tell them what to look out for.
4. **Flying using first-person view (FPV)** - you must have an observer with you and follow the rules above for flying with the help of an observer.
5. You must be **aware** of where you **can or cant fly** including local by-laws.
6. Always keep a **safe distance** from people.
7. Do **not fly over crowds** of people.

CRIMINAL LIABILITY

1. If you **intentionally** or **recklessly hit someone** with your drone, you could be **liable for battery**, which carries both criminal and civil penalties.
2. If you **intentionally** or **recklessly damage** someone else's **property** with your drone, you could be **liable for criminal damage**.
3. If you **fly** your drone **without exercising** a **reasonable standard of care** and **injure someone or damage their property**, you could be **negligent and liable to compensate the victim** for personal injury or damage to property.
4. If you **fly your drone low over someone's land** without their permission, you could be **liable for trespass**, even if you do not personally go onto the land
5. Operator ID must be visible from the outside, or within a compartment easily accessed:
   - clear and in block capitals taller than 3mm
   - secure and safe from damage
   - on the main body of the aircraft
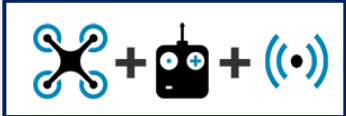
<250 Grams

1. You do not need to register your drone if it is a toy or doesn't have a camera.
2. If your drone has a camera you will need to register for an operator ID AND MUST BE DISPLAYED ON THE DRONE.
3. You must fly below the legal height limit of 120 meters.
4. You cannot fly over crowds of people, beaches, parks etc.
5. Stay well away from airports, airfields, spaceports and aircraft.
6. Follow any flying restrictions imposed for emergency incidents etc.

Drone & Model Aircraft Operator ID stickers

OPERATOR ID
OP-AB23C4D

OPERATOR ID
GBR-OP-ABCDEF123G4H

OPERATOR ID
OP-AB23C4D

OPERATOR ID
GBR-OP-ABCDEF123G4H

>250 Grams

1. You must fly below the legal height limit of 120 meters.
2. You must have both an Operator and Flyer ID.
3. Operator ID must be displayed on Drone.
4. You must not intentionally fly over individuals.
5. You cannot fly over crowds of people.
6. You must keep 150 meters away from:
   - Residential
   - Commercial
   - Industrial areas
7. Stay well away from airports, airfields, spaceports and aircraft.
8. Follow any flying restrictions imposed for emergency incidents etc.

EXAMPLE OF DRONE IDs

UNITED KINGDOM
Drone and model aircraft
Proof of completion of online training

Flyer ID
GBR-RP-ABCDEFGAA1X

First name: JOHN
Last name: SMITH

Expiry date: 01 January 2026

A1 & A3
OPEN
SUB
CATEGORY

SCAN ME

register-drones.caa.co.uk

EXAMPLES OF DRONES WEIGHING LESS THAN 250 GRAMS

CLASSIFICATION and DRONE TYPES

A1/A3 – Basic, low-risk flying

A2 – Slightly more risk than A1/A3

Specific – Moderate risk flying

Certified – High risk, complex flying

EXAMPLE OF DRONE IDs

DRONE PILOT IDENTIFICATION A1/A3
UNITED KINGDOM (UK)
01/01/2025
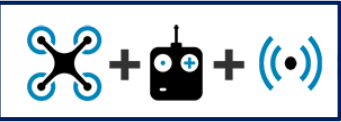
Name	John Smith
Flyer ID	GBR-RP-1234567891AA
Operator ID	GBR-OP-1234567891XX
Date Registered	01/01/2021

CARD HOLDER REGISTERED WITH CIVIL AVIATION AUTHORITY DATABASE

Threat from Drones – Who/How/What

Wilson James

WHO
- Hostile State Actors
- Terrorists
- Criminals: Serious/organised crime or lower level crime
- Protesters: Conducting unlawful protest, such as XR using drones at their Fawley refinery protest (see link).
- Journalists and others (such as social media (SM) auditors conducting unauthorised/nuisance surveillance)
- Negligent and reckless users

HOW
- Reconnaissance and surveillance – Most common threat and most difficult to identify. Used by terrorists and SM auditors alike.
- Smuggling – Across borders or into prisons
- Electronic attack – WiFi hacking drones
- Kinetic attack – Explosives, firearms
- WMD attack – Chemical agents such as Sarin Gas or radiation agents such as polonium dispersed via a drone

WHAT
WHAT CAN BE DONE TO MITIGATE AGAINST A DRONE THREAT

Electronic counter measures:
- **Geo fencing** – Location restrictions built into firmware of drone.
- **Spoofing** – Ability to 'fool' GPS on drone and take control of it. (can be used by threat actors).
- **Jamming** – Interrupt communication between Ground Control System and UAV.

Physical counter measures:
- **Lasers** - Directing a laser beam can confuse the drone sensor, blind the camera or melt the exterior affecting wiring. THIS IS NOT A RECOMMENDED MEASURE DUE TO IMPACT ON AIRCRAFTS.
- **SAM** – Surface to air missiles, used by Israel against drones from Gaza
- **Firearms** – NOT A RECOMMENDED METHOD DUE TO DANGER TO PUBLIC. Other alternatives include using nets.
- **Drone on drone** – Drone swarming or drones deploying nets.
- **Birds of Prey** – Training of Eagles and birds of prey to capture/attack drones.

LIMITATIONS: Physical size; Flight times 23-30mins (off the shelf drones); Weight reduces times and range.

Wilson James
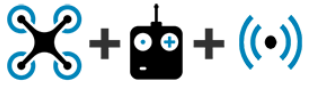
Over **76,000 drones**, operated by government and commercial organisations, are expected to be in used in the **UK by 2030**.

Hereford and Worcester is the **drone capital** of the UK, with the most UAV sales per capita in 2020

The Drone market **CAGR** is expected to grow by **2.21%** between **2022-27**

By **2030, 650,000 + jobs** in UK associated with Drone Industry

By **2030** the **Construction and manufacturing** industries are expected to **save GBP 8.6 Billion** using drone technology

The average **drone pilot** earns **£30,368** a year in the **UK**

By **2030 Drones** could contribute up to **£45bn** to the **UK economy**

The **largest** Drone **user age group** in the UK is:
over 55s (27%)
45-54 (25%)
35-44 (25%)
18-24 (7%).

By **2030 900,000+ drones** operating in the **UK.**

By **2025** the drone industry revenue is set to double from **GBP 22 Billion** in **2020** to **GBP 43 Billion**

By **2025 Asia** will dominate the drone market **taking GBP 17.89 Billion** of the GBP **43 Billion** global revenue in **2025**
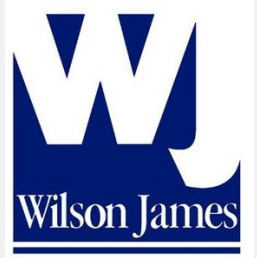
By 2030 Carbon emissions could be reduced by 2.4M tons in the UK

In **2020 70%** of **drones** sold were for **military use**

Men make up **95%** of drone **users** in the **UK**
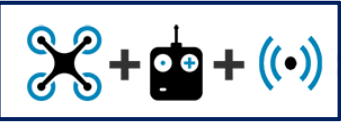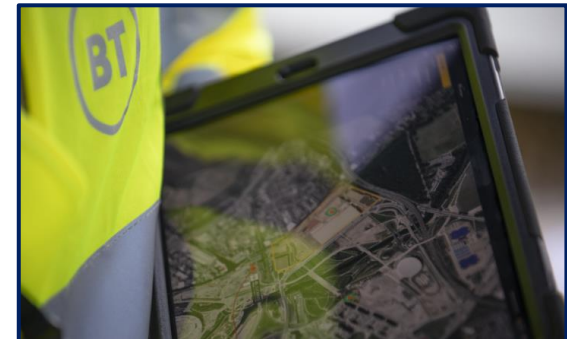
Threat from Drones –
Case Studies

Gatwick Shuts Runways for Three Days due to Drones – SussexLive

- In December 2018 over 1,000 flights were cancelled at Gatwick airport due to 115 'credible' reports of drones spotted flying over the airport.
- The sightings began on 19th December after a security officer spotted two UAS, prompting Gatwick authorities to close the runways and investigate the reports.
- The sightings continued until 21st December, seriously impacting holiday travel for 140,000 passengers.
- Following the incursions Gatwick took major steps to avoid a repeat of the disruption, investing in anti-drone technology to the tune of GBP Five million.

BT's Openreach Protects Broadband Cables with Drones – Telegraph

- BT's cable maintenance firm Openreach has taken to using drones to track and trace copper thieves ripping up their broadband cables for the valuable commodity with sells for almost GBP 7,000/tonne.
- Broadband copper cable theft can be both brazen and prolific, with thieves dragging cables across fields to rip them up and one particular cable being stolen four times in one month in Kent.
- The thefts leave communities without internet access and disrupts operations for critical infrastructure such as emergency services and lighthouses for example.
- Depending on the severity of the damage e.g. if the cable services a mobile phone mast, communities can face months of disruption and no access to the internet.
- Essex and Kent are copper cable theft hotspots.

Counter - Unmanned Aerial Systems (C-UAS) Plan

1. Conduct a **VULNERABILITY ASSESSMENT**
   - To assist your organisation understand the threat, intent and develop scenarios.
     - Identify type of drone and how it will be used.
     - Identify possible launch sites for drones.
   - To enable staff to identify malicious acts.
   - To execute appropriate measures to mitigate, reduce or deter the threat.

2. Take **SECURITY MEASURES** (including communications)
- Engage with local **Community:**
  - To raise awareness understanding the threats and mitigations.
  - Promote efforts taken against threats.
  - To help with detection effort.
- Engage with local **Businesses:**
  - To arrange communications
  - To share intelligence.
- Engage with **Staff**:
  - To report unusual activity.
  - Raise awareness on UAVs.
  - Raise awareness on the threats they pose.
  - Develop a strategy on how to respond to drone operators and how/what to report.
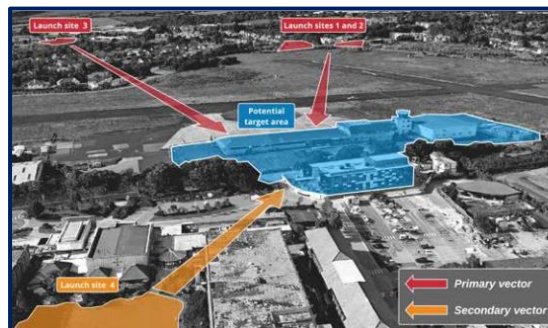
- Consider **Police engagement:**
  - Establish what support police can offer your C-UAS plan.
  - Confirm reporting and response procedures.
  - Identify actions to take should a drone be retrieved
    - To preserve evidential value and support successful prosecutions.
  - Training/testing and exercising of C-UAS plan.
- Consider **AIRSPACE RESTRICTIONS** and/or geofencing if appropriate.

3. Take **PHYSICAL SECURITY MEASURES**
   - Design out the vulnerability of the site.
     - Move vulnerable assets away from the perimeter.
     - Cover from view.
     - Concealing/disguising the asset.
     - Protecting the asset using physical barriers etc.
     - Protecting sensitive information
       - Using obscuration film, blinds.
       - Removing information from site.
     - Re-assess existing measures:
       - CCTV.
       - Lighting.

4. Review **PREVIOUS INCIDENTS:**
   - Examine previous incidents to help identify areas of weakness in plan.
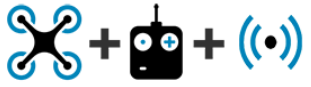
Threat from Drones –
Useful Responses

IM JUST GOING TO SEND MY DRONE UP, IS THAT OK?

1. Yes as long as you have a Operator ID (displayed correctly), the drone is <250grms and you adhere to

    the CAA Code of Conduct:

    - <250grms are considered toys. If they have cameras (used by auditors) they must adhere to the below.

    - >250grms are considered commercial and come with extra restrictions (see page 4).

    - ID displayed on exterior of craft or easily accessible.
    - You must fly below the legal height limit of 120 meters.
    - You cannot fly over crowds of people, beaches, parks etc.
    - Must follow any flying restrictions imposed for emergency incidents etc.
    - Must be in direct line of sight and flown safely.

2. Have you checked you are clear of any no-fly zones.

3. Have you checked local council restrictions (by-laws) on landing and taking off.

    (Beneficial for your team to know if there are any restrictions in the area).

IM NOT DOING ANYTHING WRONG

1. You are acting provocatively, hovering the drone, refusing to co-operate or show identification which is concerning.

Advisoryservices@wilsonjames.co.uk