

# THE PUBLIC CONSULTATION ON PROPOSALS FOR NEW LEGISLATION FOR DRONES (INCLUDING MODEL AIRCRAFT).

## Information for members of:

THE BRITISH MODEL FLYING ASSOCIATION;  
THE LARGE MODEL ASSOCIATION;  
THE SCOTTISH AEROMODELLERS ASSOCIATION; and  
FPV UK

## What's this all about?

The government intends to introduce new laws to address the perceived safety, security and privacy threats that arise from the increasing use of drones. These new rules will affect model flying. You have been sent this document to encourage you to support your model flying association, and your hobby, by responding to the public consultation, preferably in accordance with the advice given below.

The government's proposals are in a document called "Taking Flight: The Future of Drones in the UK" which may be found online here:

<https://www.gov.uk/government/consultations/drone-legislation-use-restrictions-and-enforcement>

**The consultation closes on 17<sup>th</sup> September 2018.**

The consultation documents use the term 'drone' to mean all aircraft that fly without a pilot on board. They do not distinguish between model aircraft (including manually flown quadcopters) and multi-rotor semi-autonomous aircraft – commonly recognised by the public as drones. The new rules will apply to aircraft exceeding 250g. Therefore, any rules that are developed from this consultation will apply to model flyers.

To protect the interests of our hobby we need to influence the government either:

- to create rules for all drones that will not restrict our activities; or
- to make special provision for model flyers to operate to a different set of rules.

## What can I do?

Respond to the consultation!

The response has to be given by answering a series of questions, either online or by filling in a printed Form. Each question is answered by choosing either "Yes", "No" and sometimes "Don't know". In many cases there is then a "Why" box where reasons for the answer can be added. Those participating can answer as many or as few questions as they wish.

The executive officers of the model flying associations have reviewed the proposals and have chosen the answers to the questions that they believe would best support them in negotiating the future rules for model flying with the Department for Transport. Those answers are set out in this document.

To influence the government we need existing model flyers to respond to the consultation in large numbers with these same answers, so that the results of the consultation will show a majority in favour of our point of view. Remember that you do not have to fill in any of the "Why" boxes if you don't want to. And, if you do submit any text, it is important that you use your own words; not a direct quote of the associations' text.

You are, of course, under no obligation to respond to the consultation in this way. You may decide to review the government's proposals yourself and choose your own answers; you may pick and choose which of the answers suggested below to submit; or indeed ignore the consultation entirely. However, it would help those negotiating on your behalf if large numbers of our members submitted the answers suggested below.

Answering the consultation with the same answers as your association will take about one hour. Obviously, reviewing the proposals and submitting your own answers will take longer.

You can fill in the response anonymously. However, if you do that you will have to complete it in one session. If you enter your name and email address you can complete the response a bit at a time and the system will save your answers and send you a link by email to resume later.

If you do decide to respond to the consultation - **thank you for your support!**

## Getting started

The link to answering the survey online is here:

<https://www.smartsurvey.co.uk/s/drones/>

There are approximately 80 questions – but you do not have to answer them all. The most important questions for model flyers are:

- 6 to 13 – minimum age of a drone operator;
- 14 to 15 – drone flights close to airfields;
- 16 – minimising the impact of the rules on model flying;
- 44 – whether the government should work with the model flying associations;
- 62 to 74 – the use of radio jammers (electronic effectors) to counter drones suspected of being flown for malicious purposes.

Please note that the numbering of the questions below may not match exactly the numbering when you fill in the questionnaire. This is because some yes or no answers trigger the insertion of additional questions and subsequent questions are then renumbered.

Question 1 is your name and email address – you do not have to give this information.

Question 2 asks whether you are responding as an individual or on behalf of an organisation. You **must** select "Individual".

The executive officers of the associations will be submitting responses on behalf of their organisations.

Question 3 asks whether you are an existing drone user – the answer for model flyers is "Yes" (The government's definition of a drone includes model aircraft).

For Question 4 you can click on "I am a model aircraft flyer" and any other options that apply.

Question 5 asks how many aircraft you operate and expect to operate in the future. Simply fill in how many radio controlled aircraft you own, and expect to own.

The main questionnaire then begins.

## The Model Associations' Recommended Responses to the Consultation Questions

The consultation questions are listed below.

For each question (that we believe should be answered) we have provided the answers that the associations will submit, and hope that many members will be content to submit the same answers. For each question we have provided the following as appropriate:

The answer the association will give:
The reasons the association will give:
Additional information:

In some cases there is no "Why" box to allow reasons to be given.

We appreciate that individual members may disagree with some of the associations' answers. Clearly, individuals will submit the answers they are content with. In the Additional Information box we have added for you any background to our answer to the question. (This Additional Information will not be included in the associations' responses to the consultation).

If you decide to fill in any of the "Why" boxes to give reasons for your answers (you do not have to put anything) you may wish to pick one or more of the points made by the model associations. However, please use your own words. Do not insert a direct copy of the associations' response.

### Minimum age requirement for Drone Operators

Question 6: Do you see any advantages to the introduction of a minimum age for SUA (small drone) operators?

If yes - Question 7: What advantages?

The answer the association will give: Q6: Yes Q7: The new drone rules place specific responsibilities on drone operators, which the operator needs to be mature enough to understand.
Additional information: The new rules distinguish between drone Operators (who decide when and where a flight takes place) and Remote Pilots (who fly the aircraft using the controls). For model flying the Operator and Remote Pilot will generally be the same person. The government proposals suggest that children will be able to fly drones/models as remote pilots if their parent (or other supervising adult) is the Operator. The proposed minimum age applies to the Operator, not the Remote Pilot.

Question 8: Do you see any disadvantages to the introduction of a minimum age for SUA (small drone) operators?

If Yes - Question 9: What disadvantages?

The answer the association will give: Q8: Yes Q9: Applying a minimum age limit may discourage young people from engaging in the hobby of model flying. Model flying promotes an understanding of engineering design and develops craft skills and problem solving (through aircraft construction, maintenance and repair) – consistent with the STEM education initiative. These are all qualities that this country is reportedly short of.
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Question 10: do you agree with the Government's proposal that a minimum age of 18 should be introduced for SUA (small drone) operators?

If No - Question 11 – Why not?

The answer the association will give:

Q10: No

Q11: Table 5 on page 23 of the "Taking Flight" document is incomplete and so presents a misleading description of the current position for aviation in the UK.

In the UK (and Europe) the minimum age to hold a Private Pilot's Licence for (manned) aeroplanes or helicopters is 17 years. Therefore, a minimum age of 18 to fly drones cannot be supported. (The table also does not mention that a 17 year old can hold a full driving licence for private motor vehicles).

Table 5 does say that UK law allows persons aged 14 to fly solo in gliders and balloons, but fails to mention that they can fly powered hanggliders and powered parachutes without supervision. i.e. Article 171 of the Air Navigation Order sets a minimum age of 14 to act as pilot in command of a non-EASA glider. The ANO definition of a non-EASA glider includes "a self-propelled hangglider", a definition that also includes powered parachutes. No pilot licence is required for these foot-launched powered manned aircraft. These aircraft and their pilots are not registered. Powered hanggliders and powered parachutes can fly at the same altitudes as light aeroplanes and helicopters and are capable of cross-country flight. The law accepts that age 14 is sufficient to fly a foot-launched powered aircraft, carrying one or two people and so should also allow 14 year olds to be operators of drones.

There is a further pertinent transport comparison to make. UK news websites have reported recently the DfT figures for accidents involving cyclists. In the period 2010 to 2016, there were on average 3.6 pedestrian fatalities each year due to collisions with cyclists, but there is no legal minimum age to ride a bicycle on a public road. In this same period there were no fatalities due to drones (including model aircraft). Cycling proficiency is taught in primary schools to children at age 10.

If there is to be a minimum age for drone operators we propose that it should be 12, and certainly not higher than 14.

Question 12: Do you believe that the introduction of a minimum age of 18 for SUA (small drone) operators will have a positive or negative impact?

Question 13 – Why?

The answer the association will give:

Q12: Negative

Q13: Applying a minimum age limit may discourage young people from engaging in the hobby of model flying. Encouraging young people to participate in model flying is consistent with the STEM education initiative. Model flying also promotes an interest in aviation, which may encourage young people to train as pilots of manned aircraft. There is predicted to be a shortage of pilots for the future.

A minimum age of 18 cannot be justified given that a Private Pilot's Licence can be held at 17, and a 14 year old can be the pilot-in-command of a powered foot-launched manned aircraft or a glider.

## Restrictions on small drone flights near protected aerodromes

Question 14: What other areas do you feel the review should cover?

The answer the association will give:

If the review concludes that the 1 km restriction has not reduced the number of drone incidents (i.e. the restriction is ineffective) the government should consider whether this is because the rule may not have been known to the drone flyers involved; or because irresponsible people will ignore the restriction whatever minimum distance is specified.

Additional information:

The government proposes to review the effectiveness of the new 1 km exclusion zone around licensed and other 'protected' airfields. Modellers and drone operators can still fly close to or on these aerodromes with the permission of the aerodrome management / Air Traffic. The government has set out the scope of a future review of this restriction. The question asks whether anything else should be added.

Question 15: Do you believe that the 1km restriction zone around a protected aerodrome is sufficient?

– Yes

– No

The answer the association will give: No

This next question only appears if the answer to Q15 is No:

Do you feel that a restriction zone of a different shape would be more appropriate? If yes, state the shape, its dimensions, and why.

The answer the association will give: Yes

The reasons the association will give:

Drone flying up to 400ft at a distance of 1km from the end of a runway does not give vertical separation from the standard 3 degree glideslope used by large aeroplanes. Therefore it may be argued that the distance should be greater along the extended lines of the runways and smaller at locations to the side of the runways. However, this would make the restriction more complex - and so more difficult to comply with and to enforce. Cooperation between aerodrome managers and drone operators to manage safety effectively should be encouraged.

## **Model Aircraft Flying Associations and the impact of drone legislation**

Question 16: Do you have any proposals for solutions to minimise the impacts on safe model aircraft flying that we could consider?

The reasons the association will give:

Model flyers operating in accordance with the guidelines of the model associations have an excellent safety record and pose no threat to security. There is no safety or security justification for applying more stringent rules to model flying. In developing European legislation for drones, the Commission and EASA have accepted that any new rules should not apply to model flyers who have an established good safety record – ‘hobbyist flights’. At the time of writing we understand that EASA and the Commission have developed two alternative proposals in this respect. Either: compliance with the procedures and practices of model flying associations by their members will be accepted in place of compliance with the European rules for drone operators; or, model flying within recognised model associations will not be subject to European rules at all and will be regulated nationally. In either case the principal outcome will be the same – model aircraft flyers will not be required to comply with the pan-European common rules for drone operations.

We propose that the government either: adds to the UK legislation provision for members of model flying associations to operate in accordance with alternative requirements that are consistent with existing model flying practices; or formally advises the CAA that it should issue authorisations, exemptions or permissions as appropriate to enable members of model flying associations to continue to fly ‘small unmanned aircraft’ as they have in the past - with minimal new constraints or obligations.

## **Mandating and/or regulating a Flight Information and Notification System(s) (FINS(s))**

Question 17: Do current drone information apps provide enough support to ensure the safe and appropriate use of drones?

The answer the association will give: Yes

The reasons the association will give:

The drone Apps provide useful information for drone flyers with no fixed flying site. Model flying, which generally takes place from the same fixed sites, has an excellent safety record without the use of these Apps. The safety record demonstrates that these Apps are not necessary / needed for the safe operation of model aircraft. We cannot give a view on whether the information the Apps provide will be sufficient for commercial drone operations that may take place in the future.

Question 18: Do you think there is a need to mandate the use of a FINS(s) for certain types of drone activity?

Why?

The answer the association will give: Yes

The reasons the association will give:

There may be very limited and special circumstances where notification would have a safety benefit. e.g. The commercial use of drones to film a large public event where air ambulances and police helicopters might have to be deployed if there is an incident/accident. In such cases the pilots of the manned aircraft would want to know whether large drones were operating. However, for this benefit to be realised, FINS would have to be an integral part of the manned aircraft flight planning information network.

Question 19: Should the government explore options to achieve similar policy aims, but without mandating the use of a FINS(s)?

Why?

The answer the association will give: Yes

The reasons the association will give:

The government should always consider alternatives that may result in less regulatory burden and lower costs for those who will have to comply with new rules. The principles of proportionality must apply, as set out in the government's policy on Better Regulation and CAA regulatory policy.

Question 20: Do you agree with the requirement to use a FINS as outlined by the government?

Why?

The answer the association will give: Yes

The reasons the association will give:

Our answer is a qualified 'yes' given that the government has not yet decided on the detail of FINS and the applicable rules. Such a system may be necessary in certain circumstances for commercial drone operation, or for the operation of drones that exceed the limits of the current definition of a small unmanned aircraft.

Question 21: 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
- 50kg
- 100kg
- Over 100kg

Why?

The answer the association will give: 20 kg

The reasons the association will give:

20 kg is the current threshold for the applicability of the rules and regulations that apply to full-size manned aircraft. e.g. The requirements for airworthiness certification and pilot licensing.

On a related point – the current definition of a small unmanned aircraft is 20 kg without fuel. This means that aircraft powered by fuel burning engines may take-off with a mass in excess of 20 kg, whereas an electric-powered aircraft is restricted to 20 kg. In Europe the proposal is to have a cut-off at 25 kg mass at take-off including fuel and everything else carried by the aircraft at take-off. It is suggested that the opportunity could be taken to apply that common European definition in UK national legislation as part of this current process – in which case all references to 20 kg in these proposals would change to 25 kg. This proposal has been under discussion between the CAA and the model flying associations for some time.

Question 22: Should there be a requirement to file a pre-flight notification on the FINS(s) before flying a drone?

- Yes
- No

Why?

The answer the association will give: No
The reasons the association will give: Our answer is no, unless there is a compelling safety or security justification that applies to the particular scenario / location / aircraft type.
Additional information: Obviously, we do not want a requirement to pre-notify flights to apply to model flyers. The likelihood of this being required is low as the government is suggesting several alternative weight thresholds and the lowest of these is 20kg.

Question 23: 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 at point of take-off?
- File the notification no less than 5 minutes before take-off.
- File the notification no less than 30 minutes before take-off.
- File the notification no less than 1 hour before take-off.
- File the notification no less than 3 hours before take-off.
- Other

Why?

The answer the association will give: At take-off
The reasons the association will give: In our view the proposed FINS may contribute to greater safety and security, but its absence would not of itself make any particular flight unsafe. i.e. FINS would not be a 'safety critical' system.
Additional information: The likelihood of this being required for model flying is low as the government is suggesting several alternative weight thresholds and the lowest of these is 20kg.

Question 24: 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 at point of take-off
- File the notification no more than 5 minutes before take-off.
- File the notification no more than 30 minutes before take-off.
- File the notification no more than 1 hour before take-off.
- File the notification no more than 3 hours before take-off.
- File the notification no more than 24 hours before take-off.
- File the notification no more than a week before take-off.
- Other

Why?

The answer the association will give: Other – 1 year or more
The reasons the association will give: The use of drones by farmers is increasing for monitoring crop growth, animals etc. We would suggest that if a farmer uses a drone daily over his own land and a FINS notification is required, he should be able to notify regular/frequent use and renew it annually. There may be other scenarios where long term/constant use notifications would be appropriate.



Question 25: It is proposed that remote pilots should not have sole responsibility in relation to the use of a FINS. Do you agree?

Why?

The answer the association will give: Yes

The reasons the association will give:  
Individual pilots cannot be responsible for the availability/non-availability or the integrity/accuracy of any FINS system.

Question 26: Should there be a duty on FINS providers to display accurate information?

Why?

The answer the association will give: Yes

The reasons the association will give:  
This duty should be to take reasonable steps to assure accuracy. Inaccurate information is much worse than no information as it may introduce safety risks / hazards.

Question 27: Should it be an offence for a FINS provider to display inaccurate data to drone users?

Why?

The answer the association will give: No

The reasons the association will give:  
We believe it is not an offence to display inaccurate data on equivalent systems for manned aviation. It follows that it would be disproportionate to make this an offence for FINS information. The obligation on FINS providers should be to take reasonable steps to assure accuracy. On the assumption that most of the information will be from user notifications, FINS providers should not be subject to prosecution if a user notifies inaccurate or misleading information.

Question 28: What do you believe should be approved for the public to use:

- A single FINS?
- Multiple FINSs?

Why?

The answer the association will give: A single FINS

The reasons the association will give:  
We believe that a single FINS should be approved, provided it is reliable and free to use. Users will want to go to one access point, with a format that they will become very familiar with. Having multiple systems, potentially with different interface formats (such as on screen menus) may increase the time and effort users have to expend in making notifications.

Question 29: In your opinion what should the FINS(s) cover? :

- all of the UK
- select regional information, but together multiple FINSs would provide full UK coverage
- Other

Why?

The answer the association will give: All of the UK

The reasons the association will give:  
Users will want to go to one access point, with a format that they will become very familiar with. Having multiple systems, potentially with different interface formats (such as on screen menus) may increase the time and effort users have to expend in making notifications.

Question 30: 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)?  
If Yes – What scenarios?

The answer the association will give: Yes

The reasons the association will give:  
Denial of service attacks on the FINS provider.  
Failures of the network servers used by the provider.  
Malicious hacking of the system database.

Question 31: If real time access to the FINS(s) cannot be gained do you believe the drone flight should be allowed?

The answer the association will give: Yes

If the answer to Q31 is Yes.

Question 32: Do you think there should be an exception from using real time data on the FINS(s) if access is restricted by:

- poor signal
- no battery on device
- the FINS crashing
- the FINS being offline for maintenance
- Other

Why?

The answers the association will give:

- poor signal
  - no battery on device
  - the FINS crashing
  - the FINS being offline for maintenance
- (all of these 'ticked')

Why?

In our view the proposed FINS may contribute to greater safety and security, but its absence would not of itself make any particular flight unsafe. i.e. FINS would not be a 'safety critical' system. This will depend upon the scenarios / operations for which FINS is made mandatory, if any.

If the answer to Q31 is Yes.

Question 33: If real time access to a FINS cannot be gained, how should this be managed?

- Allow drone flight in certain scenarios
- Allow drone flight in designated geographically zoned low risk areas, but not in higher risk areas
- Allow drone flight using offline maps and data from the FINS(s)
- Other

Why?

The answer the association will give:

Other (ticked)

Comment -

Flights should be allowed on most occasions. The (limited) circumstances where flights must not take place without FINS should be specified. In our view the proposed FINS may contribute to greater safety and security, but its absence would not of itself make any particular flight unsafe. i.e. FINS would not be a 'safety critical' system. This will depend upon the scenarios / operations for which FINS is made mandatory, if any.

Question 34: Which organisation do you believe is best suited to regulate the FINS(s)?

- Civil Aviation Authority
- NATS (the UK air navigation service provider)
- Department for Transport
- Other

Why?

The answer the association will give:

The CAA.

The CAA is the UK's national aviation regulator with responsibilities that include airspace classification and NOTAMS. It would not be appropriate to have another regulator for a specific aspect within the CAA's mandate. To do so would also go against recent government decisions to place all aspects of aviation regulation with the CAA, such as airport security. The CAA has the powers to grant exemptions without delay if there are problems with the practical use of FINS. Any issues with FINS should be fed back directly into new rulemaking and the CAA is best placed to do this.

Question 35: In line with government strategy should anonymised drone data from the FINS(s) be shared with the industry to drive technological development?

Why?

The answer the association will give: Yes

The reasons the association will give: It should be made available free of charge.

Question 36: 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
- None of the above

Why?

The answer the association will give:

All of the following ticked

- Department for Transport
- Civil Aviation Authority
- Police
- Intelligence and Security Services
- Border Force
- National Crime Agency
- HM Prisons and Probation Service

The reasons the association will give: None

Question 37: There would be a duty on any FINS(s) provider(s) to provide information to a list of organisations specified in legislation. The specific organisation may only request information in order for them to carry out their function. Potential organisations may include, but are not limited to: The CAA, Department for Transport, UK Police, Security and Intelligence Services.

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

- Yes
- No
- Don't know

Why?

The answer the association will give: Yes
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The reasons the association will give: None
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Question 38: Do you believe certain organisations should have some level of instant, or near instant, access to all data from the FINS(s)?

- Yes
- No

The answer the association will give: Yes
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The reasons the association will give:
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If timely action is needed to address a threat to safety or security.
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Question 39: 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
- None of the above

Why?

The answer the association will give:
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All of the following ticked:
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- |   |
|---|
| <ul style="list-style-type: none"><li>– Police</li><li>– Intelligence and Security Services</li><li>– Border Force</li><li>– National Crime Agency</li><li>– HM Prisons and Probation Service</li></ul> |
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The reasons the association will give: Because immediate action may be necessary.
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Question 40: Do you believe there should there be a charge to the drone user to use a FINS?

Why?

The answer the association will give: No
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The reasons the association will give:
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Charging will lead to non-compliance, in the same way that charging for refuse disposal leads to fly-tipping.
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Question 41: If a FINS provider decided to charge for using the system, should the Government, have the ability to control the maximum cost that could be charged?  
Why?

The answer the association will give: Yes
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The reasons the association will give:
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The government should ensure that there is no charge. Charging will lead to non-compliance, in the same way that charging for refuse disposal leads to fly-tipping.
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Question 42: Do you think there is a need to have a Special Administration Regime to manage the risk of insolvency for FINS providers?  
Why?

The answer the association will give: Yes
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The reasons the association will give: This will be needed if there is only one provider.
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Question 43: Are you a technology provider or a company considering being involved in the development of a FINS?

The answer the association will give: No
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(If the answer to Q43 is No, the next 5 questions (for potential FINS providers) do not appear).

Question 44: 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?

Why?

The answer the association will give: Yes
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The reasons the association will give:
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FINS should not apply to model flying, and the proposals appear to be consistent with that. However, the model flying associations represent around 40,000 model/drone operators who, between them, own approximately 0.5 million small unmanned aircraft. This is by far the largest grouping of current 'drone' flyers who may be affected by any new drone measures, potentially in ways that the government does not foresee. The model flying associations can contribute positively to the development of new rules due to their collective experience.
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## Police Powers Relating to Drones and Fixed Penalty Notices

Question 45: Do you agree that the police require new powers in relation to the misuse of drones?

Why?

The answer the association will give: Yes
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The reasons the association will give:
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The police should have powers to deal with people who fly drones in an irresponsible way.
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Question 46: Do you agree that the police should be able to require the production of evidence from drone users:

Where there is a reasonable suspicion of an offence being perpetrated;

Or where compliance with a legal requirement is being checked?

Why?

Where there is a reasonable suspicion of an offence being perpetrated;    Yes
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Or where compliance with a legal requirement is being checked?            Yes
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The inability of the State to take enforcement action for breaches of the rules for small unmanned aircraft has been a recurring problem.
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Question 47: The proposal is that for those unable to produce the relevant evidence at the request of a police constable, they will have 7 days in which to produce it at a police station. Do you agree with the proposal to grant a 7 day grace period to produce this evidence? Why?

The answer the association will give: Yes

The reasons the association will give:

Whilst this would be the same as the period permitted for producing documents relating to driving, there should be some flexibility. For example - If the request to produce documents was made to a drone operator / model flyer just prior to their departure abroad for a holiday or business trip, it might not be possible to comply within 7 days. Given that there are proposals for on-line operator registration and the model associations have member databases, should the regulations be open to submission of evidence by electronic means?

Question 48: Do you agree the police should be able to obtain information to check that the following have complied with the law:

A drone user

A drone operator

A remote pilot

The person who made the drone available for use

The answer the association will give:

A drone user	No
A drone operator	Yes
A remote pilot	Yes
the person who made the drone available for use	No

The reasons the association will give:

The term 'drone user' does not appear to have been defined and we do not understand the significance of 'the person who made the drone available'. We are not aware of any laws or proposed legal obligations to be complied with by these persons. However, we would presume that general police powers enable them to obtain evidence of compliance or non-compliance with the law for any activity, including drone flying.

Question 49: 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.

Why?

The answer the association will give: Yes

The reasons the association will give: None

Question 50: Do you agree that the police require powers to instruct a remote pilot to land a drone if a constable believes that:

It will protect persons from harm, harassment, alarm or distress;

It will protect persons occupying any premises from nuisance;

It is causing an annoyance relating to the occupation of a premise;

It will protect public order;

It will protect property from damage;

It would assist in exercising the functions of a police constable. Why?

The answer the association will give:

It will protect persons from harm, harassment, alarm or distress;	Yes
It will protect persons occupying any premises from nuisance;	Yes
It is causing an annoyance relating to the occupation of a premise;	Yes
It will protect public order;	Yes
It will protect property from damage;	Yes
It would assist in exercising the functions of a police constable.	Yes

These are sufficient reasons to ask a drone pilot to land the aircraft for a discussion.

Question 51: 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?

Why?

The answer the association will give: Yes
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The reasons the association will give: As long as this is in line with general law and practice.
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Question 52: 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 seize and retain the drone and/or its associated components?

Why?

The answer the association will give: Yes
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The reasons the association will give: Provided this is in line with general law and practice and that there are safeguards to ensure that the drone is looked after appropriately and is returned promptly if no offence has been committed.
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Question 53: 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 evidence in relation to an offence; or has been obtained in consequence of the commission of an offence and that it is necessary to do so in order to prevent it being concealed, lost, tampered with or destroyed?

Why?

The answer the association will give: Yes
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The reasons the association will give: Provided such data exists. Most model aircraft do not store any information.
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Question 54: 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 evidence in relation to an offence or it has been obtained through committing an offence and

it is necessary to prevent concealment, loss, tampering or destruction of the data?

Why?

The answer the association will give: Yes
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The reasons the association will give: Provided that the police provide the means to duplicate the information. We do not believe that drone operators should be required to have a means to copy the information and give it to others.
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Question 55: These proposed powers are only being considered for police constables. Do you believe any of the proposed powers should also be extended to:

Prison officers?

Police community support officers?

Council enforcement officers?

Other?

– Yes

– No

Why?

The answer the association will give: None ticked (No)
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The reasons the association will give: None
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Question 56: Are there other powers you feel the police should have in relation to drone misuse?

The answer the association will give: Don't know

Question 57: Do you agree that Fixed Penalty Notices (FPN) are a suitable alternative to prosecution for certain drone-related offences?

The answer the association will give: Yes

Question 58: Do you agree 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
- No
- Don't know

Why?

The answer the association will give: Don't know

The reasons the association will give:

There should be some flexibility. For example - If the request to produce documents was made to a drone operator / model flyer just prior to their departure abroad for a holiday or business trip, it might not be possible to comply within 7 days. Given that there are proposals for operator registration via the internet and the model associations have member databases, should the regulations be open to submission of evidence by electronic means?

Question 59: Do you agree that drone users not complying with a police officer's instruction to land a drone should receive a FPN?

- Yes
- No
- Don't know

Why?

The answer the association will give: No

The reasons the association will give:

There may be circumstances in which it is unsafe to land a drone immediately.

Question 60: Do you agree that the FPN cost should be between £100 and £300?

- Yes
- No
- Don't know

The answer the association will give: No

Question 61: The power to issue FPNs is only being considered for police constables. Do you believe the power to issue a FPN should also be given to:

Police community support officers?

Council enforcement officers?

Other

The answer the association will give:

None ticked (No)



## Counter-Drone Technology

Question 62: Do you think the operational purposes identified for the use of drone detection technology are appropriate?

If No, why not?

The answer the association will give: Yes

Question 63: Do you think the safeguards identified for the use of drone detection technology are appropriate?

If No, Why not?

If No, Are there any other safeguards for the use of drone detection technology you think we should consider?

– If Yes, what measures?

The answer the association will give: Don't know

Question 64: Do you think anything else should be done to assist organisations in meeting the defined safeguards?

If Yes, what?

The answer the association will give: Don't know

Question 65: Do you think the safeguards identified to enable deferred authority are appropriate?

If No, why not?

What additional safeguards should be applied?

The answer the association will give: Don't know

Question 66: Do you think the operational purposes identified for the use of drone electronic effectors are appropriate?

– Yes

– No

– Don't know

If No, why not?

The answer the association will give: Yes

Question 67: Should any other studies be conducted to minimise the safety risks associated with deploying electronic effectors in the UK?

- If Yes, Question 68 - What should these studies focus on?
- No, please explain why
- Don't know

The answer the association will give:

Question 67: Yes

Question 68:

Those intent on malicious or criminal actions are likely to choose drones that have full flight stabilisation. The response of those aircraft to loss of command signal is generally to hover at the current position and then slowly descend. Thus there would be minimal hazard to the public through applying jamming to counter such aircraft. The situation for model aircraft, (including quadcopters used for skill-related flying, such as aerobatics or racing) is very different. These aircraft do not have automated flight functions. If deprived of their command signal they will crash very quickly and potentially at high velocity. If a radio jammer is deployed in a manner that affects model aircraft it will create a safety risk to the model flyers and any 3<sup>rd</sup> parties nearby. It will also definitely result in significant financial loss to the model flyers affected. The monetary value of a model aircraft, including on-board radio and motors/engines will generally be in the range £300 to £20,000. In the case of higher value model aircraft it is likely that the owner will have spent 100's of hours, potentially over many years, building the aircraft. Modeller's will be understandably aggrieved if their aircraft are arbitrarily 'shot down' by the deployment (including routine testing) of radio jammers by security forces. This also raises the question of who will be responsible if a jammer causes an aircraft to crash and this causes financial loss, injury or death.

We would suggest that any jammers employed for this purpose should be narrow-beam directional devices. If a drone is detected, it's bearing and range relative to the defending security forces should be known and those forces should be able to direct the jamming beam in a manner that minimises the risk to other drones/models being operated legitimately and safely.

Most drone and model aircraft radios operate in the 2.4GHz band and so it is assumed that this is the band that will be subject to jamming. The 2.4GHz receivers in drones/model aircraft are designed to be resilient to interference by being 'bound' to a specific transmitter and through the use of frequency hopping, spread-spectrum technology. So to be effective a jammer would have to be of high energy across a broad bandwidth. In this respect it should be noted that most Wi-Fi, Bluetooth and mobile phone systems use this same frequency band. Consequently the deployment of a powerful omnidirectional jammer in urban areas is likely to cause significant disruption to the public and to businesses.

Another point to consider is that different frequency bands are used in other countries for drones and model aircraft. It would not be difficult for those with criminal intent to purchase drones intended for those foreign markets which would then be unaffected by any jamming in the 2.4Ghz band.

Question 69: Do you think the safeguards proposed for the use of drone electronic effectors are appropriate?

- Yes
- If No, Question 70 - Why not? And Question 71 – What other safeguards should be considered for the use of drone effectors?
- Don't know

The answer the association will give:

Question 69: No

Question 70: The use of powerful non-directional jammers may cause significant disruption to wifi and mobile networks. The deployment of jammers in the vicinity of model flyers will cause their aircraft to crash with consequential financial loss and risks to safety.  
Question 71: Jammers should be directional (facilitating targeting of their effects) – see answer to question 68. Where security considerations allow, model associations and registered operators (and the general public) should be advised of locations where jammers are likely to be deployed.

Question 72: Do you think anything else should be done to assist organisations in meeting the defined safeguards?

- If Yes, what else?
- No
- Don't know

The answer the association will give: Don't know

Question 73: Do you think the requirements identified for the testing of drone detection technology and drone electronic effectors are appropriate?

- Yes
- No, why not?
- Don't know

The answer the association will give: Don't know

Question 74: Do you think the safeguards identified for both the testing of drone detection technology and electronic effectors are appropriate?

- Yes
- If No, Question 75 – Why not?
- Don't know

The answer the association will give:

Question 74: No

Question 75: Model associations, registered drone operators (and the general public) should be advised well in advance of locations and times where jammers are to be tested so that association members and drone operator are warned of this hazard to their activities. Similar public notifications are already issued for GPS jamming exercises.

Question 76: Would you like any other safeguards to be considered to enable the testing of drone detection technology or drone electronic effectors?

- Yes, please explain what you would like these safeguards to be
- No, please explain why
- Don't know

The answer the association will give:

Drone detection technology: No

Drone electronic effectors: Yes

The reasons the association will give:

Model associations and registered drone operators should be advised well in advance of locations and times where jammers are to be tested. This is to reduce the risk of model flyers having their aircraft 'shot down' by blocking of their transmitter signals.

## Commercial Drone Scenario Modelling

Question 77: Do you have any forecasts of the number of drones and drone users (commercial or non-commercial) you are willing to share?

If Yes, please provide details.

The answer the association will give: No

Question 78: Are the scenarios for the number of commercial users:

- realistic
- overestimates
- underestimates

Why?

The answer the association will give: None.

Question 79: Are the scenarios for the number of commercial drones:

- realistic
- overestimates
- underestimates

Why?

The answer the association will give: None.

Question 80: How do you rate the following assumptions (accurate, weak, unknown)?

- Growth in commercial drone users will continue according to the quadratic trend that best fits historical data.
- Market saturation will most likely occur in 2030, with 2024 and 2035 representing low and high estimates respectively.
- The average commercial user currently has 5.6 drones and this will rise to 10 by 2037.

The answer the association will give: None.

Question 81: What do you estimate the average number of drones per commercial user to be?

- In the next year
- In 2023
- In 2028
- In the long run

The answer the association will give: None.

Question 82: How many drones do you estimate the average non-commercial drone user owns?

The answer the association will give: 15.

Question 83: Any other comments

The answer the association will give: None.