ELECTRONIC CONSPICUITY MANDATE CONSULTATION – CLOSES ON 22 SEP 2026

Thank you for being interested enough to find this important information about the CAA Electronic Conspicuity (EC) mandate consultation which closes on the 22 September 2026. You do not need to understand every technical detail to respond to the CAA consultation. Our guidance aims to help to inform individual responses to the CAA consultation. The CAA uses the number of consultation responses as one indication of the strength of public feeling. Your response can therefore make a difference, particularly if it explains your own experience and concerns.

Glider pilots are urged to submit individual responses in their own words before the CAA consultation closes on 22 September 2026. We offer the following guidance.

- **Start** by reading through the ‘introduction’ below (which includes brief explanation of the main technical terms used).
- **Progress to** ‘your response’ to find the consultation questions and suggested points most relevant to you that will help to inform your response.
- **If you’d like more detail**, the appendices provide supporting evidence under the three main themes of technical, operational, and financial.

Introduction

The Civil Aviation Authority (CAA) has decided that general aviation (GA) aircraft should be mandated to use electronic conspicuity (EC) when flying in UK airspace. The form of EC required under the proposed mandate is Automatic Dependent Surveillance – Broadcast (ADS-B). See below for technical details.

The CAA is currently consulting on this proposed mandate and how it should be designed and implemented. In due course, the law will be changed to require all general aviation aircraft including sailplanes to use the CAA’s choice of EC technology when flying in UK airspace. The CAA are proposing that there will be a two-year implementation period to provide time for aircraft owners to purchase the necessary EC equipment using their own funds. It is the CAA’s intention that the mandate will be introduced at the end of 2028, so in contrast to their usual practice the implementation period will start before the law has been changed.

As the CAA published consultation has resulted in many questions, on the 3rd September the CAA published a ‘common questions answered’ publication. Readers can decide for themselves if their questions have been adequately answered.

This guidance explains the BGA’s concerns about the proposal and helps glider pilots prepare their own responses before the consultation closes on 22

September 2026. The CAA have told the BGA that this deadline will not be extended.

The BGA's response to this consultation is organised around three themes; Technical considerations, Operational impacts and Financial implications. In particular:

- **The BGA supports electronic conspicuity in principle but opposes mandating ADS-B for all UK general aviation, including gliders.**
- The proposal is considered technically risky and disproportionate: it could congest the safety-critical 1090 MHz band, offers limited interoperability, and may increase pilot distraction and complacency.
- Compliant equipment and installation capacity are currently limited; estimated costs range from about £650 for a carry-on device to £5,000–£10,000 for installed solutions, potentially exceeding some aircraft's value.
- The BGA favours interoperable alternatives (e.g. ADS-L), targeted exemptions, and a phased, tested, risk-based implementation rather than a single deadline.

Main technical terms used – quick reference:

The CAA's consultation and the BGA guidance refers to electronic conspicuity terminology. This quick reference is backed up with more detail in appendix 4 below.

- **Electronic conspicuity (EC):** Technology that helps pilots, unmanned-aircraft operators and ATC to detect or identify nearby aircraft.
- **ADS-B**: A system that automatically broadcasts an aircraft's identity, position and other navigation data for reception by aircraft, ground stations or satellites.
- **ADS-L:** A European "light" conspicuity standard for crewed and unmanned aircraft, available in broadcast and networked forms and designed to support interoperability between systems.
- **Mode S:** A radar transponder mode that identifies and selectively interrogates an aircraft using its unique 24-bit address.
- **Mode S Extended Squitter (ES):** A Mode S function that broadcasts additional data, including ADS-B position and identification, without radar interrogation.
- **1090 MHz:** The radio frequency used by Mode S transponders and conventional ADS-B transmissions.
- **SRD860:** The Ofcom-regulated, licence-exempt short-range-device radio band around 860 MHz used by some EC systems.
- **FLARM:** An electronic traffic-awareness and collision-warning system that exchanges position information and uses algorithms to assess potential collision threats.
- **BVLOS:** Beyond Visual Line of Sight, used to describe remote operation of uncrewed aircraft. This is currently restricted to segregated airspace, typically Temporary Danger Areas (TDAs)

- **ACAS sXu:** A version of the ACAS X collision-avoidance system intended for small unmanned aircraft.

Click here for the CAA consultation:

Consultation on a Proposed Electronic Conspicuity Mandate in the UK - Civil Aviation Authority - Citizen Space

Click here for the CAA's additional comments published on 3 September 2026:

ec-mandate-common-topics-and-clarifcationspdf

Your response

Many of the issues around this proposal are deeply technical. You may wish to make use of these points in formulating your own response. See the appendices below for detail, including references.

Based on your own flying, do you think the proposal would deliver a real safety benefit? Does it solve the risks (if any) that you are most concerned about, including military/state traffic or other aircraft that may not participate in a mandate? Would you prefer a different approach, such as recognised local flying areas, better BVLOS drone detect-and-avoid, multi-platform EC, proven lightweight equipment or European-compatible systems? If you oppose the present proposal, explain what would need to change before you would consider supporting it.

The following *questions* are listed below using the same numbers as in the CAA consultation. For each question, BGA guidance is provided including points you may wish to cover in your own words. Please try to avoid cut and paste responses.

Click here to respond to the EC consultation questions:

Consultation on a Proposed Electronic Conspicuity Mandate in the UK - Civil Aviation Authority - Citizen Space

Question 1. The CAA's proposal is that the EC Mandate should apply to all civil general air traffic that is not already required to carry and use ADS-B equipment, operating below FL100 in UK sovereign airspace, subject to the exceptions for military and state aircraft and VLOS operations described in this chapter. Do you agree with that proposal?

No

The BGA is convinced that air-to-air EC can reduce the risk of mid-air collisions through enhanced situational awareness and conflict alerting. Gliding was the first GA sector to equip widely with EC devices (FLARM) and has seen a coincident drop in the number of mid-air collisions.

However, the BGA believes that the proposal to mandate all GA aircraft to equip with ADS-B is highly inappropriate. Detailed reasons are laid out in the appendices below.

In your response, you may wish to explain that:

- most collision risks occur between aircraft in the same activity group, such as glider-to-glider or paraglider-to-paraglider encounters. These groups have already adopted electronic conspicuity systems suited to their own operations. Requiring another device may add little protection against the less common risks between different groups and could distract pilots from more immediate hazards.
- different aircraft operations have very different risks, different acceptances of risk, equipment limitations and abilities to take avoiding action.
- there is no existing or even realistically planned ADS-B ground infrastructure and therefore the proposal is limited to air-to-air use.
- as there are planned exemptions for military aircraft and State aircraft and VLOS UAV operations are excluded, the main outcome of the proposal is that UAVs may be able to detect some aircraft.
- the proposed mandate does not appear to consider what happens when there is notified radio frequency jamming.
- the proposal does not address cross-border issues, e.g. N Ireland (UK) to Eire (EU) or visiting aircraft/pilots.

Question 2. Do the minimum performance requirements set out in CAP 3140 provide appropriate and workable technical requirements for the EC Mandate? Please explain your reasoning and provide any supporting evidence. If you think the scope should be drawn differently, please explain why and what alternative you would propose.

No

(See appendix 1.4 for detailed reasons)

In your response, you might wish to comment on…

- Several studies concluding that non-certified GNSS position data is precise enough for conflict avoidance in unsegregated airspace (i.e. Class G) and that certified solutions are not necessary.
- The significantly higher cost (acquisition and installation) of certified devices is not justifiable and, to many, not affordable.

Question 3. CAP 3140's Position 6 sets out the ADS-B IN receive capability for crewed aircraft should remain a voluntary, operator-led choice rather than a mandatory requirement. Do you agree with this position? If no, please explain *what approach you would propose and why, including the operational and safety implications. Please provide supporting evidence where available.*

Yes

You might wish to comment that unmanned air vehicles (UAV) equipped to receive ADS-B should be able to detect crewed aircraft and take avoiding action. Requiring receiving equipment in every crewed aircraft may therefore add limited benefit, particularly when conflicts between crewed aircraft have remained broadly stable and additional cockpit displays can increase distraction.

UAVs will have ADSB-IN and will automatically take appropriate avoiding action. In UAV-to-crewed GA conflict, the UAV will take the avoiding action and do it much more quickly and more reliably than crewed GA ever can. In crewed-to-crewed GA conflict, without trajectory-based conflict alerts, any benefit of from ADSB-IN is likely to be outweighed by distraction and consequent reduction in situational awareness.

Question 4. Do you think there are circumstances in which the objective of an EC Mandate could be met through means other than direct carriage of EC equipment by the aircraft? If so, please explain how any alternative approach would deliver the objectives of the EC mandate set out in Chapter 3. Please provide evidence on the operational contexts where this might apply.

Yes

(See appendix 2.2)

You might wish to comment on:

- Where regular or planned activities occur in a well-defined area, such as local flying / training, etc within a definable volume of airspace, the objective could be met through established airspace notification.

- Where intense activity occurs involving several aircraft on a temporary/short notice basis in a defined volume of airspace, the objective could be met through EC beacons.
- the potential for use of electronic conspicuity beacons for occasional or temporary activities.
- the need for continued use (subject to justification) of segregated airspace e.g. ATZs, Danger Areas, TMZs, TRAs e.g. for drone swarms.
- the main beneficial effect of the mandate is integration of UAVs (CAP 3268 chapter 3, objective 3.5) with only marginal benefit to the other objectives.

Question 5. The CAA and the Department for Transport are looking at how to balance clear rules with the flexibility needed as technology develops. This *includes whether detailed technical requirements for EC equipment should be set out in guidance or other non-legislative documents, rather than in legislation. Is there anything you think we should take into account when considering this?*

Yes

(See appendix 2)

You might wish to comment on:

- the value of the flexibility (in response to new circumstances or operational experience) which can be achieved if they are not subject to protracted regulatory timetables.
- the value of stability in the rules and the over-arching architecture so that aircraft owners can plan for equipage which is durable and can avoid replacement cost of equipage which becomes obsoleted by rules change.
- a UK approach should avoid requiring pilots to buy or carry a separate UK-only EC system in addition to equipment used for European flying. For example, FLARM forms part of EASA's ADS-L approach.

Question 6. Is there anything you would like us to consider as we develop our oversight and compliance approach to support effective implementation of an EC Mandate across different aircraft categories and operational contexts? Please provide examples where possible, including any aircraft categories where existing oversight mechanisms would not be appropriate or sufficient, and suggestions for how compliance might be assessed in those cases.

Yes

There is clearly a need to avoid burdensome compliance mechanisms, both for reason of cost and administrative overhead. A light touch approach is desirable and indeed is likely to be all that's needed provided the benefits of whatever system is deployed are obvious and the appropriate equipage readily available, and cost-effectively installable.

You might wish to comment on:

- practical aspects of monitoring equipage which is not permanently installed (which is likely to be prevalent due to the higher cost and additional panel space of that which is)
- adoption rates, which are likely to be higher for approaches/devices which obviously benefit the user, thus reducing the need for or benefit of oversight.
- carry-on EC devices, like hand-held radios and electronic flight bags, are associated with a pilot or organisation rather than permanently with a particular aircraft. Compliance should therefore be assessed through operator self-declaration, supported by clear carriage, activation and

serviceability requirements, rather than through aircraft-level installation records alone.
- clarity around owner and pilot responsibilities including following equipment failure, loss of position information or notified GNSS interference.

Question 7. Do you agree that a single compliance start date, following an adequate transition period, is preferable to a phased approach? If not, please explain what phased or alternative delivery model you would propose, which categories it should apply to, and why. Please provide supporting evidence.

No

(See appendix 2.5)

You might wish to comment on…

- The intention to start the transition period before the regulations are finalised and the law changed.
- the value of phased implementation to address the highest concentrations and increases of conflict risk first. These might be expected to be the UAV-to-UAV conflicts, because they are additional and, initially at least, will be within a few hundred feet of the ground, in urban areas (where other aircraft are absent).
- the opportunity to “pilot test” the technology and its effects on other, critical, 1090MHz usage before extending to sectors with lower conflict risk and with existing widespread adoption of alternative non-1090MHz EC approaches.

Question 8. Is the proposed transition period of approximately two years achievable across different operations? Please explain your reasoning and provide supporting evidence. Please include evidence on how quickly operators in your sector could realistically equip, whether sufficient EC equipment and installation capacity would be available, and what transition period would be more appropriate if two years is not sufficient.

No

(See appendix 1.2)

You might wish to explain that

- a two-year transition may not be achievable for gliding. Maintenance capacity is already constrained by recent changes to inspector qualification requirements, and many gliders have very limited instrument-panel space. Installing new equipment may therefore require redesigning the panel and

replacing other instruments, adding time, cost and demand for qualified engineers.
- the final compliance date should not take effect until technical standards, compliance routes, operational testing, infrastructure and international compatibility are sufficiently settled. That should include resolving interoperability with ADS-L and the wider European EC environment before any UK compliance is required.

Question 9. Is there anything you want to tell us about the availability of compliant EC equipment and the capacity of the installation and maintenance sector to support implementation within the proposed timescales? Please provide specific evidence on equipment availability, installer capacity, lead times, and any other supply chain constraints relevant to your sector.

(See appendix 1.2)

The BGA is aware of only one "carry on" ADSB product which meets the proposed performance standards, and not many more for panel installation. While the dates expected for implementation of the proposed mandate are unclear, it appears challenging for manufacturers to achieve product development and supply in time to provide choice and competition in the market, which consequently can be expected to become a sellers' market.

You might wish to comment on…

- the very small number of existing compliant EC devices available and doubt whether manufacturers will choose to develop products for a UK-only market (Europe/EASA is adopting a different protocol).
- the potential dominance of, and the risks associated with dependence on, one or two manufacturers.

Question 10. What costs would the proposed EC Mandate impose on you or the sector you represent? Please provide quantitative estimates where possible, including equipment purchase, installation, maintenance, training and any operational costs. If you consider that costs would fall on particular groups within your sector, please explain why and provide supporting evidence.

(See appendix 3)

You might wish to comment on the wide range of possible costs: about £650 for a compliant carry-on device without an ADS-B IN display; around £5,000 for installed Mode S Extended Squitter equipment; and as much as £10,000 where other instruments must be replaced to create panel space. The final cost will depend on each aircraft's layout, electrical system and installation requirements.

Question 11. What evidence do you have on the likely operational impacts of the proposed EC Mandate? Please provide data, studies, or operational experience where available.

The proposed mandate could increase loading on the 1090 MHz band, add cockpit workload and distraction, create false reassurance where traffic displays are incomplete, and introduce installation and loose-equipment risks. Relevant evidence is summarised in appendices 2.3 and 2.4, including the QinetiQ spectrum and human-factors studies and the SESAR operational trial.

The CAA have chosen not to include Air Navigation Service Providers (ANSP's) in this consultation. We expect the numbers of Transponder Mandatory Zones (TMZ's) to increase in the near future and the CAA do not say whether they will require ANSP's operating TMZs to allow the use of ADS-B Out devices (rather than a Mode S Transponder) to access these TMZ's. When asked, they said this would be at the discretion of the ANSP, and very few ANSPs are equipped to receive ADS-B transmissions.

Question 12. Are there groups, sectors, aircraft types or regions that would be affected more than others by the proposed EC Mandate, either positively or negatively? Please explain and provide evidence where possible, including any equality, accessibility or unintended consequences. Please consider both the costs and the benefits when describing differential impacts.

Yes.

(See appendix 3)

It can be expected that the impacts will be greater in some areas within gliding than others. This question is a good opportunity for individuals to describe their particular interest in gliding, the glider types they fly, and the operational and financial impacts they foresee for themselves.

You might wish to comment on…

- the need for installed equipment exemptions for vintage aircraft for which panel reconfiguration and even electrical supply are not realistically achievable.
- low-cost aircraft for whom installed EC costs would be beyond owners means and probably higher than the value of the glider.
- there being no sectors in gliding which see significant benefit.
- the only significant benefit applies to the UAV industry.

Question 13. Based on the evidence available to you, do you consider the CAA's preferred approach would meet the safety and integration objectives set out in Chapter 3?

In the BGA's view, the CAA and DfT's aim of integration of UAV (Unmanned Air Vehicles) into uncontrolled airspace is the primary driver for the CAA's EC mandate. As indicated above in our consultation question responses, the proposed mandate will be of limited effectiveness **beyond** UAV conflict, it will increase risk of distraction and complacency in crewed aircraft and is a disproportionate financial imposition on clubs and private owners in the crewed GA sector.

Click here to respond to the EC consultation questions:

[Consultation on a Proposed Electronic Conspicuity Mandate in the UK - Civil Aviation Authority - Citizen Space]

Thank you for taking the time to respond. Your response can make a difference.

Appendices

- 1- Technical considerations
- 2 – Operational impacts
- 3 – Financial implications
- 4 – About Electronic Conspicuity
- 5 – References

1 – Technical considerations

1.1 1090 MHz Band Congestion

ADS-B transmissions would add substantially to traffic on the 1090 MHz radio frequency. That same frequency is already used by safety-critical systems that help commercial aircraft avoid collisions and allow air traffic control to track aircraft. Excessive additional traffic could reduce the performance of those systems.

Analysis of potential 1090MHz congestion was summarised in CAP3139. The underlying technical report was circulated to an EC Working Group but not formally published. That report seems to indicate that the assumed ADSB transmission rate would be about one third to one half of that specified in the DO-260 ADSB International standard. This would of course have reduced 1090 MHz congestion, but we do not understand where this assumption arose from.

It will be effective only for GA-GA/UAV collisions, because ADS-B signals will not be processed by a current Traffic Collision Avoidance System (TCAS) or Air Traffic Service (ATS) system and would unacceptably clutter screens if they were.

Use of the 1090MHz band for GA-GA/UAV is unjustified by the postulated but unquantified further reduction in mid-air conflict (MAC) risk and imposes disproportionate requirements and costs on GA devices, with the prospect of further or amended requirements as problems are discovered when operational.

The proposal mainly requires aircraft to transmit their position using ADS-B OUT. Pilots receive and display other aircraft only if they also choose to fit ADS-B IN equipment. If receiving equipment remains optional, many aircraft will transmit their positions without gaining direct warnings about nearby traffic, so the reduction in collisions between general aviation aircraft may be limited. However, choosing not to fit ADS-B IN does not reduce its effectiveness in supporting collision avoidance between UAVs, or between UAVs and other aircraft.

1.2 Equipment Availability

The proposal would require equipment of which there is limited choice and supply options are uncertain and would use the 1090 MHz radio frequency already relied on by safety-critical commercial aviation systems. The BGA considers this risky and impractical, particularly because an interoperable European alternative, ADS-L, already exists and uses a different regulated frequency band. Significant ground infrastructure and integration with commercial aircraft and air traffic services would also be needed, and these are unlikely to be ready before congestion on 1090 MHz becomes a concern, especially if equipment transmits at the internationally specified DO-260 message rates.

There are currently no installable 1090MHz ADS-B OUT devices that meet the proposed specification except full Mode-S-ES Transponders; the single commercially available carry-on device (the uAvionix SkyEcho2) has no provision for an external antenna and thus limited performance. Capacity for manufacture, installation, testing and in some cases installation approval does not currently exist for introduction at this scale.

A UK-only solution is unlikely to attract substantial commercial investment in compatible devices, displays and collision-alert systems. For example, f.u.n.k.e. developed the Low Power ADS-B Transceiver (LPAT) for the CAA but did not take it into commercial production, while Garmin has not enabled the use of lower-cost commercial off-the-shelf GPS sources in relevant products. The resulting market could therefore be highly concentrated, with operators dependent on a very small number of suppliers.

1.3 Rejection of ADS-L

The BGA does not consider the reasons given in CAP 3140 Appendix C sufficient to justify rejecting ADS-L.

1.3.1 RF power is not the problem – with proper, appropriately placed antennas, low power SRD 860 systems have proven ranges of tens of miles, vastly exceeding the short range required for collision avoidance (e.g. CAP3140 C39, C40) and useful situational awareness.

1.3.2 SRD 860 is a regulated frequency, so OFCOM should indeed ensure freedom from interference by non-compliant devices (which will rarely be close enough to have an effect anyway). It doesn't matter if other technologies use the same bands for other purposes, provided they conform to SRD 860 requirements

1.3.3 The ADS-L specification is not closed and proprietary (even the previously proprietary FLARM protocol is now public), and ADS-L devices are indeed air-to-air interoperable.

Without specialist technical competence to control the design and certification requirements for EC systems, the CAA's lack of control is entirely appropriate.

1.4 Rejection of Commercial of the Shelf (COTS) GPS

In addition to the slide pack referred to in CAP3140 C29, NATS (National Air Traffic Services) report 'General Aviation: ADS-B/GPS Trial Results' (2015) provides evidence that "the quality of non-certified GPS is sufficient for use in enhancing visual acquisition / electronic conspicuity of general aviation"

CAP 1391 indicated that the use of COTS GNSS was satisfactory outside controlled airspace.

GNSS interference (CAP3140 C66, C67) is however a significant concern, but it is not addressed by any of these proposals.

Quality indicator specifications should stem from specific performance and interoperability requirements.

1.5 ADS-B Limitations

The patchy detectability of some air-to-air EC systems is widely recognised, as reported in e.g. SESAR 'GAINS D3.2 Airborne Validation Report' (2019), 'Airspace4All GA Airfield ATS ADS-B Traffic Display Trial' (2019) and QinetiQ's 'Workstream 2: Analysis of the probability of detection of electronic conspicuity devices' (2024), upon which CAP3139 Chapter 4 is based.

ADS-B broadcasts an aircraft's identity, position and related data. It does not by itself display traffic, predict trajectories, assess collision risk or advise avoidance action; those functions require separate receiving equipment, displays and software. To maximise safety benefit it therefore depends not only on fitting ADS-

B OUT, but also on compatible reception, reliable detection and effective presentation to the pilot.

SESAR's 'GAINS D4.4 Aerodrome Operations Demonstration Report' (2019) noted that, when ADS-B data were used to provide collision awareness, 'spurious warnings were generated in a busy visual circuit, which was particularly problematic when an ATC service was being provided. For example, at Dundee, pilots reported that they needed to concentrate their attention on flying the aircraft, visually searching for aircraft and listening to the ATC instructions.' This is particularly unfortunate as, according to Helios's CAA-commissioned 'Review of existing Class G airspace risk studies' (2014), '56% of powered aircraft collisions occurred over or near an airfield.'

1.6 Interoperability

As CAP3140 C31 & C33 note, there is no prospect, before 1090MHz spectrum congestion becomes a problem, of interoperability with CAT ACAS or ATS; and the NATS study mentioned above makes clear that Commercial off-the-shelf (COTS) GPS is adequate for GA (and by extension UAV) use. No ACAS sXu products exist (C31), and it is unclear how widely they will be adopted. The CAA's future aspirations (C35) depend upon infrastructure, hardware, systems and operational mechanisms that do not currently exist, are not planned, and have no funding to cover their very significant cost.

2 – Operational impacts

The CAA should complete and publish a proportionate risk assessment before introducing regulation, then define clear, outcome-based functional requirements and commission suitably qualified technical specialists to develop and validate the implementation standards.

2.1 UK-Only Solution

The UK approach differs from that adopted in the EU. A UK-only standard is unlikely to attract sufficient commercial investment, leaving operators with few products and limited future development. It could also deter EU-based aircraft from visiting the UK because their operators would need equipment solely for UK flights.

2.2 Alternatives to EC Carriage in specific circumstances

Where regular or planned activities occur in a well-defined area, such as parachute dropping, local flying / training, etc within a defined volume of airspace, the objective could be met through established airspace notification.

Where intense activity occurs involving several aircraft on a temporary/short notice basis in a defined volume of airspace, the objective could be met through EC beacons.

2.3 Impact on 1090MHz Congestion

The mandated GA use of 1090MHz ADS-B could reduce the effectiveness of safety-critical Commercial Air Traffic systems TCAS and SSR, to which it will add load even though GA ADSB transmissions are not used by them.

The impact upon the 1090MHz band was assessed in a CAA-commissioned study by QinetiQ, 'Workstream 1: Analysis of the Capacity Limits of ADS-B on 1090MHz and 978MHz' (2024), summarised as CAP3139 Chapter 3, which found that in the proposed mandated situation 'from 2040, ever increasing congestion will be seen, and beyond the year 2040 continued 1090MHz loading may start to have an undesirable effect on SSR performance, especially in the absence of mitigating actions'.

The report also stated that 'there is a consensus of opinion that ADS-B on 1090MHz will (at some point) reach a saturation point. The precise 'saturation point' is not known as it depends on many factors' and recommended that 'The CAA should continue to take measures to carefully manage RF load on 1030/1090MHz.'

The Workstream 1 document modelled ADS-B message rates at between one-third and one-half of the rate specified internationally by DO-260. The study did not model the effect of using the full DO-260 rate. The BGA therefore infers that full-rate devices would bring the saturation point forward, potentially to traffic levels closer to those seen today, but this requires further modelling to confirm.

A previous CAA-commissioned QinetiQ simulation, 'RF Environment Modelling for Widespread GA 1090MHz Conspicuity' (2019), predicted automatic TCAS Interference Limiting. The report stated that this would cause 'an inevitable reduction in the quality of TCAS surveillance'. It also explained that existing TCAS provisions should preserve conflict-resolution capability, although the traffic display would provide less comprehensive situational awareness. The BGA considers that the simulation may have underestimated GA traffic density.

2.4 Human Factors

Current ADS-B displays may increase distraction and create false reassurance, while offering limited help in some of the situations where collisions are most likely. A display can appear to show a complete picture even when some aircraft are missing or their positions are inaccurate. Showing more traffic can also increase pilot workload and divert attention from looking outside and flying the aircraft.

QinetiQ's CAA-commissioned 'Workstream 5: Human Factors – integrating Electronic Conspicuity derived traffic into an existing 'See and avoid' airspace environment' , summarised as CAP3139 Chapter 5, concluded that 'The current key HF hazard is that (Electronic Conspicuity Devices) present a compelling and comprehensive traffic picture which may be incomplete or inaccurate if other ECDs cannot be detected increasing collision risk to the user' and that while full EC interoperability might address this, 'increasing the number of EC threats on … displays is likely to raise user workload. This may reduce user ability to detect traffic threats and increase strain on the user's ability to conduct core flying tasks.' The report noted the danger of distraction, as well as of control restriction and loose article hazards with carry-on devices.

Encouraging the use of a sucker-mounted EC device may have safety implications.

2.5 Absence of Pilot Scheme

In the absence of a properly-conducted pilot scheme, there is a huge risk of unexpected/unintended consequences:

- Impact upon TCAS and SSR ability to detect CAT through spectrum loading
- Impact upon airborne and ATS screens through screen clutter
- Processes for dealing with intermittent functionality/loss of contact

3 – Financial implications

- The primary **beneficiary** of the mandate as described is the UAV industry.
- Other than within GA business aviation and commercial activity, the **cost and wider burden** of complying with the proposed EC mandate would fall on a significant number of individuals.

This results in a significant negative impact for recreational GA and a significant benefit for the UAV industry.

3.1 Equipment Costs

In August 2026, the uAvionix SkyEcho2 retailed at approximately £650 inc. VAT. The cost will likely increase as market dynamics associated with any mandate evolve. This is a carry-on, generally sucker-mounted device with known performance limitations.

The same manufacturer offers an installable 1090 MHz Mode S-ES system with ADSB in/out for around $3,300 in the USA.

Since a 1090MHz ADS-B transceiver differs from a Mode-S transponder only in software and the 1030MHz receiver (reckoned by one manufacturer to cost around £1 to include in the design), the cost is likely to be similar to that of a Mode-S-ES transponder, and indeed manufacturers may choose simply to modify their Mode-S-ES devices (the US manufacturer's similarly packaged 1090MHz Mode-S-ES and 978MHz UAT ADS-B devices differ in price by just $300). The equipment cost is therefore likely to be around £2,500-3,000, plus antenna and cabling. Installation by a qualified engineer is likely to be £1,000-2,000. Where replacement of other instruments is required in order to release panel space and/or to provide for display of ADSB-IN data, significant additional instrument costs may be incurred, potentially as much as doubling the cost.

4 – About Electronic Conspicuity

Electronic conspicuity is a general term for technology that helps pilots, unmanned-aircraft operators and air traffic services know what other aircraft are nearby. The following short definitions explain the terms used throughout this guidance; readers do not need to understand the underlying engineering.

- ADS-B

Automatic Dependent Surveillance–Broadcast (ADS-B) is an aviation surveillance technology and form of electronic conspicuity in which an aircraft determines its position via Global Positioning System (GPS) satellite navigation or other sensors and periodically broadcasts its position and other related data, enabling it to be tracked.

The information can be received by suitably equipped ground-based – including air traffic control – or satellite-based receivers as a replacement for Secondary Surveillance Radar (SSR). Unlike SSR, ADS-B does not require an interrogation signal from the ground or from other aircraft to activate its transmissions.

ADS-B can also be received point-to-point by other nearby ADS-B equipped aircraft to provide traffic situational awareness and support self-separation. ADS-B is “automatic” in that it requires no pilot or external input to trigger its transmissions. It is “dependent” in that it depends on data from the aircraft’s navigation system to provide the transmitted data.

- ADS-L

The European Aviation Safety Agency (EASA) has introduced the concept of ADS-L (ADS-B Light). Originally designed for the surveillance of crewed aircraft in airspace also occupied by unmanned aerial vehicles(UAVs), as required by Article 6005 of the Standardised European Rules of the Air (SERA), ADS-L led to the creation of two standards: networked and broadcast. Each standard offers unique benefits and addresses different safety aspects, contributing to a comprehensive EC ecosystem.

With the increasing complexity of the EC landscape, interoperability becomes crucial. This process involves allowing different EC systems (e.g. FLARM, PilotAware, ADS-B, etc) to communicate with each other to improve their overall effectiveness.

Interoperability can also be achieved through ground stations that rebroadcast or relay signals (this includes mobile networks such as 4G), multi-function in-cockpit devices or a combination of these. ADS-L can be enabled on modern FLARM devices and PilotAware devices are ADS-L compatible.

- Mode S

Mode S is a Secondary Surveillance Radar (SSR) transponder process that allows selective interrogation of aircraft according to the unique 24-bit address assigned to each aircraft.

- Mode S Extended Squitter (ES)

Mode-S transponders automatically send periodic burst transmissions called “squitters”. These transmissions are self-generated and are not in response to interrogations from a secondary surveillance radar (SSR) system. The information sent in these burst transmissions, which require the mode S device to have an input from a SIL1 GPS input, serves several purposes including Automatic Dependent Surveillance Broadcast (ADS-B) including an aircraft’s identification, GPS position, projected aircraft trajectory and navigation system status to allow controllers to accurately track the aircraft. ADS-B is effectively a Mode-S-ES transponder that does not reply to interrogations.

- 1090 MHz.

The radio frequency used by Mode S transponders and conventional ADS-B transmissions. It is also used by important aviation surveillance and collision-avoidance systems, which is why the effect of additional transmissions is relevant to the consultation.

- SRD860.

Short Range Device operating in the 860 MHz Band. Regulated by OFCOM but unlicensed.

- FLARM

An electronic traffic-awareness and collision-warning system widely used in gliding and also used by many hang glider and paraglider pilots. It exchanges position information and uses algorithms to assess potential collision threats.

- ACAS sXu

Part of the wider ACAS-X project to replace TCAS, ACAs sXu is specifically targeted at small UAVs.

5 – Reference Documents

- CAP 1391 https://www.caa.co.uk/data-and-publications/publications/documents/content/cap1391/
- CAP 3140 https://www.caa.co.uk/data-and-publications/publications/documents/content/cap3140/
- CAP 3139 https://www.caa.co.uk/data-and-publications/publications/documents/content/cap3139
- NATS report on COTS GPS

- Qinetic '*RF Environment Modelling for Widespread GA 1090MHz Conspicuity'*(2019)
- SESAR Demonstration Reports https://cordis.europa.eu/project/id/783228/results
- NATS report 'General Aviation: ADS-B/GPS Trial Results' (2015) https://nats.aero/blog/wp-content/uploads/2016/03/GA-ADS-B-GPS-Trial-report.pdf
- *'Airspace4All GA Airfield ATS ADS-B Traffic Display Trial'*(2019) https://web.archive.org/web/20210510223502/https://airspace4all.org/wp-content/docs/20190930-Airspace4All-GA-Airfield-ATS-ADS-B-Traffic-Display-Trial-Report-V1.0.pdf

End.