

Response ID [REDACTED]

Submitted to Consultation on a Proposed Electronic Conspicuity Mandate in the UK
Submitted on 2026-09-15 17:52:23

About you

A Are you responding in an official capacity on behalf of an organisation?

Yes

If yes, please tell us its name:
British Gliding association

B What is your name?

What is your name?:
CEO BGA

C What is your email address?

What is your email address?:
[REDACTED]

D Are you answering as:

National representative organisation e.g. trade association

If other, please specify:

E If you are a member of the General Aviation community, which sub-category are you answering as?

Glider / TMG

If other, please specify:

F If you are from the commercial aviation industry, which sub-category are you answering as?

If other, please specify:

G Do you consent to your response being published on this consultation website?

Yes, with personal identifying information (name, organisation, respondent category, location, additional information - please note your email address will NOT be published if you choose this option)

The CAA's Proposed Approach

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

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.:

The British Gliding Association (BGA) supports the objective of improving electronic visibility and reducing collision risk, but does not agree that every civil GA aircraft below FL100 should be compelled to transmit ADS-B.

Gliding led widespread voluntary adoption of purpose-designed EC through FLARM, with operational benefits where equipment provides reliable, interoperable and trajectory-based conflict alerting.

Core BGA position:

- The mandate should not prescribe ADS-B as the only acceptable solution.
- Existing interoperable and activity-appropriate EC, including FLARM and future ADS-L-compatible solutions, should be recognised.
- Implementation should target evidenced risks first, particularly integration of BVLOS uncrewed aircraft, rather than impose a simultaneous fleet-wide deadline.
- 1090MHz capacity to accommodate ADS-B message rates at realistic GA traffic densities without risking CAT ACAS and SSR needs to be established by models and verified by practical trials.
- Certified equipment should not be required where non-certified GNSS performance is demonstrably adequate for the intended safety function.

- Vintage, low-value and electrically unpowered aircraft require proportionate exemptions or practical alternative means of compliance.
- No transition period should precede settled standards, adequate product and installer capacity, spectrum assurance, international compatibility and a completed regulatory impact assessment.

The proposal treats very different activities, aircraft capabilities and risk profiles as though they were equivalent. In gliding, the most frequent airborne conflict is with other gliders, and the sector has already adopted FLARM widely because it is designed for close-proximity, manoeuvring traffic and provides trajectory-based alerts.

A blanket ADS-B requirement would add cost, equipment and cockpit-management burden without demonstrating a commensurate reduction in gliding risk. It would not secure universal detectability because military and state aircraft may be exempt, VLOS UAS are outside scope, some non-cooperative traffic will remain, and GNSS interference or equipment failure can remove the intended benefit.

It risks imposing substantial cost on clubs and private owners while providing limited additional protection against the principal collision risks faced by gliders.

The proposal also lacks a credible treatment of cross-border operations and visiting aircraft.

In summary, the proposal is not yet shown to be proportionate, technically mature, interoperable with the wider European environment, or deliverable within the proposed timetable.

The BGA recommends a risk-based, phased and technology-neutral approach. A future framework should be:

- technology-neutral;
- interoperable with European ADS-L developments;
- recognise existing effective systems
- provide proportionate alternative means of compliance and exemptions;
- place responsibility for BVLOS integration appropriately on the new operation and its detect-and-avoid capability.

Only when those conditions are met should any further mandate be considered.

The next stage should be a jointly governed programme of risk-based trials and analysis, with GA sector representation, that produces a published safety case, spectrum-capacity assessment, human-factors evaluation, interoperability plan, market-readiness assessment and full regulatory impact assessment.

2 Do the minimum performance requirements set out in CAP 3140 provide appropriate and workable technical requirements for the EC Mandate?

No

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.:

The proposed requirements are not yet appropriate or workable for a universal GA mandate. The BGA is not persuaded that certified GNSS position sources are necessary for the intended air-to-air conspicuity and conflict-avoidance function in Class G airspace. Available studies cited in the supporting material indicate that non-certified GNSS can provide adequate positional performance for this purpose, subject to suitable integrity monitoring and clear failure indications.

Mandating higher-certification equipment would greatly increase acquisition and installation costs, reduce product choice and exclude many gliders with constrained panel space or electrical capacity. The standard should instead state outcome-based performance requirements, permit portable and installed solutions, recognise interoperable multi-protocol equipment, and provide a clear route for proportionate declaration of conformity. It should also address jamming, spoofing, identity configuration, spectrum capacity and interoperability with ADS-L before becoming mandatory. It has become clear that the CAP3139 summary of Qinetiq's Workstream 1 Analysis of the capacity limits of ADS-B on 1090MHz and 978MHz did not mention that the analysis used significantly lower message rates than those specified in the international standard DO-260. This calls into question the conclusion that 1090MHz congestion will not become an issue before 2040. The CAA have not published (nor answered subsequent questions regarding) the aircraft & transmitter numbers assumed in that work, so we remain concerned that these may underestimate actual traffic numbers and spectrum impact.

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?

Yes

If no, please explain what approach you would propose and why, including the operational and safety implications. Please provide supporting evidence where available.:

The BGA agrees that ADS-B IN for crewed aircraft should remain an operator-led choice. A receive mandate would add display, power, integration and training burdens and could increase head-down time. Traffic displays are necessarily incomplete where aircraft are non-participating, exempt, or affected by equipment or GNSS failure. They can therefore create false reassurance unless supported by effective conflict-alerting logic and appropriate human-factors design.

For BVLOS UAS integration, the detect-and-avoid system carried by the UAV should detect cooperative crewed aircraft and cause the UAV to take timely

avoiding action. For crewed aircraft, operators should remain free to choose the receive and alerting equipment best suited to their operation, including FLARM via the multi-protocol ADS-L environment.

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?

Yes

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.:

The objective can be met by alternative means where the operating context is known and bounded. Examples include established notification of regular local flying or training within a defined volume (timely published notification is a more reliable way of getting data to a UAV); electronic conspicuity beacons for temporary concentrations of activity; and proportionate use of ATZs, Danger Areas, TMZs or TRAs where segregation remains necessary, including for drone swarms or immature detect-and-avoid operations.

Alternative means should be assessed against the specific objective and risk. They should include recognition of an aerodrome or club operating plan, published activity areas, ground or network-based information where reliable, and existing sector EC whose safety performance is established. The principal new integration need arises from BVLOS UAS. The burden of demonstrating safe integration should therefore sit with the new operation and its detect-and-avoid architecture rather than defaulting to universal additional equipage by existing airspace users.

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?

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The BGA supports controlled flexibility, subject to safeguards.

Primary legislation should establish the scope, purpose, responsibilities, exemptions and due-process protections. Detailed technical requirements may sit in guidance or other subordinate material so that they can respond to evidence and technological development, but changes must be transparent, consulted on, version-controlled and subject to realistic transition periods.

Operators and manufacturers need regulatory stability to make durable investment decisions. Guidance must not allow material obligations or equipment standards to change without impact assessment. The architecture should be technology-neutral and internationally interoperable. In particular, UK operators should not be forced to buy a UK-only system in addition to equipment used in Europe; alignment with ADS-L and recognition of FLARM-compatible solutions are essential.

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.:

The compliance model should be light-touch, proportionate and adapted to the aircraft category. Portable EC may be associated with a pilot, club or operating organisation rather than permanently installed in one aircraft. Compliance should therefore be capable of being demonstrated through operator self-declaration, club procedures and pre-flight checks, supported by clearly defined requirements relating to carriage, activation, identity configuration and serviceability.

Aircraft-level modification records alone would be inappropriate for portable equipment and many non-Part 21 or vintage aircraft. The CAA should clearly allocate owner, operator and pilot responsibilities and provide practical rules for deciding what to do following equipment failure, loss of GNSS position, notified interference, depleted power or loss of a portable unit. Enforcement should focus on deliberate or repeated non-compliance, not inadvertent technical failure. High voluntary uptake is most likely where equipment offers visible operational benefit and is affordable.

Implementation and transition arrangements

7 Do you agree that a single compliance start date, following an adequate transition period, is preferable to a phased approach?

No

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.:

A single fleet-wide compliance date would transfer unresolved technical, supply-chain and operational risk to aircraft owners. The transition should not begin before the rules, standards and acceptable means of compliance are final. A phased model should start with controlled trials and the areas of greatest evidenced new risk, including UAV-to-UAV and BVLOS integration environments, followed by evaluation of safety benefit, human factors, spectrum loading and unintended consequences.

Only after publication of trial results and an updated safety and economic case should requirements extend to lower-risk sectors that already use effective non-1090 MHz EC. Milestones should be conditional rather than calendar-only, with explicit readiness criteria for equipment availability, installer capacity, interoperability, 1090 MHz resilience, training and exemptions.

8 Is the proposed transition period of approximately two years achievable across different operations?

No

8. Is the proposed transition period of approximately two years achievable and fair across different operations?:

Two years is not a credible universal transition period for gliding. Maintenance and inspection capacity is already constrained. Many gliders have small instrument panels, limited electrical capacity and tightly integrated existing equipment. A compliant installation may require panel redesign, removal or replacement of serviceable instruments, modification approval and scarce specialist labour.

The compliance period should begin only when final standards and legal obligations are published, multiple compliant products are available at competitive prices, installation and maintenance routes are established, and interoperability with ADS-L and neighbouring states is resolved. The BGA recommends a minimum three-year implementation period after those readiness conditions are met, with a longer period or permanent alternative means of compliance for aircraft requiring substantial modification, historic aircraft and aircraft without suitable electrical systems.

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.:

The current market is not ready to support the proposed mandate. The BGA is aware of only one portable ADS-B product that appears to meet the proposed performance standard and no installed options which are not part of a Mode-S transponder. That is insufficient choice for a diverse fleet and creates dependence on one or two suppliers.

A UK-specific requirement may not attract product development where the larger European market is pursuing ADS-L and other interoperable approaches. A compressed deadline would create a sellers' market, increase prices and expose operators to long lead times or unsupported products. Installer and maintenance capacity is also limited, particularly for bespoke glider panel work and modification approval. Before setting a date, the CAA should publish a verified product list, market-capacity assessment, forecast demand, installer-capacity analysis and contingency plan for shortages. Any equipment purchased to meet the requirements of this mandate should be expected to have a 10 to 15-year life in service and not be made redundant by future requirements – for example, for access to TMZ's.

Impacts and Evidence

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.:

The direct capital cost is expected to range from about £650 for a compliant portable transmit-only device to approximately £5,000 for an installed Mode S Extended Squitter solution. Where panel space, electrical capacity or existing instruments must be changed, total cost may approach £10,000 per aircraft. These figures exclude recurrent maintenance, battery replacement, software or database support, periodic testing, modification approval, training, aircraft downtime and club administration.

The impact is highly regressive. For low-value or jointly owned gliders, installation may equal or exceed the aircraft's market value. Clubs operating fleets would face multiplied costs while also needing to train members, manage portable equipment and absorb downtime. Costs would be imposed despite many aircraft already carrying FLARM equipment that directly addresses the predominant gliding collision risk. A full impact assessment should value existing investment, quantify assets rendered redundant and examine effects on participation, club viability and fleet attrition. If a mandate proceeds, financial support and proportionate alternatives will be necessary.

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 may create adverse operational effects as well as benefits. Additional transmissions could increase loading on the safety-critical 1090 MHz band used by surveillance and collision-avoidance systems. The evidence cited in the appendices, including QinetiQ spectrum and human-factors work and the SESAR operational trial, warrants further testing before mass equipage.

In cockpits, incomplete traffic pictures can encourage complacency, while additional displays and alerts can increase workload and head-down time. Portable devices introduce securing, power, antenna-shadowing, configuration and loose-object risks. Installed equipment can displace instruments that have greater operational value to the glider pilot.

The consultation does not resolve how ADS-B Out-only equipment will be treated in present or future TMZs. Access may remain dependent on individual ANSP capability and discretion, and few ANSPs currently use such transmissions operationally. The CAA should include ANSP requirements, spectrum monitoring, human-factors evaluation, failure-mode procedures and operational trials within the implementation plan.

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.

The burden would fall disproportionately on vintage, low-value, unpowered and panel-constrained aircraft; clubs with multiple aircraft; syndicates and private owners with limited means; and operations near borders where UK-only requirements would conflict with neighbouring arrangements. Some historic gliders cannot practicably support a permanent installation or electrical supply. In other cases the installed cost could exceed the aircraft's value.

The gliding community has already invested extensively in FLARM, so a non-interoperable ADS-B requirement risks stranding effective safety equipment while adding limited benefit. The largest direct commercial and integration benefit appears to accrue to BVLOS UAS operations, while costs are transferred to established crewed-aircraft users. Potential unintended consequences include aircraft withdrawal, reduced participation, pressure on club finances, concentration of access among better-funded owners, and pilots carrying multiple devices with competing alerts.

The BGA recommends exemptions or alternative compliance for historic and technically unsuitable aircraft and for local flying and training, recognition of existing effective EC, financial support where new equipage is required for a primarily public-policy integration objective, and monitoring of participation and fleet-retirement impacts.

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?

Please explain your reasoning and provide supporting evidence. If you consider any aspects of the proposal would not meet those objectives, please identify which aspects and what changes you would propose.:

The BGA supports proportionate measures that deliver demonstrable safety benefits and remains willing to work constructively with the CAA, other airspace users, equipment manufacturers and European partners. However, the consultation material does not yet establish that a universal ADS-B mandate is the safest or most cost-effective means of achieving the stated objective.

Before any mandate is developed further, the CAA should publish a complete safety case and regulatory impact assessment; resolve 1090 MHz capacity, GNSS resilience and human-factors concerns; demonstrate interoperability with ADS-L, FLARM and neighbouring states; define the treatment of visiting aircraft and cross-border operations; establish practical exemptions and alternative means of compliance; and show that the equipment, installation, maintenance and oversight capacity exists.

The BGA also asks the CAA to distinguish clearly between electronic conspicuity, surveillance and collision avoidance. Transmission of position does not by itself provide an effective alert or guarantee detection. Future policy should therefore be performance-based and technology-neutral, recognising systems that provide reliable, activity-appropriate collision-risk mitigation rather than requiring one transmission technology regardless of operational context.

The integration of BVLOS uncrewed aircraft is a principal driver for the proposal. The safety obligation should remain with the new operation and its detect-and-avoid architecture. Existing airspace users should not be required to fund or carry additional equipment unless the necessity, benefit and proportionality of doing so have been demonstrated. Any future programme should be developed through representative trials with transparent success criteria and independent review.

References to documents used to inform our response:

- 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
- QinetiQ '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->