

# Taking flight: the future of drones in the UK

## Page 2: Personal details

Q1. Your:
<b>name?</b> John Turner
<b>email?</b> daa@airpilots.org

Q2. Are you responding:
on behalf of an organisation?

## Page 6: Organisation details

Q6. What describes your organisation best?
A membership or representative organisation

Q7. How many drones do you think your organisation will operate in:
<b>the next 1 year?</b> 0
<b>2023?</b> -
<b>2028?</b> -
<b>the longer term?</b> -

Q8. Your:
<b>organisation name?</b> The Honourable Company of Air Pilots
<b>organisation does?</b> The principal activities of this Livery Company of the City of London are centred on sponsoring and encouraging action and activities designed to ensure that aircraft are piloted and navigated safely by individuals who are highly competent, self-reliant, dependable and respected. The Company fosters the sound education and training of air pilots from the initial training of the young pilot to the specialist training of the more mature. Through charitable activities, education and training, technical committee work, aircrew aptitude testing, scholarships and sponsorship, advice and recognition of the achievements of fellow aviators world-wide, the Company keeps itself at the forefront of the aviation world.
<b>organisation interest in drones is?</b> The Company wishes to enable and support the safe operation of drones and manned aircraft worldwide. This year it introduced a membership category for Drone Pilots.

## Page 7: Minimum age for an operator

Q9. Do you see any advantages to the introduction of a minimum age for SUA (small drone) operators?

Yes

## Page 8: Minimum age for an operator: advantages

Q10. What advantages?

Drones of up to 20 kg have the potential to damage property and to cause injury or death. Inappropriate drone flying has the potential to cause large-scale death (100 plus people) and destruction of property over a significant area (airliner crash, road or rail accident) through unsafe interaction with land and air transports. To ensure all drone operators can be expected apply a reasonable level of care, they should be of a suitable age to hold responsibility for the appropriate exercise of that care.

## Page 9: Minimum age for an operator

Q11. Do you see any disadvantages to the introduction of a minimum age for SUA (small drone) operators?

No

## Page 11: Minimum age for an operator

Q13. Do you agree with the government's proposal that a minimum age of 18 should be introduced for SUA (small drone) operators?

Yes

## Page 13: Minimum age for an operator

Q15. Do you believe that the introduction of a minimum age of 18 for SUA (small drone) operators will have:

a positive impact?

## Page 14: Minimum age for an operator: effects

**Q16. Why?**

Drones of up to 20 kg have the potential to damage property and to cause injury or death. Inappropriate drone flying has the potential to cause large-scale death (100 plus people) and destruction of property over a significant area (airliner crash, road or rail accident) through unsafe interaction with land and air transports. To ensure all drone operators can be expected apply a reasonable level of care, they should be of a suitable age to hold responsibility for the appropriate exercise of that care. The age requirement will first ensure that Drone operations are considered separately from toy playthings and second provide an assurance that the required level of care is taken during drone operations.

**Page 15: Aerodrome restriction****Q17. What other areas do you feel the review should cover?**

The equivalence of drone and manned aircraft safety in design and operation. Although drones are often seen as aviation new-comers, it is quite likely that they will, at least within certain locations, become the majority user of some airspace segments. Therefore, it would be sensible to apply (to the extent that it is possible and appropriate) equivalent rule-sets to drones and to manned aviation safety requirements.

**Page 16: Aerodrome restriction****Q18. Do you believe that the 1km restriction zone around a protected aerodrome is sufficient?**

No

**Page 17: Aerodrome restriction: shape agreement****Q19. Do you feel that a restriction zone of a different shape would be more appropriate?**

Yes

**Page 18: Aerodrome restriction: alternative shaped**

**Q20. State the shape, its dimensions and why?**

Continuing the theme from our response to Q12, it would be more appropriate for each airport to promulgate the areas where drone flying is not permitted so that there is always a lateral and height safety buffer between manned and un-manned aircraft using an aerodrome and those that are operating outside of or separate from the known aerodrome aviation environment. Although more complex, this would ensure the maximum available volume for Drone operation while sustaining the safety of aerodrome operations. To sustain 1,000 ft separation between drones and aerodrome air traffic, the area of 'other drone' prohibition would include anywhere that aerodrome traffic might fly at less than 1,400 ft ABOVE AERODROME ELEVATION, with drones operating within 1km of that boundary being restricted to operating no higher than 400 ft ABOVE THE ELEVATION OF THE ADJACENT AERODROME. Aerodromes would be responsible for promulgating the specific limitations applicable at their location dependant on approach and departure (and visual circuit) procedures in use by aerodrome traffic at the time. This would be much more complicated than the historic '2 nautical mile/2,000 ft Air Traffic Zone' that surrounds many smaller airfields but modern web- and app-based methods would ensure current information was readily available to the drone operator.

The rules must provide the protection that is necessary for a safe aerodrome flying environment rather than a 'one size fits all' that will either limit drone operation where it could have been conducted safely and/or permit drone operation where it is unsafe.

**Page 19: Model aircraft flying associations****Q21. Do you have any other proposals for solutions to minimise the impacts on safe model aircraft flying that we could consider?**

We recognise that model aircraft flying associations have developed a robust and safe method of operation of sometimes very large and heavy model aircraft and we would defer to their expertise and experience in this area. The legislative challenge is to recognise that whereas model aircraft fliers invariably worked with the support and oversight of the model associations, most new drone operators will not. This places under question, inter alia, how drone operators will be advised of and monitored against any changes in drone legislation beyond obtaining their first qualification as a drone operator/remote pilot.

**Page 20: Mandating and/or regulating a Flight Information and Notification System(s) (FINS)****Q22. Do current drone information apps provide enough support to ensure the safe and appropriate use of drones?**

Don't know

**Why?**

Information exchange should include promulgation to air traffic control units - so they have an awareness of operations in their vicinity, manned pilots, so they have an awareness of areas of intense drone activity that might preclude safe practice of forced landing profiles, and other drone operators. At present, the apps seem more centred on informing

Q23. Do you think there is a need to mandate the use of a FINS(s) for certain types of drone activity?

Yes

**Why?**

This is the only viable way, prior to a 100% mandate to fit ADS-B to all flying vehicles, to ensure that other airspace users are aware of drone activity in their vicinity. However, see Q19

Q24. Should the government explore options to achieve similar policy aims, but without mandating the use of a FINS(s)?

Yes

**Why?**

The miniaturisation of ADS-B devices means they are becoming small and light enough with sufficiently small power requirements to be fitted to even small UAS. The government should explore and support the earliest introduction of such devices to all vehicles using UK airspace as a first step towards establishing a known air environment - and enabling quick identification on non-compliant air vehicles.

Q25. Do you agree with the requirement to use a FINS as outlined by the government?

Yes

**Why?**

It provides an initial framework for clarifying the extent of drone use and communicating that to other airspace users. The framework will inform the programme of work required to move towards and implement a UTM in the future.

## Page 21: The Flight Information and Notification System(s)

Q26. What do you think should be the maximum mass of a drone for which its user should have to use a FINS(s), if such a requirement were to be introduced?

20kg

**Why?**

This is based on an assumption that any drone >20kg will be subject to more detailed controls that are effectively the same as manned aircraft. (If those controls were restricted to drones >150kg, then all drones up to 150kg would be required to comply with FIN(S).)

Q27. Should there be a requirement to file a pre-flight notification on the FINS(s) before flying a drone?

Yes

**Why?**

To provide information and data as described in earlier responses and support effective and safe management of airspace.

Q28. What do you think should be the minimum allowed time, prior to take-off, for filing a pre-flight notification on the FINS(s)?

File the notification no less than 30 minutes before take-off

**Why?**

The manned 1 hour requirement is probably too long and does not reflect the ability of manned aviation to raise a 'pre-note' message in less than 1 hour. 30 min means that drones and manned aircraft will become subject to similar notification periods.

Q29. What do you think should be the maximum allowed time, prior to take-off, for filing a pre-flight notification on the FINS(s)?

File the notification no more than 24 hours before take-off

**Why?**

A 24 hour window for notification will avoid the potential for date confusion in notification messages.

Q30. It is proposed that drone pilots should not have sole responsibility in relation to the use of a FINS. Do you agree?

Yes

**Why?**

Operator and pilot carry a joint responsibility for the safety of the over-flown public, the former a strict liability and the latter a duty of care. However, it must be easy for both operator and pilot to confirm that their activity has been entered into FIN(S) appropriately.

Q31. Should there be a duty on FINS providers to display accurate information?

Yes

**Why?**

Erroneous data would be potentially hazardous to other airspace users and the over-flown public.

Q32. Should it be an offence for a FINS provider to display inaccurate data to drone users?

Yes

**Why?**

Operator and pilot can not reliably confirm they have raised the correct notification if there is any risk of that data being shown incorrectly.

Q33. What do you believe should be approved for the public to use?

A single FINS?

**Why?**

This will remove potential for confusion or data-transfer errors between different systems.

Q34. In your opinion what should the FINS(s) cover?

All of the UK

**Why?**

As Q28

## Page 22: Access to the Flight Information and Notification System(s)

Q35. Besides poor signal, no battery on the electronic device, maintenance or crashing do you think there are other scenarios which could restrict access to the FINS(s)?

No

## Page 24: Access to the Flight Information and Notification System(s)

Q37. If real time access to the FINS(s) cannot be gained do you believe the drone flight should be allowed?

No

## Page 26: Managing system providers for the Flight Information and Notification System(s)

Q40. Which organisation do you believe is best suited to manage and regulate the FINS(s)?

**Other:**

A national FIN(S) operating company

**Why?**

Managing and regulating are different functions and should be split. CAA can regulate but should not manage. NATS is not the sole ANSP in UK so it should not be the automatic default provider. DfT could appoint the ANSP to manage FIN(S) then require CAA to regulate it - or retain regulation oversight itself if it felt CAA was not competent to do so.

Q41. In line with government strategy should anonymised drone data from the FINS(s) be shared with the industry to drive technological development?

Yes

**Why?**

Important that there is visibility of the size and scope of drone activity as well as other parts of aviation in UK

Q42. For the purposes of carrying out their function, to which organisation or organisations should a FINS provider have to provide data if requested?

Department for Transport

Civil Aviation Authority

Police

Intelligence and Security Services

Border Force

National Crime Agency

HM Prisons and Probation Service

Other:

Aerodromes,

**Why?**

Important that there is visibility of the size and scope of drone activity as well as other parts of aviation in UK

Q43. Do you agree it should be an offence for a FINS system provider to withhold information from a specified organisation if a valid request for data is made?

Yes

Q44. Do you believe certain organisations should have some level of instant, or near instant, access to all data on the FINS(s)?

Don't know

## Page 27: Managing system providers for the Flight Information and Notification System(s)

Q45. Which organisation do you believe should have some level of instant, or near instant, access to all data on the FINS(s)?

Police

Intelligence and Security Services

Border Force

National Crime Agency

HM Prisons and Probation Service

Other:

Aerodromes, ANSPs

Q46. Do you believe there should be a charge to the drone user in order to use a FINS?

No

**Why?**

FINS is the starting point for a national infrastructure facility for UTM. That infrastructure will provide a safety benefit to all airspace users and the general public; a safe, efficient and effective unmanned infrastructure will also provide long-term benefits to UK economy. Therefore, it should be paid for by general taxation and not specific user-charges.

## Page 28: Future development for the Flight Information and Notification System(s)

Q47. If a FINS provider decided to charge for using the system, should the government maintain the ability to control the maximum cost that could be charged?

Yes

**Why?**

The government should insist that users are not charged directly.

Q48. Do you think there is a need to have a Special Administration Regime to manage the risk of insolvency for FINS providers?

No

**Why?**

This would threaten appropriate levels of investment in the provider.

Q49. Are you a technology provider or company considering being involved in the development of a FINS?

No

## Page 32: Model aircraft flying associations and the Flight Information and Notification System(s)

Q56. Should the government work with model aircraft flying associations to consider ways in which the policy could be shaped to minimise the impact of any new legislation relating to FINS(s) for this group?

Yes

**Why?**

Without consultation, legislation can have unintended negative consequences.

## Page 33: Police powers and Fixed Penalty Notices

Q57. Do you agree that the police require new powers in relation to the misuse of drones?

Yes

**Why?**

Appropriate use is more likely if there are appropriate safeguards against inappropriate use!

## Page 35: Police powers and Fixed Penalty Notices

Q59. Do you agree that the police should be able to require the production of evidence from drone users where:

	Yes	No	Don't know
there is a reasonable suspicion of an offence being perpetrated?	X		
compliance with a legal requirement is being checked?	X		

**Why?**

As Q43

Q60. Do you agree with the proposal to grant a 7 day grace period to produce this evidence?

Yes

**Why?**

Equivalence

## Page 36: Police powers and Fixed Penalty Notices

Q61. Do you agree that the police should be able to obtain information to check that the following have complied with the law?

	Yes	No	Don't know
A drone user	X		
A drone operator	X		
A remote pilot	X		
The person who made the drone available for use	X		

Q62. Do you agree that the police require powers to instruct a remote pilot to land a drone, if there is a reasonable suspicion of the commission of an offence?

Yes

Q63. Do you agree that the police require powers to instruct a remote pilot to land a drone, if a constable believes that:

	Yes	No	Don't know
it will protect persons from harm, harassment, alarm or distress?			X
it will protect persons occupying any premises from nuisance?		X	
it is causing an annoyance relating to the occupation of a premise?		X	
it will protect public order?		X	
it will protect property from damage?		X	
it would assist in exercising the functions of a police constable?	X		

**Why?**

The police need sufficient powers to carry out their duties. However, those powers should be deployed according to evidential conditions, not on the basis of a countable's belief, that might not be well founded.

Q64. Do you agree the police should have the power, when a drone and/or its components are suspected of being involved in the commission of an offence, to enter and search premises with a warrant?

Yes

Q65. Do you agree the police should have the power, when a drone and/or its components are believed of being involved in the commission of an offense, to seize and retain the drone or its associated components?

Yes

Q66. Do you agree the police should have the power to access electronically stored information from the drone or its components if a constable reasonably suspects that it is: 1. evidence in relation to an offence or has been obtained in consequence of the commission of an offence and 2. necessary to do so in order to prevent it being concealed, lost, tampered with or destroyed?

Yes

Q67. Do you agree the police should have the power to require any information stored on the drone or its associated components to be duplicated in a legible form that can be taken away if a constable believes that it is: 1. evidence in relation to an offence or it has been obtained through committing an offence and 2. necessary to prevent concealment, loss, tampering or destruction of the data?

Yes

Q69. Are there other powers you feel the police should have in relation to drone misuse?

Yes

## Page 37: Additional police powers

Q70. What powers and why?

The police should have powers that allow them to bring down a drone that is being operated illegally.

## Page 38: Police powers and Fixed Penalty Notices

Q71. Do you agree that Fixed Penalty Notices (FPN) are a suitable alternative to prosecution for certain drone-related offences?

Yes

## Page 40: Police powers and Fixed Penalty Notices

Q74. Do you agree that if a person is unable to produce the required evidence within 7 days of a police constable's request they should receive an FPN?

Yes

Q75. Do you agree that drone users not complying with a police officer's instruction to land a drone should receive a FPN?

Yes

Q76. Do you agree that the FPN cost should be between £100 and £300 pounds?

Yes

## Page 41: Counter drone technology

Q78. Do you think the operational purposes identified for the use of drone detection technology are appropriate?

Yes

## Page 43: Counter drone technology

Q80. Do you think the safeguards identified for the use of drone detection technology are appropriate?

Yes

## Page 45: Counter drone technology

Q83. Do you think there is anything else that should be done to assist organisations in meeting the defined safeguards?

No

## Page 47: Counter drone technology

Q85. Do you think the safeguards identified to enable deferred authority are appropriate?

No

## Page 48: Deferred authority

Q86. Why not?

Also need to be trained to take decisions based on risk management principles considering the wider population and other airspace users.

Q87. What other safeguards would you like to be considered to enable deferred authority?

Also need to be trained to take decisions based on risk management principles considering the wider population and other airspace users.

## Page 49: Counter drone technology

Q88. Do you think the operational purposes identified for the use of drone electronic effectors are appropriate?

Yes

## Page 51: Counter drone technology

Q90. Should any other studies be conducted to minimise the safety risks associated with deploying electronic effectors in the UK?

Yes

## Page 52: Electronic effector studies

Q91. What should the studies focus on?

The ability to 'capture' a drone in-flight so that it can be conveyed to a safe location. (This will provide a safe mechanism for interacting with drones flown over a crowd or densely populated area.)

## Page 53: Counter drone technology

Q92. Do you think the safeguards proposed for the use of drone electronic effectors are appropriate?

Yes

## Page 55: Counter drone technology

Q95. Do you think anything else should be done to assist organisations in meeting the defined safeguards?

Don't know

## Page 57: Counter drone technology

Q97. Do you think the requirements identified for both the testing of drone detection technology and drone electronic effectors are appropriate?

Yes

## Page 59: Counter drone technology

Q99. Do you think the safeguards identified for both the testing of drone detection technology and drone electronic effectors are appropriate?

Yes

## Page 61: Counter drone technology

Q101. Would you like any other safeguards to be considered to enable the testing of:

	Yes	No
drone detection technology?		X
drone electronic effectors?		X

## Page 62: Drone scenario modelling

Q102. Do you have forecasts of the number of drone or drone users (commercial or non-commercial) you are willing to share?

No

## Page 64: Drone scenario modelling

Q104. Are the scenarios for the number of commercial users:

underestimates?

**Why?**

Drone applications are considered highly likely to continue to be developed for more than the next 10 years.

Q105. Are the scenarios for the number of commercial drones:

underestimates?

**Why?**

A four-fold increase in drone numbers seems more intuitive than just a doubling. Estimates of disruptive technology such as drone deployment are invariably understated.

Q106. How do you rate the assumptions that:

	Accurate	Weak	Unknown
growth in commercial drone users will continue according to the quadratic trend that best fits historical data?	X		
market saturation will most likely occur in 2030, with 2024 and 2035 representing low and high estimates respectively?		X	
the average commercial user currently has 5.6 drones and this will rise to 10 in 2037?			

**Why?**

As text answers to Q76 and Q77

Q107. What do you estimate the average number of drones per commercial user to be in:

**the next year?** 8

**2023?** 20

**2028?** 30

**the long run?** -

Q108. How many drones do you estimate the average non-commercial user owns?

3

## Page 65: Final comments

Q109. Any other comments?

None