Airspace Modernisation Strategy 2022–2040

The Airspace4All Trust

PART 1 - CAP 2298A - Consultation Response V5 - 4 April 2022

INTRODUCTION

1. The Airspace4All Trust coordinates on behalf of a wide range of GA sub-categories, predominantly the members of the General Aviation Alliance. The General Aviation Alliance represents the interests of some 72,000 subscription paying members of a group of organisations in the UK General Aviation (GA) industry.

2. This document is a response to the CAP2298a consultation prepared for the Airspace4All Trust on behalf of its stakeholder organisations:

   British Balloon and Airship Club
   British Gliding Association
   British Hang Gliding and Paragliding Association
   British Model Flying Association
   British Microlight Aircraft Association
   British Skydiving
   Helicopter Club of Great Britain
   Light Aircraft Association
   PPL/IR Europe
   Royal Aero Club of The United Kingdom

3. The Airspace4All Trust and GA stakeholders welcome the approach taken to modernise the UK airspace, systems and services, sharing the vision and objectives of the AMS, and appreciate the extent and quality of consultation approach that lead to the development of the consultation document. We look forward to that being continued during the post CRD (Comment Response Document) and Strategy development thus ensuring a sustainable strategy balanced in respect of stakeholders interests

4. Many of the elements set out in the consultation document cover areas that GA has been promoting for some time and this programme presents a great opportunity to make huge steps in capability and efficiency for all airspace users.

5. We have identified a theme that runs through the AMS proposals that results in nearly all the GA comments and challenges that follow in this paper. It stems from diversity of GA with its very different operational requirements and limitations. This has always presented a barrier to progress on airspace regulatory matters and whilst this AMS Vision is good for all of GA, the proposals that would deliver it could be seriously damaging for some. That does not need to be. The GA organisations themselves recognise the need for change and are the store of expertise that can be deployed within the AMS so that the critical operational needs can be understood and taken into account.

6. This response highlights the problem areas for GA but does not generally set out solutions. These need greater interaction in their development if the aims of the AMS are to be met. As set out in Part 1 Paragraph 1.9 we seek the opportunity to make a full contribution to the strategy and are ready with experts and resources to enable GA to become an integrated part of the future airspace. For GA this consultation is just the first step in that collaboration.

We have completed the on-line response documents you requested but our stakeholder's interest in the outcome of airspace modernisation goes far beyond the limited areas you define. We have therefore created and published this document which sets out their position on the various elements. For ease of reference, we annotate our text with the source document paragraph numbers.

RESPONSES TO CAP 2298A

The Trust has assembled the following bullet point summary of its analysis and responses to the consultation. These are detailed and cross referenced in the sections that follow.

Trust welcomes in principle:

- A well-developed strategy providing a clear policy on which to move forward
- Stated intent to integrate the requirements of ALL airspace users and new entrants in simplified and efficient airspace structures
- Engagement to date and expectation that approach will continue in both development and implementation
- Recognition of key drivers
- Acknowledges the delivery elements
- Intent to exploit technology supported by appropriate policy & regulation to provide an airspace that is fit for purpose until 2040 based upon continuous ongoing development
- Flexibly managed airspace and greater access to controlled airspace which could be of great benefit to GA and other airspace users
- The intent to reduce the volume of CAS at lower levels in line with Government policy
- Supports the intent for technological improvements, particularly with digitised services such as NOTAMs, flight planning and met services

Trust is concerned that as currently written AMS :

- Does not adequately reflect the input to date from GA
- Stated position is that EC will be mandated for ALL
- Implies that solutions would greatly increase CAS (by c300%)
- Does not appear to appreciate the full diversity, nature and operating requirements of the broad range of aviation activity we represent
- Lacks clarity, consistency and clear pathways to realisation
- Many of the stated proposals have potential for unintended consequences for our sector which are not recognised and would be unacceptable
- Appears to be an ATS centric solution

What the Trust seeks going forward:

- Full engagement with all parties in the detailed development of the AMS to ensure that the needs of our sector are fully understood and incorporated into the emerging solutions
- Analysis of the diverse nature of our sector, its varied operational requirements and the risks of unacceptable unintended consequences for one or more of the activities represented by our stakeholder
- Visibility of future pathways to success and clarity of the governance to address that

What the Trust can provide:

- Commitment to engage on behalf of the sector
- A single point of contact to facilitate a co-ordinated position, representation and access to information and resources across the sector
- Technical resource, knowledge and insight regarding the requirements of the sector as both input and assessment of the implications of given scenarios and proposals as the AMS progresses

CAP 2298A CHAPTER 1

BACKGROUND

7. (Para 1.2) We support the objectives set out in the Overview and we carry these elements through our response. We support the concept of integrating the needs of all airspace users, the simplification of airspace design and regulation to which we would add the need to simplify and standardise (pilot) procedures for safety reasons. We don't agree that sustainability is overarching in that a net zero airspace which cannot accommodate aviation would defeat the object of this whole process. Balance is needed and we would support it being a guiding principle. However, there are areas identified later in this response where procedures said to support net zero do not or do the opposite. These issues are not new, GA having raised them in previous modernisation fora and in ACP engagement, but these continue to be repeated. We note the places this occurs.

DELIVERING AIRSPACE MODERNISATION

8. (Para 1.9) We fully support the concept that modernisation needs to be delivered collaboratively with, inter alia, "representative organisations" and we stand ready to play our part in that. We believe there should be a specific structure for engaging with the GA community so that we can all collaborate in the development of policy and delivery rather than just commenting on plans already formed. Its work needs to be documented and tracked towards the objectives. GA has the range of skills and expertise that this programme needs to succeed for all airspace users.

We would urge that GA is engaged from the earliest stages to enable us to contribute fully rather just responding.

9. (Footnote 13) We note that "*Flight Training*" is missing from the definition of GA but is important. "*Leisure Flying*" is not a generic name for GA flying. We set out detail of our objection to its use as a term to describe GA operations in our response to para 2.82

10. (Para 2.10) In the "Integration" the strategy begins that "it should, wherever possible satisfy the requirements of operators and owners of all classes of aircraft …." The inclusion of "wherever possible" to the requirements of Section 70 of the Transport Act suggest that the strategy is being watered down from government policy and does not have to fully comply with that duty. This should be changed to align with the Transport Act.

CAP 2298A Chapter 2 – Strategic Objectives, Drivers and Benefits

11. Integration of Diverse Users.

(Para 2.10) This describes UK airspace as shared and segregated but footnote 18 states that segregated airspace is not reserved exclusively for a specific user. But in many cases it is or is very close to that. Moreover, the word "shared" suggest some form of equitable division of access which is not correct. Indeed, in para 2.14 it states that "to ensure safety, segregation in the form of controlled airspace is currently used". Whilst this is a correct description of the status quo, it might be useful to indicate that it is the business of this strategy to change that.

(Para 2.15) This says "*To facilitate access by diverse airspace users, there must be a transition towards greater integration of air traffic, where it is safe to do so*." Whilst we may consider that this suggests greater access for GA, areas of the documents suggest the reverse; ie greater access to CAT outside existing CAS areas with restrictions being applied to GA, perhaps because "it is not considered safe to do so". Access by GA to other areas is problematic and should be made clear in the parts of the document that deal with integration. We will expand on this later.

(Para 2.16) This suggests that "*collision risk is greater around smaller aerodromes with no surveillance capability themselves and in areas of high density*". Whilst it is true than the collision risk to **GA aeroplanes** is highest near the aerodrome, aerodromes with a (radar) surveillance capability do not normally offer a service to the generality of such aircraft. Moreover, the study published by A4A[1] found that nearly half of all such collisions (9) were near aerodromes offering an ATC service, 5 were at aerodromes offering an AFIS service and 6 were near an aerodrome with an AGS or no service at all. There is no evidence that smaller aerodromes represent a greater risk of MAC than larger ones.

Policy should not be driven by the statement presented.

Moreover, whilst emerging EC systems allow aerodromes to manage traffic flows, it will be the aircraft-to-aircraft capability that reduces collision risk. As traffic densities increase, controller (AFISO/AGS operator) in a ground-linked system loop becomes less effective and introduces other risks with confusion and overload.

(Side box on page 20) Electronic Conspicuity notes that: *To be most effective it needs **100% of users** operating in a designated block of airspace to be using **compatible** electronic conspicuity devices, and to be able to be detected by others*.

> Whilst that is true in absolute terms it is not a full statement of practical risk reduction and must not be used in other contexts or as a basis for policy. Collisions must be analysed on a risk basis; where there is no or minimal risk between certain users (or it is catered for by some other system), 100% is not required. That would be a waste of resources and would detract from the real issues. The CAA has previously demonstrated poor analysis and decision making in the use of statistics to apply significant resources to areas of safety that offer diminishing returns when other areas remain outside consideration.
>
> Because GA aircraft cannot normally detect and avoid aircraft using only transponders even if 100% of aircraft were fitted with them, the transponder is not a practicable EC device for aircraft-to-aircraft collision avoidance and is of little direct use to non-radar ground units.

[1] https://airspace4all.org/reports/mac-evidence-based-analysis-of-risk-1975-2018/

(Para 2.20) states *that "a system for managing cooperative deconfliction based on a model of shared information needs to be adopted on a wider scale."*
The statement that "a model of shared information needs to be adopted on a wider scale" is an early indicator (brought out in Part 2) that the authors perceive that uncontrolled airspace will soon be a thing of the past. Later we note that SWIM would be the basis for such policy but GA appears to have little part in that and is barely mentioned.

(Para 2.22) Suggests that; "*in relation to restricted airspace, interoperability will encourage integration and sharing*". Whilst it may enable integration and sharing, that is a matter for this policy to prescribe and encouragement would be a wholly inadequate basis.

12. Simplification.

(Para 2.26) sets out an excellent vision that we support fully:

> *UK airspace is among the most complex in the world, yet its underpinning design dates back to the 1950s but aircraft performance and navigation capabilities have changed significantly. To fully utilise the performance capabilities of modern aircraft, aviation needs an efficient and effective airspace structure.*

There is a lot that can be developed from this statement and that needs to be highlighted and included in the strategy. For example, para 2.29 says:

> *By not utilising the modern technologies available, current flightpaths constrain aircraft climb performance, increasing the time taken to reach optimum cruising altitude. This creates inefficiencies and results in more emissions and greater fuel burn.*
>
> And
>
> *A significant redesign is needed to enable the most efficient use of available airspace. Airports' standard arrival and departure routes need to be upgraded*

We know that the introduction of RNAV departures replicating previous procedures but with no controller intervention results in aircraft climbing at a lower angle than before. Previously, controllers would give climb clearances above the published altitude constraints but now all aircraft are limited by those constraints. Aircraft navigation systems reduce the angle of climb automatically so as to reach the altitude constraint at the nominated waypoint and not before. The present body of airspace changes at airports are effectively freezing the old procedures into our future airspace and the vision of efficient airspace use set out in para 2.29 can never be delivered.

This "redesign" must be tackled as an immediate threat to the programme outcomes.

We recognise that airports have not changed their departure procedures because they want to reduce costs, the CAA permits procedure replication and avoiding change (even for the better) reduces community environmental objections.

This AMS must introduce changes to climb gradients and descent profiles to meet net zero and reduce noise footprint.

The use of "continuous climbs and descents" actually makes this worse not better but this does not seem to be recognised. We return to this in 2.44 and later.

(Para 2.21 to 2.24) These paragraphs talk about "*securing the efficient use of airspace*" but only discusses network management within CAS. If we are to move towards an integrated airspace system this work must cover all airspace and all airspace users including GA.

13. Environmental Sustainability.

Para 2.35 sets the scene on achieving environmental objectives "taking account of the interests of all stakeholders" but the sections that follow are all about commercial air transport operating in controlled airspace. Whilst these are the main polluters so need to be the focus, the strategy would do well to reflect and recognise that part of the sector that is already carbon neutral and silent; the gliding and the hang gliding and paragliding segments. Aviation using the energy in the atmosphere will grow in importance and volume as costs increase but much in the Strategy would deny them access to airspace. It is understandable that ATS staffs do not understand the nature of these operations nor what they do and how they do it; it is not part of their experience nor of their focus. But the prime move to reduce the impact of commercial air transport should not damage those parts of the sector that have already achieved net zero.

Flight Without Fuel is a major part of GA and should be recognised, protected and promoted by The Strategy.

To make a start on recognising the operational requirements for Flight Without Fuel we have included a note on Hang Gliding and Paragliding operations in our response to Chapter 5 – Use case 1 The Future Structure of Airspace. We have attached a substantial descriptive document at Annex A to this response.

Para 2.44 has the key statement that:

"Airspace modernisation enables aircraft to follow more efficient flightpaths thereby reducing fuel burn and emissions per flight"

This again calls up steeper climbs and descents and minimising unnecessary low-level routing. The text which follows (Para 2.45) again focusses on continuous climbs and descents when that is absolutely not the measure needed here.

The departure routes need to be raised with no intermediate level constraints.

To explain the contradictions here it may be useful to describe what actually happens on the aircraft flight deck during departure, here assuming the flight management system (FMS) is navigating the aircraft to follow the published RNAV departure procedure:

- After take-off using "take-off power" aircraft climb to "thrust reduction/flap retraction" altitude where thrust is manually reduced to "climb power", normally at 1000ft above aerodrome level.
- The FMS lowers the nose, reducing climb rate and the aircraft accelerates so that flap can be retracted.
- Acceleration continues at this lower angle to achieve the (below FL100) speed limit of 250kts.

- If there is an altitude constraint at the next waypoint in the procedure (there usually is) the FMS will calculate the climb angle required to achieve that altitude at the waypoint and not before. It reduces thrust and climb rate to follow that path. The aircraft climbs continuously but at a lower rate than it would have been had controller intervention given the aircraft a direct climb to an available altitude or if the pilot had chosen a different climb profile (but they cannot do that whilst following the published procedure).

A turbojet aircraft is most efficient if it can climb continuously to cruise altitude at climb power and at the design best speed for the conditions which will always be more than 250 kts. Time spent at 250kts below FL100 and at reduced thrust settings to achieve non-ideal altitude constraints will use more fuel, generate more emissions and more noise than a direct unconstrained climb. The RNAV departure without controller intervention is notably less efficient than the traditional controller-managed departure it is replicated from.

Some recent and ongoing and endorsed ACP submissions do not enforce the requirement for more efficient flight paths and continuous unconstrained climbs/descents when they could easily do so. The present airport ACP catalogue is setting "letterboxes in the sky" to interface with NATS upper airspace but these are wholly based on the old, inefficient airport procedures which the future AMS will be unable to change.

This will prevent many of the advantages of AMS being realised.

(Para 2.45) Asserts that controller intervention with stepped climbs are bad and continuous climbs are good. But this is only true if the continuous climbs are unconstrained by procedure which is rarely the case in the UK. A shallow climb rate to achieve a lower constraining waypoint will be worse than an unconstrained climb to a higher altitude which is then stepped.

(Para 2.49) says "*For example, modernisation could enable aircraft to climb more quickly … reducing noise impacts"* but that is not what the policy is offering. Continuous climbs do not equal quicker climbs. The former is on offer, but the latter is not.

For information, the definition of a continuous descent (approach) is that the descent between the hold and the final approach should contain no more than 1 level segment of up to 2½ nm. But this has nothing to say about the angle of descent (or climb) A climb or descent of 50ft per mile would satisfy that but be useless in terms of efficiency.

(Para 2.53) Illustrates a higher rate climb in Figure 2.2 and says "f*aster climbs reach higher altitudes sooner …. and have noise benefits".* But that is not what is on offer here and is seriously misleading.

It should be on offer.

Some time ago the CAA announced on national television in relation to LAMP 1a that aircraft would now climb more quickly reducing noise and environmental impact, but it was never designed or implemented because airport departure procedures were not changed. There was anecdotal evidence that aircraft departing Heathrow were flying lower than before for the reasons described.

This is the opportunity to change that. The GA organisations want to see the sustainability opportunities realised. They would expect that the requirement for low level CAS at airports would reduce to the benefit of future aircraft that operate outside what is now CAS.

CAP 2298a Section B - the Drivers for Change

14. Meeting the Demand for Airspace More Sustainably

(Para 2.57 – 2.62) This section follows the well understood narrative about traffic growth using Eurocontrol forecasts which may well overstate the recovery.

15. Encouraging Aviation Innovation to Support UK Economic Growth

Para 2.63 – 2.67 "*Technology will drive radical changes within 10 years and the growth of current users with drones and spaceflight cannot be accommodated in the current airspace structure*"

Common specifications for EC and interoperability are cited together with better information sharing and integration of all the different users.

(Para 2.68) Suggests that the economic and financial models to deliver these services will need to be developed; the DfT and CAA will set out details in due course. The financial model will be key to success or failure and GA wants to be involved in this area at the outset. In the past, GA was excluded from this sort of area but needs to be involved in the development of a practical solution for all users.

16. International Obligations

(Para 2.69) Is very short and just refers to ICAO GANP and connectivity. But later on the document calls up the establishment of controlled airspace wherever an ATC service is provided citing a requirement to comply with ICAO SARPS. As we have said to the CAA many times, this would result in a 300% increase in low level CAS which would close down much of GA and make the objectives of the Strategy very difficult to achieve. The UK does comply with ICAO in that, like every other state, we file differences.

CAP 2298a Section C - The Benefits and Impacts of Airspace Modernisation

17. (Para 2.73) The introduction to Section C notes that it *"Considers the benefits and impacts from the perspective of individual stakeholders."*

The "Use Cases" in Chapter 5 are important in that they appear to have been imported from previous work that GA has worked on but its previous comment, proposals or development input seem not to have been incorporated. This is disappointing because GA deployed significant resources to support that CAA work. We have records of all the meetings and sessions and all the previous materials and concepts so we are ready to re-engage on what would work in practice, and what would not.

18. Passengers and shippers

(Para 2.75- 2.76) Suggests that "*Modernisation will generally improve resilience of the system to bad weather or other forms of disruption…"* It is unclear how the strategy would improve resilience in bad weather. With less controller intervention there will be fewer controllers and the capability to operate a busy TMA during, for example, thunderstorms, will be reduced. Not a direct GA issue but an observation.

NATS have previously said (in a meeting with GA) that the introduction of RNAV procedures with the reduction in controller intervention (in the London TMA) will mean there is no capacity for the level of vectoring now seen there in bad weather "pilots will just have to get used to flying through thunderstorms". That would clearly be a reduction in safety. We think the passengers might have something to say about that. It may be advisable to get the view of BALPA before proceeding on that basis.

19. Climate change impacts

(Para 2.77 to 2.78) This area majors on net zero and reducing emissions. That can be done by keeping airliners high where the engines are more efficient and that equals less low-level flying which then demands less CAS. The previous examples do not support net zero.

The recently endorsed design to introduce a new medium level hold at Luton is an example. During consultation, it was suggested that holding (by whatever method) at higher levels was a much cleaner way to solve the Luton design problem. However, NATS averred that ATC needed to get aircraft from the hold to approach quickly which they said was not possible with higher holds. That argument would struggle to survive in the proposed technology-driven environment where inbound aircraft are sequenced before even reaching the FIR boundary. Higher holds contribute to net-zero and reduce noise impact on communities in the same way that point merge procedures do.

20. Communities impacted by aircraft noise

Para 2.79 – 2.81 is on noise – the same principles apply as in 2.77.to 2.78 above. Higher is good and also requires less CAS.

21. Aircraft Operators

(Para 2.82) Refers to airspace access referring to:

"*General Aviation sector, including recreational flyers, by providing greater access to CAS….*"

The phrase "recreational flyers or recreational aviation or leisure flight" is used throughout the strategy documents when referring to GA activities. Strictly speaking "Recreation Aviation" is a commercial operation defined in CAP 755 and comprised of what many would know as "pleasure flights". These are generally A to A flights carrying members of the public for sightseeing. Whilst it is a minuscule part of GA, the Strategy should serve the more numerous elements of GA that need the modernisation and integration to survive. Their operations include:

Private flights by aeroplanes and helicopters
Commercial and business flights by aeroplanes and helicopters

Emergency services flights
Air taxi flights
Flight training flights by all types of aircraft
Glider flights
Microlight flights
Hang Glider, Paraglider and paramotor flights
Parachuting and parachuting support
Model aircraft flights
Sport and competition flights
Some military flights
Recreational aviation flights (as in CAP 755)

The document also uses the word "Leisure" in 4 places as an alternative way to describe operations by the GA sector. The CAA's 2006 Strategic Review of GA noted that "*it is perceived by some to be purely a leisure pursuit and preserve of the wealthy. However, this masks the real picture*" It goes on to record it economic contribution (2005) as £1.5bn.

GA has put this to CAA ATS staffs before but we seem to have been ignored. The AMS needs to find a better and less disparaging term for GA which probably accounts for more aircraft movements than the Commercial Air Transport sector. Moreover, some 50% of commercial air transport passengers are travelling for leisure rather than business purposes. Perhaps just "General Aviation flights" would be a better phrase to use in this Strategy for GA activities.

There is a clear need for the leadership of the AMS project to change the mindset of what GA is and does. Positive education and direction is needed.

This paragraph goes on to suggest that the AMS will deliver better access to military use airspace that would otherwise remain segregated. GA would support that and expect to see it delivered. However, we note that later in Use Case 2 that CAS is proposed for all military airfields (that have an ATC service) and it is difficult to see that the AMS is making any changes that would provide better access for GA in that Class D than it enjoys today in Class G.

(Para 2.83) On Cost makes a conclusion about the cost benefit to commercial operators' offerings. Surely such benefits belong to the whole of the aviation sector and GA should benefit from the outcome of AMS on equal terms. We again refer to the Strategic Review of GA on size and economic benefit.

22. Airport operators

(Para 2.84) This section relates to the increase in data which will benefit runway and airport capacity. Whilst not directly addressed by this, GA airfields are not able to participate in data exchange today. For example, the decision by the CAA and NATS to make access to AFPEX unaffordable for non-commercial GA airfields has resulted in no proper mechanism to activate GA flight plans, something that is proposed for expansion in the AMS.

GA needs to be considered and supported to meet the overall objective in our new "single sky"

23. Air navigation service providers

(Para 2.85) repeats the assertions about disruption that we challenge in para 2.75 above.

24. Government

(Para 2.86 to 2.88) uses AMS as a significant means to achieve net zero policy. We should refer to our earlier proposition that without mandating steeper gradients it will not achieve this.

CAP 2298a Chapter 3 - Key ways of modernising airspace through ICAO GANP

25. Information & Data Sharing - SWIM

(Para 3.19 to 3.22) This section describes SWIM as it applies to CAT operations. No particular application to other airspace users including GA is suggested. It seems from other parts of the Strategy that SWIM will be an enabler for all airspace users to operate from the same data sources. Perhaps the connection to non-CAT should be reviewed.

26. Operational

(Para 3.24) on Integration and Flexibility creates a vision of a single sky:

"Traffic management based on digital information exchange with all types of aircraft"

This reinforces our comments on SWIM

Separation services provided by a variety of means, for example by automating human-based tactical air traffic control service

That seems to be what direct EC exchange between aircraft does today. Human in the loop is also less efficient, more costly and impracticable with increased traffic.

Putting some automatic ground-based ATS function in that loop would be pointless and we cannot see how that would work or benefit anyone.

Developing airspace structures and enabling technologies for the greater integration of piloted and remotely piloted operations as well as continuing to enable sport and recreational operations to better self-manage their desired operation when and wherever possible

The phrase "when and wherever possible" here suggests GA may not benefit from this. Perhaps the phrase should be removed

As we have said before "*sport and recreational operations* " is used when that is too narrow a descriptor. GA operations should be sufficient unless a more specific group is needed.

Para 3.25 - Simplification:

Says: *"CAA-mandated classification of certain volumes of controlled airspace where required, based on published parameters such as the number of IFR traffic movements or complexity"*

This appears to be a catch all. The use of IFR numbers to set the classification or existence of CAS is OK if it is done in partnership with users such as GA (eg as in Germany) but could be used as a means to exclude GA. The visions of future airspace in the later case studies show vast areas of new CAS have already been earmarked for deployment.

GA would like to be included, at the start, in the development of any policies in this area.

Says *"Removal of the fixed structures in en route airspace, adding free routes"*

The introduction of free route airspace will exclude GA unless provision is made at the policy stage.

We would like to be involved in that area.

Says*: "Future-proofing' new airspace designs today to enable emerging requirements for Free Route Airspace and trajectory-based operations".*

There is a hint here that this means establishing more regulated airspace than is needed. The nature of future-proofing should be developed in the policy

Says: "*More use of transponder mandatory zones and radio mandatory zones (TMZ/RMZs) that have less impact than controlled airspace"*

There is a general assumption that all GA can and will have a transponder but not all can and would therefore be excluded from TMZs. TMZs are called up in the later Case Studies and reference to the glossary confirms the AMS does mean Mode S and not some other EC.

Are we now going to demand universal Mode S for all airspace users including drones? This is carrying forward the technology of yesterday and avoids innovation.

Says: "*Transition Altitude standardised at one altitude, for example 6,000 feet."*

We fully support a raised TA.

(Para 3.26) - Sustainability:

Says: *"Redesigning airport arrival and departure routes at lower altitudes to allow flights to climb and descend continuously, improving CO2 performance and better management of aircraft noise*"

As per our earlier comment on Sustainability in Para 2.44, continuous climb or descent does not deliver higher rates of climb and descent so does not improve CO and noise issues nor contribute to net zero.

Says: *"Reducing adverse weather impacts, such as holding, through better access to meteorological information"*

We cannot think of a situation where better weather information would prevent holding. Airline flights generally go anyway as long as there is a legal destination

alternate. Otherwise the air transport system would collapse. We don't think this is true.

Says *"Efficient and sustainable use of CNS (Communications, Navigation and Surveillance) technology across the aviation sector."*

This is a really good statement but there is no obvious mechanism for GA to access or benefit from the expansion of CNS. This should be included in the AMS. Integration not segregation must apply to services too. Otherwise, GA will once again be getting in the way of CAT operations.

Technology - Communications, Navigation, Surveillance and Spectrum Approach

(Para 3.39 to 3.43) – Navigation:

Where this paragraph says it will:

Support the use of electronic conspicuity in the provision of surveillance service by Flight Information Service Officers (FISO), enabling safe integration of approach operations at smaller General Aviation aerodromes.

This seems to be a marker for the continuation of the ATS regulatory opposition to the establishment of GNSS approaches outside CAS and without the use of controllers. We aver that this is already safe and is being done today. What will change?

Provide an affordable airspace modernisation approach for smaller aerodromes that have less air traffic control technology and equipment where space-based augmentation is available

Ditto

(Para 3.44 to 3.45) – On surveillance this says:

"The use of electronic conspicuity in provision of surveillance service by Flight Information Service Officers (FISO), enabling safe integration of approach operations at smaller General Aviation aerodromes"

The use of EC to enable IFR approaches outside CAS is a tiny part of the opportunity, but this seems fixated on. We should be innovating and promoting.

"New technologies and equipment for air traffic services to gather, process and display aircraft position information from multiple sources thus enabling the safe integration of a mix of airspace users"

Portable EC technology itself is unlikely to have the range to service ATS aspirations without some clear and innovative thinking and development. Capability data gathering would be a cheap and simple exercise.

"Deployment of an interoperable conspicuity solution and the associated ground use of the data to support air traffic services".

Again, ATS sees itself as the focus of this but, as set out in the "navigation" section, automation means taking the controller out of the loop.

(Para 3.46 to 3.47) on ATC Tools and Procedures seems to say that modernisation of ATC systems will make everything work better. We hope so!

(Para 3.48 to 3.58) on Spectrum & Resilience says that *this is a key ATS management security issue*.

Rather more than that, in light of current affairs, this is a major national security risk and no mitigation seems to be considered here. It should be.

There appears to be no suggestion that a modernised ATC environment will include EC other than the Mode S transponder? We are unaware of any plan for ANSPs to equip with ADS-B (other than North Sea and trans-Atlantic). Are we going to be stuck with Mode S for all airspace users (which does nothing for collision risk) as well as an EC solution TBD?

CAP 2298a Chapter 5 – Case Studies a Vision of Airspace in the 2030s

27. The structures and ATS services that are proposed in these case studies are generally those that were put forward by the CAA in its many Airspace Modernisation Focus Group meetings and in the recent consultations on Classification of UK Airspace and Design of CAS Structures. Despite the significant effort by GA in participating in all the meetings and responding to the latter documents, there has been no subsequent engagement and the GA proposals and solutions do not seem to have been taken up. GA does not want to expend more scarce resources for no purpose but does want to be involved in developing a workable and sustainable future.

    Each one of these studies should be revisited in partnership with the airspace users to ensure that requirements and impacts upon each activity are fully understood and included .

Use Case 1 Future Structure of Airspace Vision (page 65 -67)

28. Future Structure of Airspace - General

    In the first section there are some phrases that sound alarms for GA:

    1. *"autonomous operations in UK airspace are a long-term aspiration"*

       Suggests that the current freedom to operate within Class G airspace or perhaps the Class G airspace itself will be gone.

    2. *"The aim is to develop UK airspace to allow wider access across all existing and future airspace users. In the interim, we will need to develop UK airspace such that it will,* ***where possible,*** *enable increased access for all existing and future airspace users."*

       This does not read as a commitment to enabling access which we were led to believe is fundamental to the Strategy.

    3. ***"There will be an intent to remove*** *long periods of segregation in favour of 'switching on' airspace for a specific activity."*

These words have been chosen carefully. Having an intent is not sufficient to deliver a policy and suggests that the author is planning not to do this. There will be long periods of segregation.

4. ***To enable tactical freedom*** *where required (such as Ministry of Defence units), when the classification downgrades, the airspace reverts to TMZ/RMZ (transponder mandatory zone/radio mandatory zone).*

   We note that it is impractical for some types of GA airspace user to operate a transponder. The policy on EC is anyway away from Transponders.

   It is unclear why MOD units which are not using CAS must have a TMZ/RMZ in its place. Controlled airspace is not private airspace and the MOD must follow its "*policy presumption in favour of public access wherever this is compatible with operational and military training uses*".

   We do support UK defence interests absolutely but do not support any restrictions on airspace that is not being used for its declared purpose.

5. *" An Air Traffic Zone (ATZ) for ATCS provision to Visual Flight Rules (VFR) traffic may be created but will be based upon traffic density/complexity at the aerodrome and not the licensed status."*

   The ATS regulators have engaged with GA for some years on the topic of the airspace classification required for ATC service provision. The intent of the CAA on this has changed repeatedly and is now unclear. From this text it appears that an ATZ has taken on some new meaning and that the CAA intends to again change the requirements but has decided not to set it out clearly.

   This proposition conflicts with the statement in Case Study 2 on ATS Provision where it is quite clear that an "ATC service will only be provided in CAS". We note that Tower and Ground are ATC services. All airfields with an ATC service would need a CTR. A CTR cannot be Class E (ICAO definition) and ICAO sets the minimum size for CTRs.

   As GA has stated before, this policy would add some 55 CTRs increasing the low-level CAS in the UK by some 300%.

6. Elsewhere, the document suggests there might be some small CAS provision for VFR traffic but ICAO sets the minimum size for CTRs and all military airfields have IFR traffic so would need a CTR to operate.

   There must be another joint forum to discuss and understand the proposals and consequences before this goes further. The diversity of GA operations requires diverse SME input and advice to the AMS. The Trust and GA stands ready to provide that.

7. *"The introduction of CAA-regulated intensity-based minimum classification allocation i.e. class C at the busiest airports, to allow VFR and IFR to be separated."*

   We know that the ATS regulator has a desire to change Class D airspace to Class C, recently citing the reason that most UK Class D was operated as Class C anyway.

We disagree. Class D should be operated as Class D because the operator has no legal basis to do otherwise. The regulator should enforce that.

If Class C were mandated at major airports by the CAA, the Manchester low level route would be untenable and other VFR routes (EGGW and EGLL perhaps) would not be able to be used when the airport is busy. It increases segregation contrary to the objectives of the AMS and we object. Perhaps it would be useful if the CAA were to engage with GA and airport operators on the impact of this proposal. As far as we can see it would have no impact on commercial aeroplane operators one way or the other.

Moreover, when the Heathrow CTR was changed from Class A, a NATS study concluded that if it were Class C it would not be able to operate its business effectively because of the separation requirements. Class D was chosen. It must be safe today so there seems to be no safety imperative. If it was now changed to Class C, helicopter operations in the Heathrow CTR would be limited. Please publish the previous NATS study so that operators who would be affected by the change can study the issues and respond. Please discuss the operational consequences with helicopter operators and revisit this.

8. *"Airspace above FL95 to become Class C to enable Free Route and Trajectory Navigation"*

   The key to successful flexible use airspace above FL95 (in this case) is seen in the German model where, in return for efficient routing for CAT for the vast majority of time, gliding is able to use key areas on request and CAT routing uses a planned fallback arrangement.

   Such systems would be welcomed by the Gliding community.

9. *"Increased use of class E with a TMZ in other areas to enable ATC provision to IFR while minimising impact to VFR".*

   Class E airspace does not necessarily need to be also a TMZ as it is not a requirement for ATC provision. GA responded to the ATS "consultation" proposing that all Class E would be a TMZ to mitigate against an IFR aircraft being misidentified as a VFR aircraft and not given separation. Following that, the CAA said that Class E airspace would not automatically be also a TMZ. This would reverse that policy statement.

   Any area of Class E should have additional requirements set out on the basis of fact and considered in a consultation.

   Also, the AMS needs to be clear on its position on electronic conspicuity. The AMS refers to the use of EC devices to enable traffic management, but it seems that Mode S remains the only acceptable means of compliance in a TMZ and therefore in the proposed Class E. Other users who are unable to operate Mode S would be excluded.

   GA needs to understand the EC policy and how it will be rolled out as part of the AMS.

10. *"AFIS/Air Ground airfields will have a flexible TMZ/RMZ and RMZ respectively. For an AFIS unit this will allow the use of Flight Information Displays (FID) to be used to enable better airspace management and safety. The TMZ can also be an aid to integration of IFR and VFR traffic if GNSS approaches are being used.*

Around busy AG units, a RMZ will be used to provide a level of safety for aircraft in the critical stages of flight. When the airfield is closed or traffic minimal, the airspace can be switched off."

Once again, a transponder would be required at AFIS aerodromes rather than the chosen EC solution. Moreover, it is illogical to propose that an FID used by an AFIS will enable airspace management when FIDs are generally not compatible with Mode S. We note from the glossary in this document that a TMZ requires the operation of transponder equipment.

This must be resolved.

The correct description for "Air Ground" is AGCS (see glossary).

It is clear to all GA operators that the safety of flight is greatly enhanced by the use of FIDs at AGCS stations. This was demonstrated in the trials carried out by A4A at the AGCS equipped North Weald aerodrome. FID data is known to be more accurate and reliable than pilot assessments of position. We are aware that some ATS regulators do not support the safety enhancement provided by this, but it is fundamental to the safe development of the AMS future. It may be that this topic needs a separate forum with the Regulator and GA to develop safety policy. It may be that the opposition to this safety innovation comes from non controllers using surveillance systems thereby diminishing the role of the controller. If this is progress towards a clear and safe solution we must all accept the clear safety cases. The future is relevant more to FISOs, AFISOs and AGCS operators because "control" is not needed.

11. *"Airspace establishment, disestablishment and classification should always be related to demonstrable utilisation and complexity criteria, and subject to routine review".*

As in Germany where a joint GA/ATS forum reviews airspace classification and recommends change, GA stands ready to contribute to a similar arrangement as espoused in this paragraph.

Please could this be developed as a policy thread straight away so that it can contribute to the delivery of AMS.

12. *"A clear containment policy relating to the activity and route structure to be contained within any classification of airspace should determine the size and shape of that airspace. Performance-based navigation (PBN) is an important element that provides highly accurate and repeatable flightpaths, reducing the need for large areas of containment through the use of controlled airspace."*

The UK containment/design policy for CTRs was omitted from the recent draft policy papers on Airspace Classification and Design.

Please see the GA responses to that consultation which remain unresolved and must form the basis for the policy stated in this paragraph. If those papers are to form the basis for design in AMS, given the range of input from GA, we would expect a second round of engagement.

It is our recent experience that PBN design at airports results in more CAS than previous traditional procedures. Please see the change proposals for Glasgow (already the largest CTR in the UK) and Edinburgh, both of which have both declared increases in CAS requirement because of PBN requirements.

This suggest that this policy statement is not being delivered and is unlikely to change unless actioned today.

29. Future Structure of Airspace - Classifications

Class A

Class C

We object to the use of the phrase "leisure flights" used here as well as the phrase "recreational flights". See our earlier explanation on descriptors for GA operations set out in our response to Para 2.82 earlier in this document.

If the CAA "aspires to change the classification of some airways", perhaps it could set out its reasons for that so we can understand the issues. There are areas where Class D is safer than Class C in some lower-level airways

We propose that it would be impracticable to change major airport CTRs to Class C without damaging their business model. The Manchester low level route would not be accessible. See the explanation set out in our response to the Use Case 1 Future Structure of Airspace Vision (General) in our Para 26 above.

Class D

The use of Class D in place of an ATZ would be a CTR and would need to comply with the ICAO standards for that. This is a fundament change to the AMS concept and must be explained in full detail and its impact on aviation understood.

"Class D CTRs and CTAs will be subject to Advanced Flexible Use of Airspace principles when such airspace is not required to support IFR operations."

It is unclear what these AFUA principles are.

Before we proceed GA needs to understand the basis for this policy and how it would fit with ICAO SARPS.

Class E

It is important for GA that EC solutions are used to replace transponder mandates because transponders do not provide any collision warning to GA aircraft. If ATS units require a surveillance capability for low density traffic, the EC policies set out in the AMS should be used in this area.

Class G

Class G is the default classification for UK airspace unless there is a clear and accepted need for some other classification. The AMS should state that policy clearly.

RMZ/TMZ

The use of EC devices must replace the transponder for these purposes for safety. Transponders in GA aircraft are not visible to FIS operators nor to other like

aircraft, so they do not provide any meaningful safety enhancement. This is why EC devices are being rolled out and should be used, **mandating Mode S will do nothing for management and safety in these circumstances**.

Air traffic services where additional information services are provided

"Enhancements to the characteristics of all airspace classes in support of BVLOS drone and advanced air mobility operations".

A we can expect BVLOS drone operations throughout the FIR, this suggests that there will be additional requirements for flight in most lower airspace throughout the FIR. As this is one of the core objectives of the AMS it cannot be dismissed in a few words. GA needs to understand what is proposed here.

30. **Flight Without Fuel** – Operational Requirement for Hang Gliding and Paragliding

As set out in our response on Environmental Sustainability (Page 23 para 2.35 et al), the Strategy needs to recognize and make provision for those aviation elements that already deliver net zero aviation. To aid understanding, we attach at Annex A, a paper explaining the operation and limitations of Hang Gliding and Paragliding as they relate to this Strategy. This forms part of our consultation response.

Use Case 2 Air Traffic Service Provision (text from page 69)

31. Conventional ATS

*"Aligned with ICAO Standard and Recommended Practices (SARPs) and Procedures for Air Navigation (PANS), hence **air traffic control service provided only in controlled airspace** with ICAO Flight Information Service (FIS) outside of controlled airspace, when not co-provided with an air traffic control service".*

"Supplemented by data services providing FIS including airspace information and other platform activity through connected onboard SWIM-profiled systems such as FIS-B/ TIS-B".

This is the bald statement that CAS will be established everywhere that an ATC service is required, trebling the volume of low-level CAS in the UK. Military airfields would be a particular problem for GA. Notably, Lasham would lie within an Odiham CTR and would, for operational purposes, be enclosed by CAS to the extent that it would have to close. We believe that the CAA ATS regulators recognise that much of the service that is provided today by Controllers is actually flight information and can be delivered by FISOs.

We attach at Annex B, a list of current UK airfields with CAS and another with an estimate of the likely additional CAS provision. In both cases we estimate the volume of CAS that would need to be created.

There has been a suggestion from the CAA that CAS would not necessarily be needed for VFR ATC services but that is not reflected in this document. It would be needed for an ATC service for IFR traffic in any case.

The UK has filed a difference with ICAO on this and whilst that was threatened by EASA, Brexit has given the UK control of its ICAO differences again. The CAA has said it is directed by DfT to remove ICAO differences but when challenged they were unable to prove that. We have not found any such directive. This would be a major

issue for the future of the GA sector. It is not mentioned in para 2.69 on International Obligations.

32. Drone and Air Mobility

"Service provision to support BVLOS (beyond visual line of sight) drones and advanced air mobility will form an element of air traffic management (ATM) and the additions to ATM in support are likely to be prescribed enhancements to ICAO FIS provision within a defined volume of airspace".

"This service will be provided by an air navigation service provider, who may be the operator of the BVLOS platform, but more likely to be an (existing or new) air navigation service provider who is capable of servicing BVLOS ATM/UTM (UAS Traffic Management) requirements in class G and above".

If drones are to be required to receive an ATS service, it seems likely that GA operating in the same airspace will have to be party to that too. That would be a significant task for both the ANSP and GA traffic. Has this been addressed?

30. UK FIS and LARS

"Replaced with ICAO FIS. Will be common to the service provided in mainland Europe.

"LARS Replaced by bespoke lower airspace service"

GA will be keen to see this progress. It may not be the best plan to consider LARS and FIS as separate in the future airspace. **If it is to be common with Europe it needs to be a radar-based FIS which we have seen work well**.

Please see the A4A report on the German model[2]. Having "islands" of radar service as currently provided is not integration.

Use Case 3 Remotely Piloted Aircraft Systems (text from page 70)

31. RPAS Prior to Flight

"The UAS operator will pre-notify its planned activity using a SWIM-connected airspace management tool. This will inform the UAS operator of other activity planned in the proposed operating area, airspace restrictions and other information relating to the flight, such as weather.
This pre-notification would also be used to initiate clearances, such as being able to operate within controlled airspace or flight restriction zones etc. This information will then also be available to other airspace users, airspace control authorities and other interested parties.
Pre-notification will apply to both beyond visual line of sight (BVLOS) and line of sight (LOS) UAS flights to give a complete picture of activity to all operators."

To make this work, SWIM would need to know in advance the intentions of all other airspace users which is not possible today. The UAS operator would also need to be the last user joining the data pool to gather all the other traffic data. Whilst UAS may use a pre-set track and timing, other GA airspace users cannot because of the nature of their operation.

[2] http://fasvig.org/reports/airspace-what-can-we-learn-from-germany

There needs to be more work with sector representatives to develop this policy in practical terms.

32. RPAS Airborne

Once airborne the UAS platform will operate as planned. Re-tasking and changes will be allowed within uncontrolled airspace and the SWIM-enabled airspace management system can be updated as required. Electronic conspicuity will be required to enable 'detect and avoid' for all airspace users, thus reducing the risk of mid-air collisions.

To deliver this, all other airspace users would need EC. This aircraft-to-aircraft EC would not be Mode S which is proposed for mandating anyway so it would seem that 2 systems would be needed.

"Before crossing airspace, the operator will need clearance to enter.
Having been pre-notified to the airspace management system, the flight will be visible to the airspace controlling authority, allowing appropriate clearances to be provided."

The system making RPAS visible to airspace management would need the range and coverage to connect to the ground environment. Current carry-on devices are designed to provide aircraft-to-aircraft data communication and do not have the range to provide reliable communications with the ground environment. Whilst this is widely known and understood in the GA community, it may be that trial results are needed to point a way forward.

Use Case 4 Spacecraft - Ground or Air Launched (page 71)

33. Spacecraft

We have no GA issues with the proposals.

Use Case 5 : Recreational General Aviation flight between two small airfields in class G airspace (page 72 & 73)

34. We have referred to the unfortunate use of the term "Recreational" which is not appropriate. This example could refer to many, but not all, of the different types of GA aircraft and operation.

The scenario presented here would not operate in the way described for many of the different categories of GA aircraft so it should not be seen as a measure of GA operational capability.

The proposal to replace the present ATZ at small airfields with an RMZ would result in a very similar operation to today. The proposal to mandate a TMZ (defined in the glossary as Transponder Mandatory) to support an AFISO service where IFR operations are conducted seems perverse as transponders offer no aircraft to aircraft or aircraft to AFISO connection.

As the AMS develops it will be instructive to "game" scenarios such as this against each type of aircraft and operation to identify how they would operate in practice and what the issues and limitations are. This should be simple action carried out early in the process. The Trust and GA can provide the resources for that.

36. We have provided a substantial section on Hang Gliding and Paragliding at Annex A to this paper. It refers to Case 5 and presents the issues that relate to it. That should be read in conjunction with this section of our response

CAP 2298a Chapter 6 – Funding

37. GA recognises that funding of the modernisation programme and its outcome are unclear. We have long held the view, supported by the CAA, that the airspace structure is necessary because of the protection provided to the commercial air transport sector and, but for that, GA could be left largely to its own devices. However, we of course recognise that GA must operate in such a way that it does not endanger or impede commercial operations and that resulted in the segregated airspace we see today. But commercial traffic growth and demand together has rendered the segregation model inadequate. Integration is clearly the way forward, particularly with the prospect of significant commercial UAV operations.

    GA supports the change but is clear that the changes are needed for and because of the expansion of the commercial aviation sector which must therefore fund the activity.

Appendix A – Legal and Policy framework

We have no observations on Appendix A

Appendix B – Glossary

We have no observations on the Glossary

This consultation response is submitted by The Airspace4All Trust on 4 April 2022

Annex A – Flight Without Fuel – the operational requirement for hang gliding and paragliding.

Annex B – An analysis of CTR deployment today compared with the CTR deployment that would be required to satisfy the policy set out in Chapter 5 Use Case2

Additional Documents

This document must be read in conjunction with 2 previous consultation papers which have significant overlap. They were submitted by the General Aviation Alliance. They have been forwarded separately with this submission:

1. Policy for the Design of Controlled Airspace Structures Consultation Response.

2. Policy for the Classification of UK Airspace Consultation Response

FLIGHT WITHOUT FUEL – OPERATIONS AND LIMITATIONS

The British Hang Gliding and Paragliding Association (BHPA)

Background

1. The British Hang Gliding and Paragliding Association (BHPA) is the governing body for hang gliding and paragliding in the UK. The BHPA has a long history of effective self-regulation (over 40 years) and a robust training, qualification and continuous education system through its registered schools and clubs. Its members benefit from insurance that not only provides third party cover to individual members and training operations, but also indemnifies the owners of land used for flying activities.

2. The BHPA has over 7,000 members who predominantly fly hang gliders and paragliders (or their motorised variants); parascenders, microlight aircraft and single seat deregulated aircraft (SSDRs).

3. By far the greatest proportion of UK-based hang glider and paraglider pilots are BHPA members. However, there is a proportion of powered paraglider (paramotor) pilots who are self-taught, or have been taught by a training establishment independent of the BHPA with no oversight of its training standards.

4. Syndicate ownership of hang gliders and paragliders is non-existent, so it is reasonable to say that every BHPA member owns at least one aircraft. Many BHPA members own more than one aircraft. The BHPA estimates the total fleet size for UK hang gliders and paragliders (including powered variants) at over 10,000 aircraft.

Regulatory Background

5. Hang gliding and paragliding are deregulated forms of aviation in the United Kingdom and are Non-Part 21 Aircraft (EASA Annex I aircraft). There is no legal requirement to register hang gliders and paragliders on the UK national aircraft registration database, and no requirement to hold a national pilot's licence in order to fly them.

6. Hang gliding and paragliding are inexpensive forms of flight. There is a strong second-hand market in the UK and a complete aircraft can be purchased for less than £1000.

Areas of Operation

7. Hang gliders and paragliders are not limited to operating from airfields. They operate anywhere in the open FIR. They can be foot-launched from hills, windward cliffs and mountains. They can be towed into the air, either by a ground-based winch or aerotow by a microlight aircraft. They can launch using a power unit from any reasonably flat area such as an airfield, sports field or farmland. They can be transported by foot, by car or by public transport and easily carried by hand to take-off areas. The BHPA has over 900 sites registered on its sites database, however the unique portability of these aircraft enables pilots can travel with their aircraft and equipment to remote locations and take off from any small open area (with appropriate permissions, if required). Flights take place from ground level to cloudbase, although significant portion of flight activity takes place within 500ft of the ground. Unpowered flights of hundreds of km can be made using thermic lift (the current UK cross country record for an unpowered paraglider stands at over 300km).

8. Non-powered hang gliders and paragliders exploit air currents to prolong fight, so they do not fly in straight lines. Flight plans are largely dictated by the ever-changing local air conditions. Because of the ability of these aircraft to land in very confined areas, pilots can recover to soaring flight from extremely low altitudes. Recoveries of several thousand feet (to cloudbase) are frequently made from just 300 feet above the ground.

9. Because of their low speed, hang gliders and paragliders fly in close proximity to each other. It is not uncommon for 50 hang gliders and paragliders to be found in one thermal or soaring a ridge. A trace of a gaggle of hang gliders and paragliders thermalling to cloudbase would appear chaotic to an Air Traffic Controller, with single or multiple aircraft turning in a tight radius around a core of lift. This is a standard pattern in gliding flight where the principle of "see and avoid" in VMC is used to detect potential airborne conflicts. Pilots are trained to fly in these close proximity situations using international rules of the air and soaring conventions based on these rules. It is well established that the greatest mid-air collision risk is another hang glider or paraglider. However, records show that these occurrences are very rare. Collisions between hang gliders or paragliders and other types are unknown.

10. It is of concern to the BHPA that our data on pilot numbers, locations and extent of flying operations is incorrectly applied or simply dismissed as being confined to a small number of small defined areas. The BHPA endeavours to present a real-world picture of our activities to the CAA, DfT and other interested bodies at every available opportunity. In fact, we have identified to the CAA that on a good day in a defined area of the southeast of England, there may be as many as 2200 hang glider and paraglider flights taking place,

including local flights, training flights and cross-country flights by unpowered and powered hang gliders and paragliders.

On-Board Equipment

11. Hang gliders and paragliders (including their powered variants - powered hang gliders and paramotors) are open cockpit aircraft with no power supply. They do not routinely carry radios, nor have licences in place to talk to flight management ground stations.

12. There is a buoyant market in hang gliding and paragliding-specific flight computers that can be used for flight planning and navigation en-route. These are mobile phone sized, light weight (c. 200g) and self-contained with their own internal GPS and barometer, powered by an internal battery. Some of these devices are equipped with FLARM technology for position broadcast.

Electronic Conspicuity (EC)

13. At every opportunity, the BHPA has put its position forward that mandating Electronic Conspicuity would not work for hang gliders and paragliders, for the following reasons:

    - There is no ADS-B device currently on the market that has been demonstrated to be fully compatible with cockpit-less aircraft such as hang gliders and paragliders. Tested devices reveal sporadic broadcast reception below 500ft AGL and/or in hilly or mountainous areas. As paraglider harnesses are worn by the pilot they offer very little scope for EC device installation away from the pilot's body. Signal blocking by the pilot's body has been noted in preliminary trials.

    - Electronic Conspicuity in its current form brings little or no benefit to the majority of hang gliders and paragliders. We fly in close proximity to other hang gliders and paragliders and maintain a good lookout and separation using 'see and avoid'.

    - Using a screen instead of good lookout will increase the risk of mid-air collisions.

    - Electronic Conspicuity broadcasts from gaggles of hang gliders and paragliders may cause signal saturation and are therefore likely to be filtered out, substantially increasing the risk of a mid-air collision with aircraft that are heavier and faster.

    - Given the low speed of hang gliders and paragliders, Electronic Conspicuity provides no opportunity for the hang glider or paraglider pilot to take any action to avoid a collision with a faster moving aircraft.

- BHPA members participated in the DfT/CAA Electronic Conspicuity rebate scheme and over 10% of the BHPA membership purchased an EC device with assistance from the scheme. The greatest majority of hang glider and paraglider pilots have purchased a device equipped with FLARM, to enhance the traffic situational awareness of the operators of heavier / faster aircraft, so they may take action to deconflict with the hang glider / paraglider.

- The BHPA requests the evaluation of FLARM as an EC option to enable hang gliders and paragliders to access TMZs. An allowance such as this may be a driver for yet further EC device uptake amongst the hang gliding and paragliding population.

- The BHPA supports voluntary EC device equipage and the principle of interoperability between EC device platforms.

- The effect of legislation to mandate Electronic Conspicuity would drive a percentage of hang glider and paraglider pilots to operate 'rogue'.

- The BHPA is a member of the European Hang Gliding and Paragliding Union (EHPU), a body representing 110,000 hang glider and paraglider pilots in 20 European countries. The EHPU supports the proposal in EASA's NPA 2021-14: to assess the suitability of mobile telephones as position indicators so that RPAS can detect and avoid airspace users flying hang gliders and paragliders.

The Delivery 'elements'

14. Use Case 5, although most closely aligned (out of the five example Use Cases) to UK hang glider and paraglider operations does not adequately cover the activity. Hang glider and paraglider sites in the UK regularly exhibit many hundreds of aircraft movements over the course of a good flying day and should be regarded as areas of high intensity GA operations. Electronic Obstruction Beacons have not been tested at hang gliding and paragliding sites and the BHPA cannot comment on assumptions of their effectiveness.

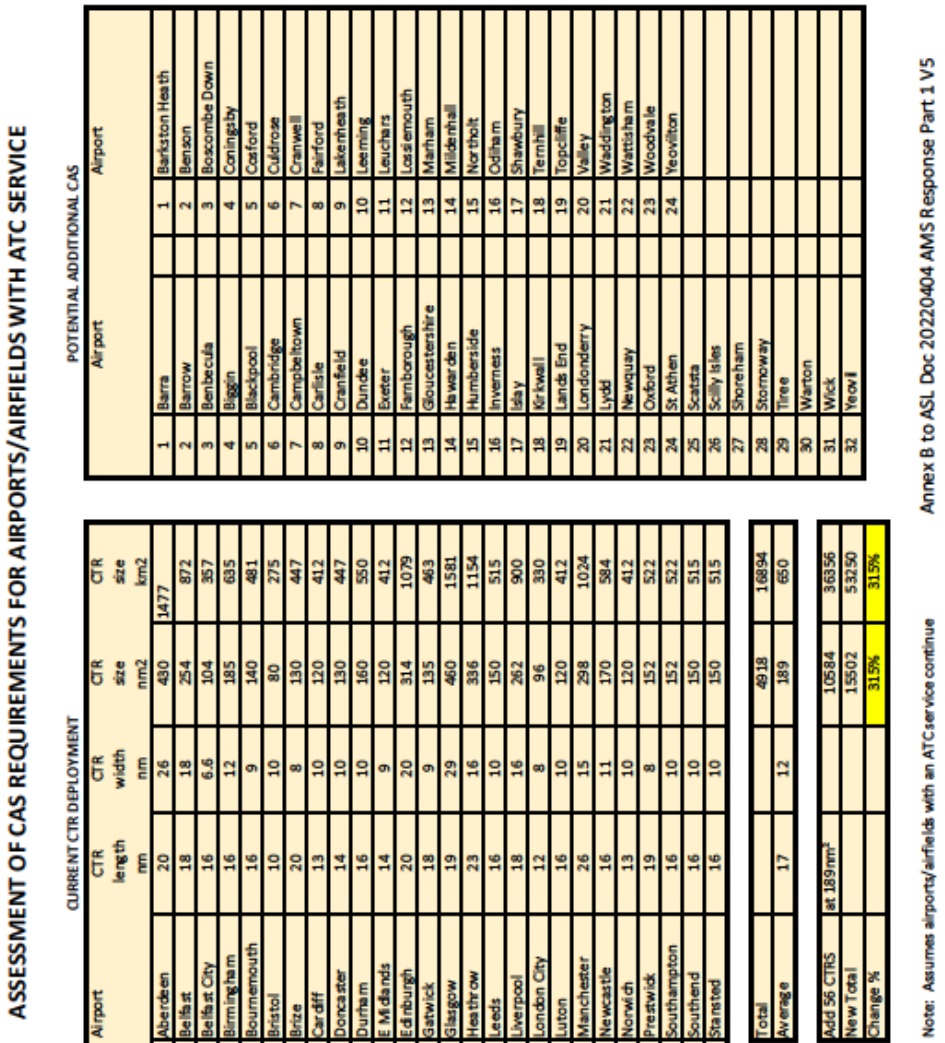
15. For certain airfield operations - aerotowing, winching, PPG / PHG local flying, certain busy hill sites, flying competitions and displays, the devices could be a useful addition to NOTAM-ing of the activity. The devices need to be an easily implemented solution for hang gliding and paragliding clubs and schools of all sizes, with the following attributes:

    - Low cost, reflecting the low cost to pilots for participation in hang gliding and paragliding (in comparison to other forms of GA). Hang gliding and paragliding are the cheapest forms of manned recreational airsports in that they do not require national licences and aircraft permits. The cost of purchasing an aircraft is within reach of many individuals from many socio-economic groups and the cost of storing and maintaining the aircraft is negligible compared to other types of GA that require hangarage and adherence to service intervals.

- low cost in respect of device licences. Clubs may have several sites in operation on any given day, and would therefore need to purchase and operate several devices simultaneously.

- Portable, with long battery life. The device weight and portability needs to mirror the ultralight, ultra-portable nature of hang gliding and paragliding.

- Beacons may promote more head-in-cockpit flying by operators of heavier / larger craft. Of course, this problem is not just relevant to stationary obstruction broadcasts. There is a risk that the pilot of an aircraft detecting an obstruction beacon goes "head-in-cockpit" to navigate a way around the beacon, presuming that all hang gliders and paragliders are operating inside the "bubble" of the beacon - thereby not detecting the non-pinging lone hang glider or paraglider (or thermalling gaggle) that has left the beacon area to fly cross-country.



ASSESSMENT OF CAS REQUIREMENTS FOR AIRPORTS/AIRFIELDS WITH ATC SERVICE

CURRENT CTR DEPLOYMENT

	Airport	CTR length nm	CTR width nm	CTR size nm2	CTR size km2
1	Aberdeen	20	26	430	1477
2	Belfast	18	18	254	872
3	Belfast City	16	6.6	104	357
4	Birmingham	16	12	185	635
5	Bournemouth	16	9	140	481
6	Bristol	10	10	80	275
7	Brize	20	8	130	447
8	Cardiff	13	10	120	412
9	Doncaster	14	10	130	447
10	Durham	16	10	160	550
11	E Midlands	14	9	120	412
12	Edinburgh	20	20	314	1079
13	Gatwick	18	9	135	463
14	Glasgow	19	29	460	1581
15	Heathrow	23	16	336	1154
16	Leeds	16	10	150	515
17	Liverpool	18	16	262	900
18	London City	12	8	96	330
19	Luton	16	10	120	412
20	Manchester	26	15	298	1024
21	Newcastle	16	11	170	584
22	Norwich	13	10	120	412
23	Prestwick	19	8	152	522
24	Southampton	16	10	152	522
25	Southend	16	10	150	515
26	Stansted	16	10	150	515

Total			4918	16894
Average	17	12	189	650

Add 56 CTRS	at 189nm²		10584	36356
New Total			15502	53250
Change %			315%	315%

Note: Assumes airports/airfields with an ATC service continue

POTENTIAL ADDITIONAL CAS

	Airport			Airport
1	Barra		1	Barkston Heath
2	Barrow		2	Benson
3	Benbecula		3	Boscombe Down
4	Biggin		4	Coningsby
5	Blackpool		5	Cosford
6	Cambridge		6	Culdrose
7	Campbeltown		7	Cranwell
8	Carlisle		8	Fairford
9	Cranfield		9	Lakenheath
10	Dundee		10	Leeming
11	Exeter		11	Leuchars
12	Farnborough		12	Lossiemouth
13	Gloucestershire		13	Marham
14	Hawarden		14	Mildenhall
15	Humberside		15	Northolt
16	Inverness		16	Odiham
17	Islay		17	Shawbury
18	Kirkwall		18	Ternhill
19	Lands End		19	Topcliffe
20	Londonderry		20	Valley
21	Lydd		21	Waddington
22	Newquay		22	Wattisham
23	Oxford		23	Woodvale
24	St Athen		24	Yeovilton
25	Scatsta			
26	Scilly Isles			
27	Shoreham			
28	Stornoway			
29	Tiree			
30	Warton			
31	Wick			
32	Yeovil			

Annex B to ASL Doc 20220404 AMS Response Part 1 V5

Airspace Modernisation Strategy 2022–2040

The Airspace4All Trust

PART 2 - CAP 2298B - Consultation Response V5 - 4 April 2022

INTRODUCTION

1. The Airspace4All Trust coordinates on behalf of a wide range of GA sub-categories, predominantly the members of the General Aviation Alliance. The General Aviation Alliance represents the interests of some 72,000 subscription paying members of a group of organisations in the UK General Aviation (GA) industry.

2. This document is a response to the CAP2298a consultation prepared for the Airspace4All Trust on behalf of its stakeholder organisations:

   British Balloon and Airship Club
   British Gliding Association
   British Hang Gliding and Paragliding Association
   British Model Flying Association
   British Microlight Aircraft Association
   British Skydiving
   Helicopter Club of Great Britain
   Light Aircraft Association
   PPL/IR Europe
   Royal Aero Club of The United Kingdom

3. The Airspace4All Trust and GA stakeholders welcome the approach taken to modernise the UK airspace, systems and services, sharing the vision and objectives of the AMS, and appreciate the extent and quality of consultation approach that lead to the development of the consultation document. We look forward to that being continued during the post CRD (Comment Response Document) and Strategy development thus ensuring a sustainable strategy balanced in respect of stakeholders interests

4. Many of the elements set out in the consultation document cover areas that GA has been promoting for some time and this programme presents a great opportunity to make huge steps in capability and efficiency for all airspace users.

5. We have identified a theme that runs through the AMS proposals that results in nearly all the GA comments and challenges that follow in this document. It stems from diversity of GA with its very different operational requirements and limitations. This has always presented a barrier to progress on airspace regulatory matters and whilst this AMS Vision is good for all of GA, the delivery elements set out in CAP2298B do not align with the Use Cases (particularly Cases 1, 2 and 5) set out in CAP 2298A. There are proposals there that would be seriously damaging for some airspace users and that does not need to be. The GA organisations themselves recognise the need for change and are the store of expertise that can be deployed within the AMS so that the critical operational needs can be understood and taken into account.

6. This response highlights the problem areas for GA but does not generally set out solutions. These need greater interaction in their development if the aims of the AMS are to be met. As set out in Part 1 Paragraph 1.9 we seek the opportunity to make a full contribution to the strategy and are ready with experts and resources to enable

GA to become an integrated part of the future airspace. For GA this consultation is just the first step in that collaboration.

We have completed the on-line response documents you requested but the format does not appear to provide for comment on CAP 2298B. To properly express our stakeholder's interest in the outcome we have created this document which sets out their position on the various elements. The Trust has assembled a list of key points set out in its response to CAP 2298A including its position on drivers. These are also relevant to CAP2298B as an overview. They are repeated here for ease of reference:

Trust welcomes in principle:

- A well-developed strategy providing a clear policy on which to move forward
- Stated intent to integrate the requirements of ALL airspace users and new entrants in simplified and efficient airspace structures
- Engagement to date and expectation that approach will continue in both development and implementation
- Recognition of key drivers
- Acknowledges the delivery elements
- Intent to exploit technology supported by appropriate policy & regulation to provide an airspace that is fit for purpose until 2040 based upon continuous ongoing development
- Flexibly managed airspace and greater access to controlled airspace which could be of great benefit to GA and other airspace users
- The intent to reduce the volume of CAS at lower levels in line with Government policy
- Supports the intent for technological improvements, particularly with digitised services such as NOTAMs, flight planning and met services

Trust is concerned that as currently written AMS :

- Does not adequately reflect the input to date from GA
- Stated position is that EC will be mandated for ALL
- Implies that solutions would greatly increase CAS (by c300%)
- Does not appear to appreciate the full diversity, nature and operating requirements of the broad range of aviation activity we represent
- Lacks clarity, consistency and clear pathways to realisation
- Many of the stated proposals have potential for unintended consequences for our sector which are not recognised and would be unacceptable
- Appears to be an ATS centric solution

What the Trust seeks going forward:

- Full engagement with all parties in the detailed development of the AMS to ensure that the needs of our sector are fully understood and incorporated into the emerging solutions
- Analysis of the diverse nature of our sector, its varied operational requirements and the risks of unacceptable unintended consequences for one or more of the activities represented by our stakeholder
- Visibility of future pathways to success and clarity of the governance to address that

What the Trust can provide:

- Commitment to engage on behalf of the sector
- A single point of contact to facilitate a co-ordinated position, representation and access to information and resources across the sector
- Technical resource, knowledge and insight regarding the requirements of the sector as both input and assessment of the implications of given scenarios and proposals as the AMS progresses

RESPONSES TO CAP 2298B

CAP 2298b CHAPTER 1 & 2 OVERVIEW & DELIVERY ELEMENTS

7. **GA supports the ambition that this will be a continuously reviewed process that ensures emerging technology is appropriately supported by policy, regulation and design.** The 9 elements are a logical breakdown of the refreshed AMS; however, it is clear from the swim-lane diagrams that the focus for this review has been on the commercial aviation sector, particularly ATS. GA has a vested interest in most of the strands contained within this document; however, there is very little to reveal that GA has been considered throughout, other than one section (UK-ABN/4 – Integration). It is also very difficult to determine, from the presentation of the elements, how the "shopping list" of items to be addressed will flow from identification of which component parts are relevant, to the action required to modernise that element by affecting policy, regulation or design. Of significant concern is the EC (including MLAT) thread that runs throughout, suggesting a potential mandate for aircraft <5700kg (which includes a broad section of GA). Additionally there is no indication of a roadmap to an integrated EC solution. The aim to simplify airspace design is welcomed; but that does not seem to be supported by a policy thread to introduce a new containment policy that gives better guidance for the design of CTRs to improve efficiency and reduce the CAS footprint.

CAP 2298b - AIRCRAFT-BASED NAVIGATION

8. **UK-ABN/1. Trajectory-based operations**.

   Flexible use airspace at lower levels is of significant importance to GA. With the potential for more RPAS activity operating in the same airspace that is traditionally used by GA, a proliferation of lower airspace routes is likely. The ability to turn this airspace off, along with extant military airspace that is not used 24/7, would seem to be an appropriate trade for the loss of full access in these areas. Of concern to GA are the terms related to access to the future digital flight planning data, FIS and the EC requirements that will need to be met. There would seem to be no link to an EC roadmap (for both air and ground/ATS operations) or a thread that shows how the wider integration of electronic information for both pre-flight and in-flight operations will be developed.

9. **UK-ABN/2. Terminal redesign**.

   This element is of particular interest to GA. However, as with ABN/1 there are no blocks in the swim-lane diagrams for policy enablers, such as an EC roadmap or enhanced guidance for terminal CAS design (particularly CTRs). With a potential

increase in lower level routes (such as for BVLOS RPAS), absent a means of integrating EC solutions, segregation is likely to proliferate – potentially resulting in a net loss of Class G airspace (thereby making the development of design guidance to optimise terminal controlled airspace even more important to GA). Some development areas that have the potential to be of concern for GA are Revised Airspace Containment/Buffer (which could be read as an attempt to increase the boundary between CAS and uncontrolled airspace) and System Wide Information Management (SWIM - the sharing of flight plan and EC data) – there is no block for the development of handling VFR flight plans, nor the adoption of a wider EC capability by ANSP(s).

10. **UK-ABN/3. Network management**.

    On the face of it this section might be seen as of little interest for GA. However, some of the future capabilities described here are enablers for CAS reduction (particularly more efficient CAT flow – which could, for example, negate the need for holds near airports, such as that currently in design for Luton). **Of particular interest are network operations that could be utilised to provide better access to CAS by GA aircraft. GA would like to see greater amplification of this thread.**

11. **UK-ABN/4. Integration**.

    This element has the potential to be of most importance to GA. However, it could also be seen as the vehicle by which RPAS are integrated into Class G airspace, at the expense of GA. EC features highly, with regard to FIS; however, again there is no indication of how the current broad range of EC solutions (and MLAT) can contribute – particularly as the only ANSP link to non-transponder EC relates to Oceanic services (perhaps hinting that the only EC system that could be integrated is transponder-based?). There is no reference to AMS supporting an incentive for GA airfields to equip with low-cost flight information displays (FID) to aid localised flight information to be provided to GA aircraft, although new regulation would seem to pave the way for this. Similarly, other than ACAS, there is no link to the development of non-ACAS (or Hybrid ACAS X) EC-based flight systems for collision avoidance between GA aircraft – suggesting that the AMS focus for collision avoidance is between RPAS and CAT.

CAP 2298b – AIRSPACE MANAGEMENT

12. **UK-AM/5. Airspace management**.

    Without an EC roadmap it is unclear how Cooperative Separation (CSEP) will introduce UK standards for EC devices on aircraft <5700kg, whether adoption of these standards will be mandatory and how ground use of output data from these devices will be facilitated in the GA environment. It is also unclear how this standardisation relates to extant/future EC elsewhere. The quoted application of this is to apply EC and MLAT data in the provision of ATS separation services – presumably through an ANSP as a FIS – and as a charged for service. There is no suggestion that this could be applied more broadly (for example, at GA airfields – both AFISO and air/ground, utilising low cost FIDs).

13. **UK-AM/6 Data Services**.

This element covers areas that GA has been interested in for some time, in particular: provision of met information through a FIS broadcast; improved NOTAM and eventual replacement; and a flight information management service for low altitude operations (including VFR flight plan/flight intent operations). The technology to enable the strands of this element is not all new and the benefits to the aviation sector of GA participating in these initiatives are self-evident. However, the cost of implementation and access may prove prohibitive to GA, unless offsets are identified.

14. **UK-AM/7 Future, Surveillance and Spectrum.**

    As described, this element will rely (in part) on the standardisation/compatibility of EC devices – it specifies aircraft <5700kg (which includes much of GA and RPAS) which hints at a mandatory requirement for aircraft in this category. It mentions FID, but only in the context of the provision of ATS. This needs to be expanded to include Air/Ground airfields and should include the early development of an EC roadmap. Of great concern to GA, within current ANSP plans this will only work if all participating aircraft are transponder equipped – it mentions Oceanic ADS-B (already in place) but fails to mention North Sea ADS-B (also in place) or wider spread adoption of other forms of EC by ANSP(S). **It would seem that the ambition is to make all airspace a "known environment" to ATS and, if so, greater explanation will need to be made to GA.**

15. **UK-AM/8 Integration Of Communications, Navigation, Surveillance and Spectrum**.

    Again, this element pushes the wider employment of EC "of required integrity" to support surveillance and separation – once again omitting the need for an EC roadmap to provide the vision for a common standard to facilitate an integrated EC solution for both air and ground use.

16. **UK-AM/9 Aircraft Capabilities**.

    Previous comments concerning the potential mandate for the carriage of EC on aircraft <5700kg and the omission of the development of an EC roadmap apply.

Policy for the Classification of UK Airspace

Consultation Response Proforma – 18th July 2021

THE GENERAL AVIATION ALLIANCE

Free text comment:	Meaning of "General Aviation" (GA) in this response The General Aviation Alliance (GAA) represents Sports, Recreational and Private aviation. Whilst in other contexts the term GA may be understood to include some commercial operations and business operations, the use the term "GA" in this response and any other related documents refers to Sports, Recreational and Private aviation, i.e. that element typically regulated by the UK CAA's General Aviation Unit.

Free text comment:	Alignment with Government Policies The Directions and specific letters from the government on airspace policy require that the CAA must develop a National Policy, ensure amount of controlled airspace is minimum required and, inter alia: • Airspace must be safe, interoperable, and integrated for all users. • Controlled airspace must be reduced. • Lower (controlled) airspace must be released. This policy must support that work.

Free text comment:	Value of Modernisation The aviation industry has invested vast sums in re-equipping aircraft and airports with modern equipment and procedures and the CAA must recognise this and reflect their capability in our airspace policies and structures. The congested airspace in the UK FIR needs that if it is to have the room for all sectors to flourish in the years ahead. The revision of this and its sister policy document on Design is the opportunity to do that. As drafted, this policy would deny that.

Free text comment:	Comment on the purpose and effect of the document The modernisation of UK airspace requires substantial changes to policies, structures and services which need to be developed and deployed in a coordinated manner to achieve the aim. This is a complex and multi-facetted task that is too broad and important to be conducted piecemeal. The policy on airspace classification is but part

	of that programme and it must be informed by the objectives of the overall AMS and by Government policies and directives. It will be a supporting pillar of the future of UK aviation not a stand-alone policy. The present proposal, to deploy a revised classification policy that would demand major changes to the structure of the UK FIR, is out of step with the concepts of modernisation. Contrary to Government directives, the policy it proposes would require the establishment of controlled airspace at some 56 additional aerodromes. The volume of low-level controlled airspace in the UK would increase by some 300% At the same time, changes proposed to surveillance requirements would permit control zones to be established at aerodromes without radar; the introduction of procedural control increasing segregation. It has been suggested to us by the CAA that the UK does not provide an ATC service in Class G outside an ATZ. This implies that it does provide an ATC service inside ATZs but the paragraph and note related to controlled aerodromes in ICAO Annex 11 is not included in this policy. Moreover, the UK difference to ICAO Annex 11- C2 2.5.2.2.1 and 2.5.2.2.1.1 make it clear that the UK does provide an ATC service outside CAS. The policies presented in this document would require those differences to be removed. The outcomes of the proposal would be directly contrary to Government directives. Whilst this is said to be driven by the requirement to comply fully with ICAO, state differences are an essential part of the international agreements, and the UK has some 550 in place. Without access to differences the worldwide adoption of ICAO SARPs would have failed. We have been unable to identify any directive from government that requires the establishment of this policy, with its concomitant increase in controlled airspace. No safety data or evidence has been produced to support any case for establishing such a policy in the UK FIR. No attempt seems to have been made to identify the impact of the draft policy on air operations nor to seek mitigating policies. No facilitation has been conducted on the development of this policy by a stakeholder working group.

Free text comment:	<u>Consequences if This Policy is Adopted</u> The consequences of adopting a policy such as this have been discussed with the regulator over several years. The establishment of CTR and CTA to satisfy the requirements for aerodromes that offer an ATC service would increase the volume of low-level CAS by about

	300% making large areas of the UK effectively inaccessible to GA aircraft for no defined benefit to any aircraft operator. Particularly in the south of England, the number of new CAS areas would create effective no-fly barriers across the country and many aerodromes and businesses would close. The UK would be counted amongst the worst places in the World for General Aviation when it could be the best.

Free text comment:	<u>Proposal</u> The existing policy on The Application of ICAO Airspace Classifications in UK FIRs needs revision and the GAA supports that in principle. However, the nature of UK airspace and the services and procedures provided in it requires the application of ICAO SARPs to be tempered by the alleviations available in Annex 11 and the differences that are approved by the Secretary of State and published in the current UK AIP 1.7. Otherwise, we do not have the room or the funding structure to enable the aviation sector to flourish as government intends and the airspace modernisation programme needs time to develop and deliver for the future. A policy that includes the Annex 11 alleviations and the current UK differences would form a basis that GA organisations should be able to support as part of AMS. The AMS programme would need to bring together and coordinate the many areas of change that will be required to achieve its aim for the benefit of all airspace users. The GAA stands ready to work with the CAA in developing a policy that works for all airspace users.

Line number:	
Paragraph number:	1.1 The CAA (Air Navigation) Directions 2017 (as amended)[1] require the CAA to publish a national policy for the classification of UK airspace. The purpose of this Airspace Policy Statement is to provide that national policy and it shall be referred to herein as the 'Airspace Classification Policy'
Comment:	The Directions and specific letters from the government also place other requirements on the CAA and those should be detailed in this policy if it is to be valid. If the CAA is going to put such requirements into this document it must use all the relevant material and not omit items that suggest a different policy.

	Para 1.4 may also be the place to note these requirements.
Proposed revised text:	1.1 The CAA (Air Navigation) Directions 2017 (as amended)[1] require the CAA to publish a national policy for the classification of UK airspace. Directives from Government dated 23 October 2019 and 4 November 2019 shape that policy and include reviewing airspace classification with the aim of reducing controlled airspace and releasing lower airspace. The purpose of this Airspace Policy Statement is to provide that national policy and it shall be referred to herein as the 'Airspace Classification Policy'
Justification:	Completion of statement on government policy

Line number:	
Paragraph number:	1.2 International Civil Aviation Organisation (ICAO) Annex 11 on air traffic services (ATS) requires that airspaces are classified and designated in accordance with the airspace classification system[2].
Comment:	This is subject to any differences that a State may declare, and this paragraph should say that. The UK is now in control of its own legislative framework. Also. the "airspace classification system" includes important elements which have not been transposed to this document. They are listed in the relevant part below.
Proposed revised text:	1.2 International Civil Aviation Organisation (ICAO) Annex 11 on air traffic services (ATS) requires that airspaces are classified and designated in accordance with the airspace classification system[2] but makes provision for State differences. The UK does not designate class B, C or D airspace in all portions where an ATC service is provided to IFR or VFR flights. This is filed as a difference and detailed in UKAIP 1.7.
Justification:	UK Differences to ICAO. Although the GAA was told by the CAA that the Department for Transport (DfT) required it to remove all ICAO airspace differences, we asked senior DfT staff, but we were unable to verify that statement. Differences remain extant and are published in the UK AIP.

Line number:	
Paragraph number:	1.3 (c) Those portions of UK airspace where it is determined that air traffic control service will be provided to instrument flight rules (IFR) flights shall be designated as control areas or control zones
Comment:	This is modified by the note to the definition of Controlled Aerodrome in ICAO Annex 11. ***Controlled aerodrome.*** An aerodrome at which air traffic control service is provided to aerodrome traffic.

	Note.— The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists. Paragraph 1.3(c) is also subject to any differences that a State may declare, and this paragraph should say that. The UK is now in control of its own legislative framework.
Proposed revised text:	1.3 (c) Those portions of UK airspace where it is determined that air traffic control service will be provided to instrument flight rules (IFR) flights shall be designated as control areas or control zones except at certain controlled aerodromes and subject to published UK differences. The UK does not designate class B, C or D airspace in all portions where an ATC service is provided to IFR flights. This is filed as a difference and detailed in UKAIP 1.7. C2 2.5.2.2.1 The definition of a controlled aerodrome notes that where an *air traffic control service is provided to aerodrome traffic does not necessarily imply that a control zone exists.*
Justification:	UK Differences to ICAO. Although the GAA was told by the CAA that the Department for Transport required it to remove all ICAO airspace differences, we asked senior DfT staff but were unable to verify that statement. Differences remain extant as published.

Line number:	
Paragraph number:	1.3 (d) Those portions of controlled airspace wherein it is determined that air traffic control service will also be provided to visual flight rules (VFR) flights shall be designated as classes B, C, or D airspace.
Comment:	This is subject to any differences that a State may declare, and this paragraph should say that. The UK is now in control of its own legislative framework
Proposed revised text:	1.3 1.3 (d) Those portions of controlled airspace wherein it is determined that air traffic control service will also be provided to visual flight rules (VFR) flights shall be designated as classes B, C, or D airspace except at certain controlled aerodromes and subject to published UK differences. The UK does not designate class B, C or D airspace in all portions where an ATC service is provided to IFR flights. This is filed as a difference and detailed in UKAIP 1.7. C2 2.5.2.2.1.1
Justification:	UK Differences to ICAO. Although the GAA was told by the CAA that the Department for Transport required it to remove all ICAO airspace

	differences, we asked senior DfT staff but were unable to verify that statement. Differences remain extant.

Line number:	
Paragraph number:	1.6 References to EU regulations in this document are to those regulations as retained (and amended in UK domestic law) under the European Union (Withdrawal) Act 2018. For example, Reg (EU) No 923/2012 Standardised European Rules of the Air (SERA) is now UK (EU) Reg No 923/2012 SERA
Comment:	The paragraph implies that the retained regulations are immutable. But they are now under national control and are an interim measure. They are already amended by UK published differences to ICAO SARPs. The UK is not obliged to retain any or all of the EU laws and can legislate for UK circumstances and requirements to meet the objectives of Government.
Proposed revised text:	
Justification:	Note on interpretation

Line number:	
Paragraph number:	**3 Definitions** – Missing entry
Comment:	The ICAO Annex 11 definition of a "Controlled Aerodrome" has not been included here. The note is important – it says: ***Controlled aerodrome.*** An aerodrome at which air traffic control service is provided to aerodrome traffic. *Note.— The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.* Presently, UK has filed a difference based on Part ATS but the meaning is very similar to the ICAO Note.
Proposed revised text:	***Controlled aerodrome.*** An aerodrome at which air traffic control service is provided to aerodrome traffic. *Note.— The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.*
Justification:	ICAO definition that is relevant to UK airspace.

Line number:	

Paragraph number:	**3 Definitions** (l) 'Controlled airspace' means an airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification. (UK (EU) Reg No 923/2012 Article 2(58))
Comment:	Whilst this definition is acceptable, in that where controlled airspace is established, an ATC service must be provided, it does not imply that where an ATC service is provided, controlled airspace must be established. This is in line with English law in which the regulations now sit, the ICAO Annex 11 definition of controlled aerodrome and the UK differences to ICAO Annex 11 mentioned elsewhere in the response.
Proposed revised text:	(l) 'Controlled airspace' means an airspace of defined dimensions within which air traffic control service is provided in accordance with the airspace classification. (UK (EU) Reg No 923/2012 Article 2(58)) In line with ICAO Annex 11 definition of controlled aerodrome and the UK differences to ICAO Annex 11, this does not imply that where an ATC service is provided, controlled airspace will be established.
Justification:	Clarification

Line number:	
Paragraph number:	4.2 • G IFR and VFR flights are permitted and receive flight information service if requested.
Comment:	The UK has a difference to ICAO on • G in that is does not provide an ICAO FIS and it does not even provide a UK FIS except subject to availability. It says: *C2 2.6.1 Within Class G airspace, subject to availability, UK FIS may be received.* The UK should provide an ICAO FIS and this paragraph suggests it now intends to do so. Please would you confirm that the policy would now provide an ICAO compliant FIS on request throughout the UK FIR?
Proposed revised text:	No change
Justification:	If the UK is really going to provide an actual ICAO FIS on request, we agree with the text as drafted and look forward to that very much.

Line number:	
Paragraph number:	4.2
Comment:	In section 4.2, we would like to see the policy acknowledge that the phrase "are separated from" sets out the owner of the responsibility for

	the avoidance of a mid-air collision, and does not necessarily imply "standard separation". A separation less than standard is acceptable provided an acceptable level of safety is maintained, as, for example, is the case in the USA in many circumstances
Proposed revised text:	Add Note. *The phrase "are separated from" in this paragraph sets out whether ATC or the aircrew has the primary responsibility for the avoidance of collision hazard, and does not necessarily imply "standard separation". A defined separation less than standard is acceptable provided an acceptable level of safety is maintained.*
Justification:	Relates separation criteria to hazard level

Line number:	
Paragraph number:	4.3 The classification to be applied to a particular volume of airspace will depend on the consideration of multiple factors, which may have interdependencies, being both quantitative and qualitative, including:
Comment:	The policy misses the opportunity to set expectations as to the application of the classification based on the criteria, giving ACP sponsors no guidance as to what is considered safe enough. One criterion is "the number and frequency of instrument flight rules (IFR) flights operating within the airspace". Although we would prefer to see this as "the number and frequency of commercial air transport (CAT) flights operating within the airspace", numerical criteria as strong guidance are essential if this is to be applied consistently. The USA has criteria for establishment of Class B, and Class C airspace expressed in annual numbers of operations and enplaned passengers. Similar criteria might be used by ACP sponsors in establishing an airspace "to satisfy a demonstrable safety need".
Proposed revised text:	No change to text here but we propose that the detailed (and in some cases, quantitative) criteria required to elaborate 4.3 to an appropriate level of detail should be developed after a review of global best practice and after consultation with stakeholders?
Justification:	If the classification is going to be scoped on a quantitative basis, the quantities need to be defined or at least cross referenced to provide meaning and consistency.

Line number:	
Paragraph number:	5.1 (c) The airspace classification shall be selected to permit safe access to as many types of airspace user as practicable.
Comment:	Although this is a correct statement to make, this policy would achieve the opposite by creating vast swaths of Class D airspace which the

	CAA recognises is operated as if it were Class C. If this really is the policy it should be implemented.
Proposed revised text:	No change, just implementation.
Justification:	Existing provision transposed to new policy but not implemented.

Line number:	
Paragraph number:	5.1 (e) (i) Class A. Exceptionally, class A may be notified for certain CTR, based upon the type, density and complexity of air traffic.
Comment:	This is a copy of the previous policy and is not mandated by ICAO; it is a UK policy. There is no conceivable situation where Class A would be used for a CTR now that SVFR is not available in Class A. The last sentence should be deleted.
Proposed revised text:	The last sentence should be deleted.
Justification:	No longer practicable

Line number:	
Paragraph number:	5.1 (e) (iii) Class C. …..Class C should be notified for CTRs and CTAs in the vicinity of major international aerodromes as determined by the type, density and complexity of air traffic (including a consideration of forecast air traffic volumes) and particularly the volume of IFR flights.
Comment:	This is a UK policy not driven by ICAO. When the Heathrow CTR changed from Class A, NATS determined that Class C would be unworkable because the separation requirements for VFR traffic would prevent helicopters operating in the CTR as they do today. Hence Class D. We have asked NATS for a copy of the document but the CAA should have one. Likely candidates for Class C (as in footnote 7) would be LHR, LGW and MAN. This proposal is a numeric traffic-based classification policy which does not appear to satisfy any actual airspace requirement. If it were to be applied to an airport (which we believe would be an unnecessary commercial constraint) a "use it or lose it" policy should also be included (as with the LHR slot system).
Proposed revised text:	Class C. …Class C may be notified for CTAs in the vicinity of major international aerodromes as determined by the type, density and complexity of air traffic (including a consideration of forecast air traffic volumes) and particularly the volume of IFR flights
Justification:	Practicality

Line number:	

Paragraph number:	5.1 (e) (iv) Class D. Within the UK FIRs, class D is normally notified for CTRs and CTAs in the vicinity of those aerodromes where an ATC service is provided to aerodrome traffic (unless there is an overriding need for a more restrictive classification).
Comment:	This is the significant change in policy which would have an outcome contrary to government directions to the CAA. The UK currently has differences on this subject which are ignored by the proposed policy. We refer to UKAIP 1.7 C2 2.5.2.2.1and C2 2.5.2.2.1.1. We also refer to the note to the definition of "controlled aerodrome" mentioned earlier: Note.— The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists. The UK provides an ATC service outside controlled airspace and the requirements to minimise and reduce controlled airspace issued by the Government would be breached if this policy were introduced as proposed. Moreover, it would contradict the differences already filed with ICAO. The use of the term "overriding" is subjective and not appropriate for definition of airspace requirements. We propose that "demonstrable safety requirement" is a better phrase.
Proposed revised text:	5.1 (e) (iv) Class D. Within the UK FIRs, Class D is normally notified for CTRs and CTAs in the vicinity of those aerodromes where an ATC service is provided to aerodrome traffic unless there is a demonstrable safety requirement for a more restrictive classification or if the establishment of controlled airspace is not justified.
Justification:	Reflects the ICAO definition (and note) of a Controlled Aerodrome and ICAO differences UKAIP 1.7 C2 2.5.2.2.1and C2 2.5.2.2.1.1

Line number:	
Paragraph number:	6 Communications, Navigation, Surveillance and ATS Requirements
Comment:	This is a change from current policy removing the extant paragraph which says: *…., the effective management of airspace in the vicinity of an aerodrome requires as a minimum primary radar-based ATS provision. Thus, the provision of such equipment is a prerequisite for the establishment of CTRs and CTAs in the vicinity of an aerodrome.* The removal of this paragraph in the new policy would permit a CTR to offer only a procedural service which would certainly exclude most GA/VFR traffic for most of the time. CAP670 is referenced and it says at Part C Section 3 SUR01.9: National Surveillance Coverage Requirements:

	…..PSR is normally the minimum level of equipment necessary to provide Radar Control, Traffic Service or Deconfliction Service. SSR or other surveillance technologies may, to varying extent, be required to supplement PSR in order to safely accommodate increases in traffic complexity or density. We propose that the phrase "*SSR or other surveillance technologies"* should be used in all places that refer to TMZ in this and its accompanying policy documents" We have been informed that the CAA has indicated that it would accept CTR establishment at a non-radar unit. This would conflict with paragraph 5.1(d) in the new policy which says: *…..Every effort will be made to ensure that airspace sharing arrangements are not overly complex and that such arrangements do not reduce flight safety or render the affected airspace (or sharing arrangements) unusable. Segregation of aerial activities by use of airspace classifications should only occur where no other viable alternatives exist, and safety cannot be assured by any other means.* The situation described should not occur in a properly managed FIR. Segregation of aerial activities by use of airspace classifications should only occur where no viable alternatives exist, and an application is supported by a full safety case?
Proposed revised text:	At the end of para 6.1 add: *The effective management of airspace in the vicinity of an aerodrome requires as a minimum primary radar-based ATS provision. Thus, the provision of such equipment is a prerequisite for the establishment of CTRs and CTAs in the vicinity of an aerodrome.*
Justification:	Alignment with existing policy and means of compliance with policy set out in para 5.1 (d)

Policy for the Design of Controlled Airspace Structures

Consultation Response Proforma – 18th July 2021

THE GENERAL AVIATION ALLIANCE

Free text comment:	<u>Meaning of "General Aviation" (GA) in this response</u> The General Aviation Alliance (GAA) represents Sports, Recreational and Private aviation. Whilst in other contexts the term GA may be understood to include some commercial operations and business operations, the use the term "GA" in this response and any other related documents refers to Sports, Recreational and Private aviation, i.e. that element typically regulated by the UK CAA's General Aviation Unit.

Free text comment:	<u>Alignment with Government Policies</u> The Directions and specific letters from the government on airspace policy require that the CAA must develop a National Policy ensure amount of controlled airspace is minimum required and, inter alia: • Airspace must be safe, interoperable, and integrated for all users. • Controlled airspace must be reduced. • Lower (controlled) airspace must be released. This policy must support that work. <u>Airspace Modernisation</u> The modernisation of UK airspace requires substantial changes to policies, structures and services which need to be developed and deployed in a coordinated manner to achieve the aim. This is a complex and multi-facetted task that is too broad and important to be conducted piecemeal. The policy on the design of airspace structures is but part of that programme and it must be informed by the objectives of the overall AMS and by Government policies and directives. It will be a supporting pillar of the future of UK aviation not a stand-alone policy.

Free text comment:	<u>Key Issues in the Document</u> This is a really worthwhile and necessary revision of a policy document. It has the basis for a comprehensive guide to airspace design. Unfortunately, it omits any useful design policies or criteria for instrument approaches and the associated design of CTRs. This is a

	principal policy issue that must be developed and resolved. During our consideration of this issue, the CAA explained that the criteria for instrument approaches were defined in ICAO documents, suggesting they did not need to be detailed in this policy. We disagree absolutely. The design policy also bases criteria on the Primary Obstacle Clearance Area drawn from ICAO Doc 8168, but we could find no ICAO requirement that requires CAS areas to align with that. Moreover, design policy should reflect the navigation accuracies achieved by today's aircraft and not be slave to the inaccuracies of yesterday's analogue devices. CAS containment criteria for safety are not directly related to the Primary Obstacle Clearance criteria for safety as they address quite different risks. This is discussed further in our response. The aviation industry has invested vast sums in re-equipping aircraft and airports with modern equipment and procedures and the CAA must recognise this and reflect their capability in our airspace policies and structures. The congested airspace in the UK FIR needs that if it is to have the room for all sectors to flourish in the years ahead. The revision of this and its sister policy document on Classification is the opportunity to do that. Because of the importance of the containment and design policy on instrument approaches, we propose that the CAA should engage with the aviation communities to develop and agree policies that work for all parties. We propose that without the inclusion of instrument approaches, the draft documents are fatally flawed.

Line number:	
Paragraph number:	1.3 The purpose of this Policy Statement is to provide generic design criteria for controlled airspace and further describe the lateral and vertical relationship required where ATS route, SIDs and STARs are contained within controlled airspace
Comment:	As well as ATS route, SIDs and STARs, this document must cover Instrument Approaches. Para 3.2 notes that such instrument approaches outside CAS are out of scope confirming that inside CAS, they are in scope.
Proposed revised text:	An additional section setting out all the containment and design criteria is needed. The GAA stands ready to assist the CAA in developing that.
Justification:	Missing criteria

Line number:	
Paragraph number:	2.1 The purpose of controlled airspace is to enhance the protection of flights operating in accordance with the instrument flight rules (IFR)

	flights, particularly commercial air transport flights involving the movement of passengers on a scheduled journey.
Comment:	It is unclear where this definition comes from as it is not referenced. The CAA has previously insisted that the purpose of CAS (at an aerodrome) is to protect the IFR flights using the instrument flight procedures at the aerodrome". We can find nothing that prioritises scheduled CAT passenger flights. This definition infers segregation. It is not in accordance with sect 70 of the Transport Act. No priority for scheduled passengers is mentioned there.
Proposed revised text:	2.1 The purpose of controlled airspace is to enhance the protection of IFR flights that require it to achieve an acceptable level of safety for their operations, for example commercial air transport flights involving the movement of passengers on a scheduled journey
Justification:	Inappropriate definition

Line number:	
Paragraph number:	2.3 Controlled airspace in the vicinity of an aerodrome will consist of control zones (CTR), CTAs and may include terminal control areas (TMA), within which specific ATS routes, standard instrument arrival (STAR) routes and standard instrument departure (SID) routes
Comment:	This paragraph omits Instrument Approaches in the list of procedures, the design of which should be determined by this policy. What is the point of defining all these other parts of the departure and arrival if there is no approach to be made at the end of it?
Proposed revised text:	Add "instrument approaches"
Justification:	Missing criteria

Line number:	
Paragraph number:	2.7 In the UK, the guiding principle in establishing a volume of controlled airspace is that we must "seek to ensure that the amount of controlled airspace is the minimum required to maintain a high standard of air safety and, subject to overriding national security or defence requirements, that the needs of all airspace users is reflected on an equitable basis
Comment:	This has not been implemented in the UK and although this policy lists the requirement, there is nothing included to deliver it. This should be included
Proposed revised text:	If this policy is going to be delivered, we are content with the wording but today, that does not seem to be the case. This policy is contradicted by the other policy set out in Para 2.1 where CAT is prioritised
Justification:	Correct a policy that is not being delivered.

Line number:	

Paragraph number:	3.2 ATS routes and instrument approach procedures established in class G airspace are out of scope of this policy statement
Comment:	This is all very well but instrument approach procedures within controlled airspace do not seem to be included here either. That is absolutely critical to the purpose of this document and is the fundamental element missing from the current policy.
Proposed revised text:	No change to this text but significant change elsewhere
Justification:	This policy must include design criteria for instrument approaches in CAS.

Line number:	
Paragraph number:	3.2 ATS routes and instrument approach procedures established in class G airspace are out of scope of this policy statement
Comment:	We did not think it was possible to establish ATS routes outside CAS as they once were
Proposed revised text:	If our comment is correct, "ATS routes" can be deleted
Justification:	Irrelevant to today's FIR?

Line number:	
Paragraph number:	4.1 The technical design criteria described in this policy statement shall be applied to new controlled airspace design proposals submitted to the CAA in accordance with the procedures detailed in CAP 1616
Comment:	It is unclear if the criteria will be applied only to new airspace or also to existing airspace that is subject to a new change proposal. Whilst it is reasonable to have a transition period, the design criteria should be applied retrospectively at least on every occasion existing airspace is subject to any ACP. This would align with the current policy being applied to ongoing changes that the whole airspace must be reviewed, not just a minor element being changed. Such an ACP should include those directed by the CAA or sponsored by third parties. Moreover, with so many ACPs currently in train, the clarification offered by this policy revision should be applied to current ACPs where that is practicable. We assess that proposals at CAP 1616 Step 2a should be required to apply the new policies, and proposals at Step 4a should be required to apply the new policies unless there is an overriding reason not to do so and that is accepted by the CAA.
Proposed revised text:	4.1 The technical design criteria described in this policy statement shall be applied to new and change controlled airspace design proposals submitted to the CAA in accordance with the procedures detailed in CAP 1616. For existing CAP 1616 change proposals, the new policies

	shall be applied at Step 2a. If that step has been completed they shall be applied at Step 4a unless there is an overriding reason not to do so and that is accepted by the CAA. The CAA may direct a change to controlled airspace to comply with these criteria. A third party may sponsor a change to implement this policy within existing controlled airspace.
Justification:	Gives the policy utility

Line number:	
Paragraph number:	4.2 Where an air navigation service provider (ANSPs) is a designated airspace controlling authority, as a function of point (b)(5) of AMC2 ATM/ANS.OR.B.005(a)(3)8, the CAA would expect ANSPs to review the airspace design and volume, associated ATS routes and/or SIDs and STARs and the ATS arrangements within that volume of airspace, to ensure that they:
Comment:	A policy that says "the CAA would expect an ANSP" is tantamount to nothing. It is clearly required, so this policy must say that. If the policy does not say that ANSPs will ignore it and the CAA will have no legal basis to enforce it. The policy noted in Para 4.1 above should be applied.
Proposed revised text:	4.2 Where an air navigation service provider (ANSPs) is a designated airspace controlling authority, as a function of point (b)(5) of AMC2 ATM/ANS.OR.B.005(a)(3)8, the ANSPs is to review the airspace design and volume, associated ATS routes and/or SIDs and STARs and the ATS arrangements within that volume of airspace, to ensure that they: …..
Justification:	The phraseology proposed would not implement the policy requirement, a directive is required.

Line number:	
Paragraph number:	4.3 Any new controlled airspace, or changes to an existing controlled airspace volume as a result of a review by the airspace controlling authority, shall be subject to the process and procedures detailed in CAP 1616. Depending on the specifics of the change required to the controlled airspace or the ATS route/s, SIDs and STARs within it, such amendments will be made in accordance with extant legislation and airspace policy, taking into account related guidance materials. The key documents are listed in the references section of this policy statement below.
Comment:	The statement "controlled airspace or the ATS route/s, SIDs and STARs" should also include Instrument Approaches.
Proposed revised text:	4.3 Any new controlled airspace, or changes to an existing controlled airspace volume as a result of a review by the airspace controlling authority, shall be subject to the process and procedures detailed in CAP 1616. Depending on the specifics of the change required to the controlled airspace or the ATS route/s, SIDs, STARs and instrument

	approaches within it, such amendments will be made in accordance with extant legislation and airspace policy, taking into account related guidance materials. The key documents are listed in the references section of this policy statement below.
Justification:	Add Instrument Approach

Line number:	
Paragraph number:	5 **Definitions**
Comment:	The definition (and note) of Controlled Aerodrome is missing. It appears in both ICAO Annex 11 and Part ATS as noted in UK AIP 1.7. It is relevant to this policy and should be included.
Proposed revised text:	***Controlled aerodrome.*** An aerodrome at which air traffic control service is provided to aerodrome traffic. *Note. The term "controlled aerodrome" indicates that air traffic control service is provided to aerodrome traffic but does not necessarily imply that a control zone exists.*
Justification:	Include ICAO Annex 11 definition

Line number:	
Paragraph number:	6.2 Specific design criteria for the containment within controlled airspace of ATS routes, SIDs, STARs and flights subject to vectoring instructions from air traffic control are detailed within Annex B.
Comment:	This list should include Instrument Approach Procedures
Proposed revised text:	6.2 Specific design criteria for the containment within controlled airspace of ATS routes, SIDs, STARs, Instrument Approaches and flights subject to vectoring instructions from air traffic control are detailed within Annex B.
Justification:	Include Instrument Approach criteria

Line number:	
Paragraph number:	6.2 Specific design criteria for the containment within controlled airspace of ATS routes, SIDs, STARs and flights subject to vectoring instructions from air traffic control are detailed within Annex B.
Comment:	It is unclear where the clause on vectoring as a requirement for controlled airspace came from. It does not appear to be contained in the ICAO or Reg UK(EU) No 923/2012 references which are source for this policy. It appears to be a catch-all to allow controlled airspace to be established widely around aerodromes, particularly military aerodromes. As such it would increase controlled airspace volumes and airspace segregation significantly.

	In any case, this says the criteria are in Annex B when they are not! There is no justification or criteria for this measure which should be deleted.
Proposed revised text:	6.2 Specific design criteria for the containment within controlled airspace of ATS routes, SIDs, STARs and Instrument Approaches are detailed within Annex B.
Justification:	Clarification and deletion to a reference in Annex B which does not exist.

Line number:	**Annex A**
Paragraph number:	A1.1 The classification and designation of ATS airspaces follows a determination of the need for air traffic services. When it has been determined that ATS will be provided in particular portions of the airspace or at particular aerodromes, then those portions of the airspace or those aerodromes shall be designated in relation to the air traffic services that are to be provided ICAO Annex 11 section 2.4.
Comment:	This is not an appropriate statement in the design criteria policy as it attempts to short circuit the detailed policy is set out in the Policy for The Classification of UK Airspace which could be cross referenced here. It should not reference ICAO Annex 11 directly. It is also incorrect in that other criteria in the classification document may have a bearing on that. For example, this statement would bypass any UK Differences or other policy matters. It is not relevant and should be deleted. Such policy statement areas must be contained in one document only.
Proposed revised text:	A1.1 The classification and designation of ATS airspaces is set in document (reference)
Justification:	Inappropriate cross reference and incorrect statement

Line number:	
Paragraph number:	A1.2 Those portions of UK airspace where it is determined that air traffic control (ATC) service will be provided to instrument flight rules (IFR) and/or visual flight rules (VFR) flights shall be designated as control areas (CTA) or control zones (CTR)11.
Comment:	This is not an appropriate statement in the design criteria policy as it attempts to short circuit the detailed policy is set out in the Policy for The Classification of UK Airspace which must be cross referenced here and not ICAO Annex 11. It is also incorrect in that other criteria in the other document have a bearing on that. Such policy statement areas must be contained in one document only. See also our note at Para A1.1
Proposed revised text:	This text should be deleted. If necessary, a cross reference to the classification policy should be made.

Justification:	Inappropriate and incorrect statement.

Line number:	
Paragraph number:	A3.1 CTAs, including, inter alia, airways and terminal control areas (TMA) shall be delineated so as to encompass sufficient airspace to contain the flight paths of those IFR flights or portions thereof to which it is desired to provide the applicable parts of the ATC service, taking into account the available navigation capabilities
Comment:	Desire is not normally an element of policy.
Proposed revised text:	"CTAs, including, inter alia, airways and terminal control areas (TMA) shall be delineated to contain the flight paths of those IFR flights or portions thereof to **which airspace classification policy requires** the applicable parts of the ATC service" (not "… to which it is desired…"!!)
Justification:	Inappropriate wording for a policy statement

Line number:	
Paragraph number:	A6.1 Radio and transponder mandatory zones (RMZ and TMZ respectively) may be established within volumes of class E controlled airspace….
Comment:	RMZ or TMZ in class G are an alternative to establishing class E so that might be reflected here
Proposed revised text:	It would be better to say "Radio and transponder mandatory zones (RMZ and TMZ respectively) may be established within volumes of class E controlled airspace **or in class G airspace** when the establishment of a more restrictive classification of airspace is not warranted but additional measures to enhance flight safety are required"
Justification:	Clarification

Line number:	**Annex B**
Paragraph number:	
Comment:	The main headings in this Annex relate to SIDs, STARs, PBN Approach Transitions and ATS Routes. There is no heading for Instrument Approaches contrary to the statement made in the policy. Para B1.1 says "…designed to provide sufficient airspace to contain notified ATS routes, instrument approach and departure procedures" but then fails to mention instrument approaches again. It is fundamental to this policy that containment of instrument approaches is set out in detail and under a main heading. Otherwise, airspace designers will continue to use the inappropriate containment policy designed for CTAs when designing CTRs. Inquiries of the CAA prior to this response suggested that CTRs did not need to be included because their policy is set out in ICAO Doc 8168.

	That would apply to all the other structures too in which case the policy as a whole is redundant. We do not accept that; this policy is important. The main paper Para 6.2 states that "Specific design criteria for the containment within controlled airspace of ATS routes, SIDs, STARs and flights subject to vectoring instructions from air traffic control are detailed within Annex B". They are not. Moreover, such criteria are not appropriate and this mention should be deleted.
Proposed revised text:	Add reference to instrument approach criteria and detail them.
Justification:	Missing section to be added

Line number:	
Paragraph number:	B1.1 Where it is determined that air traffic control (ATC) service will be provided to instrument flight rules (IFR) and/or visual flight rules (VFR) flights (see Annex A), controlled airspace is established. It is designed to provide sufficient airspace to contain notified ATS routes, instrument approach and departure procedures (including holding and missed approach procedures), and the area in which aircraft receive vectoring instructions to join the final approach track.
Comment:	The first sentence is not an appropriate statement in the design criteria policy as it attempts to short circuit the detailed policy is set out in the Policy for The Classification of UK Airspace which must be cross referenced here and not ICAO Annex 11. For example, this statement would bypass any UK Differences or other policy matters. It is not relevant and should be deleted. Although this refers to instrument approach procedures, the paragraphs that follow omit that policy. It should be added
Proposed revised text:	B1.1 Controlled Airspace is designed to provide sufficient airspace to contain notified ATS routes, instrument approach and departure procedures (including holding and missed approach procedures
Justification:	Remove inappropriate statements

Line number:	
Paragraph number:	B1.2 'Sufficient airspace' is taken to mean that the volume of controlled airspace should safely contain the primary area of these procedures. Containment should, in the first instance, be predicated upon the primary area identified through the design of these procedures.
Comment:	Para B1.2 and Para B2.3 address the same subject of lateral containment. Our comments to both are the same. The primary area, which is designed to address obstacle and terrain risk, is not an appropriate benchmark for establishment of 'sufficient airspace' to address conflict risk. The permanent nature of obstacles and terrain means that an excursion from the primary area bears a much greater risk than an excursion from the (typically) controlled airspace protecting the procedure, which would require the presence of an aircraft in that airspace at the time of the excursion to have any safety effect. The protected airspace can therefore be considerably less than the primary

	area without compromising safety and should be based on a historical analysis of the tracks actually flown (in the absence of any 'shortcuts' offered by ATC) or tracks in analogous procedures, with a margin of perhaps 1 nm between the (say) 99th percentile deviation and the edge of controlled airspace.
Proposed revised text:	Lateral containment of SIDs established within controlled airspace, may in the first instance, be based upon the size and shape the primary area determined for obstacle clearance and applicable to the procedure design. An analysis of achieved track-keeping performance (if necessary for a new procedure, in an analogous scenario) should be performed to reduce the containment to the minimum airspace required to make it unlikely that a flight following the procedure would leave the containment volume.
Justification:	Inappropriate containment policy

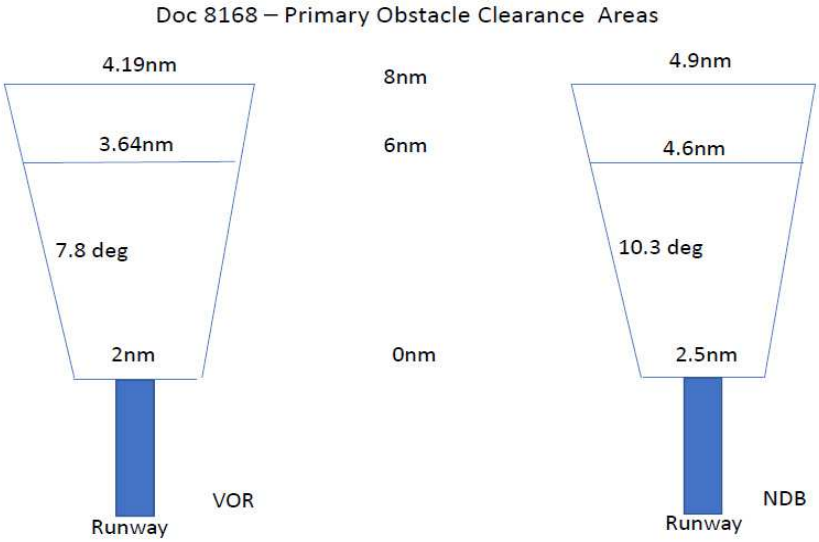
Line number:	
Paragraph number:	B2.3 Lateral Containment. Lateral containment of SIDs established within controlled airspace, should in the first instance, be based upon the size and shape the primary area determined for obstacle clearance and applicable to the procedure design
Comment:	We searched for a source requirement for the boundaries of CAS to contain the Primary Obstacle Clearance Area as defined in ICAO Doc 8168 but we found nothing beyond the current CAA policy statement. This policy leads to most UK lower airspace designs being far larger than could reasonably be required even for legacy navigation facilities. They are all much larger than would be required for modern RNP designs. This fundamental design criteria must be reviewed against modern RNP criteria and revised before this document proceeds. If there is an ICAO requirement for this policy, please tell us what it is so we can review this again. Moreover, this document must define the design criteria and stating that this is only "in the first instance" means there is some other criteria to be added. This document must contain the whole policy.
Proposed revised text:	See comment/proposal at Para B1.2
Justification:	Historic national requirement no longer appropriate

Line number:	
Paragraph number:	B2.5 Conventional SIDs. Where it is not possible to introduce RNAV 1 designs due to operating fleet capabilities or other constraints, the nominal track for SIDs established within controlled airspace should in normal circumstances not be less than 5 NM from the limits of controlled airspace 20. Exceptionally, and when this criterion cannot be met, sponsors of conventional SIDs may present alternative proposals with appropriate mitigation supported by a safety case for CAA approval. In

	such cases, the nominal track should not be less than 3 NM from the lateral limits of controlled airspace.
Comment:	The policy uses "RNAV 5 limits" for a conventional SID but RNAV 5 SIDs are not permitted by PANS OPS. As written the containment policy for conventional SIDs appears to assume a potential track error of ± 5nm at the point of lift off which is impossible. Moreover, even with the lowest standard of conventional navigation aid (ADF) the track error for Primary Area calculation from Doc 8168 at 8nm from the facility is only ±2.45nm so we believe that within a standard CTR a containment of ±3nm is more than adequate. Moreover, RNAV1, which is permitted for SIDs, suggest that 2nm would be completely adequate. We propose that this be adopted for UK containment policy within the CTR element of any departure.
Proposed revised text:	B2.5 Conventional SIDs. Where it is not possible to introduce RNAV 1 designs due to operating fleet capabilities or other constraints, the nominal track for SIDs established within CTRs should in normal circumstances not be less than 3 NM from the limits of controlled airspace. Exceptionally, and when this criterion cannot be met, sponsors of conventional SIDs may present alternative proposals with appropriate mitigation supported by a safety case for CAA approval.
Justification:	Revised design criteria

Line number:	
Paragraph number:	B3.1 STARs, PBN approach transitions and ATS routes…….
Comment:	As previously set out, this paragraph must also include instrument approaches
Proposed revised text:	B3.1 STARs, PBN approach transitions, instrument approaches and ATS routes…….
Justification:	Add missing section

Line number:	
Paragraph number:	Whole Document
Comment:	As mentioned in several places, the policy is flawed by its failure to provide design criteria for instrument approaches.

	It is our contention that a semi-width of 3nm within the confines of a CTR is more than sufficient to contain the primary area for the worst-case conventional instrument approach and SID and therefore PBN approaches. We attach a diagram of the Doc 8168 requirement for primary area.  We propose that the missing section on instrument approach containment is added and that a 3nm semi-width for conventional SIDs satisfies the containment requirements of this policy. In addition, the CTR requirements contained in Annex A paragraph 2 should be included here to provide a single point of design requirements.
Proposed revised text:	A complete section needs to be created. The GAA stands ready to contribute to this work.
Justification:	A fundamental element of airspace design data is missing from this document and has been missing from its predecessor. This has led to airspace designers creating overlarge CTRs. It has also presented a dilemma for airspace sponsors who have no criteria on which to base their application. Where possible, a standard size and shape CTR should be used. This document should suggest this preferably with an illustration.