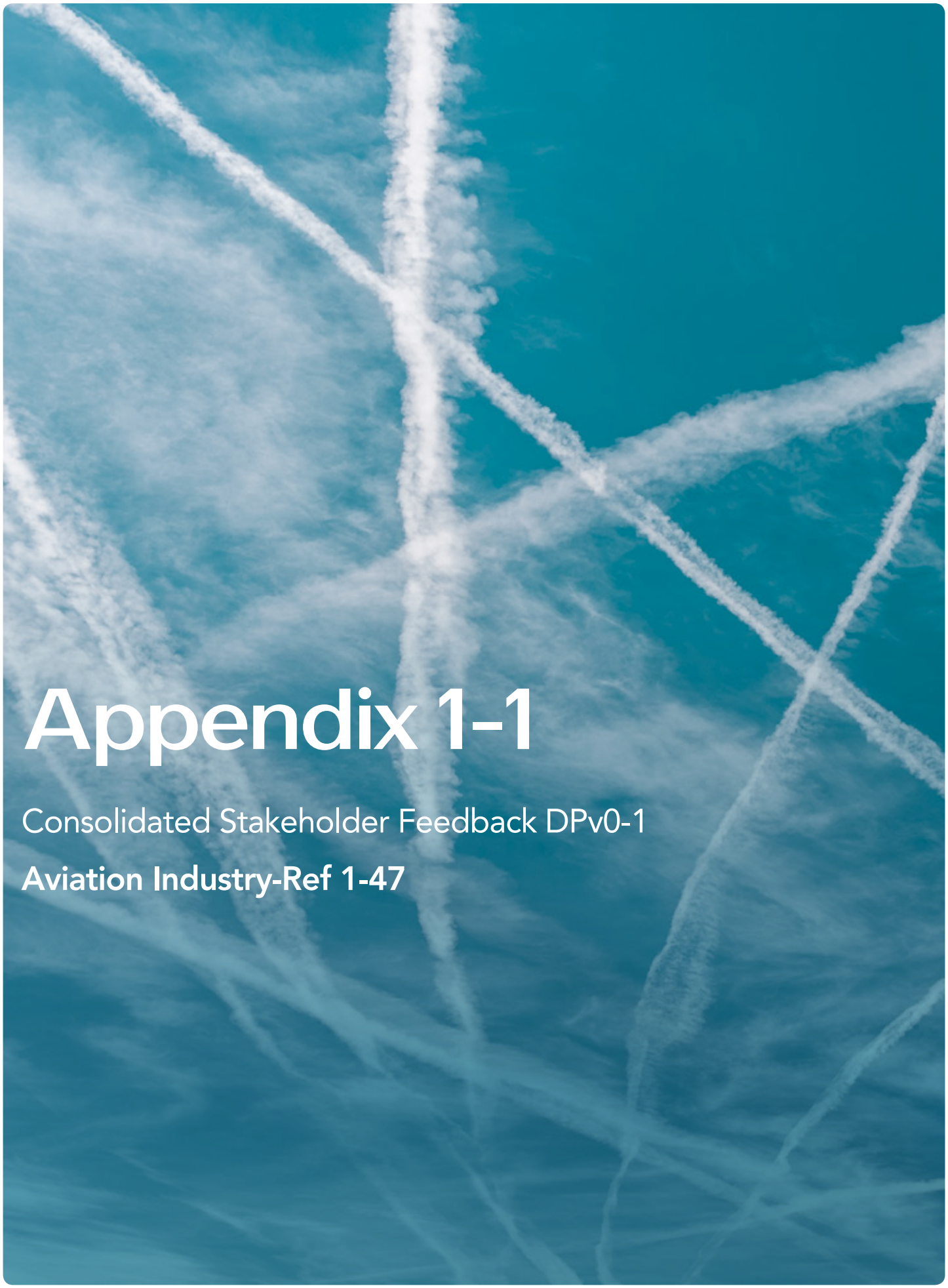
YOUR LONDON AIRPORT
Gatwick



# Appendix 1-1

Consolidated Stakeholder Feedback DPv0-1

**Aviation Industry-Ref 1-47**

## 2 Redhill ATC response DPv0-1

# 3.15 Summary of Questions

| | |
|---|---|
| **1a** | Do you agree that airspace design must be safe and further promote safety management systems? YES / NO<br>Additional comments: |
| **1b** | Should 'Safer by Design' attract the highest design principle priority? YES / NO<br>Additional comments: |
| **2** | Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? YES / NO<br>Additional comments: |
| **3** | Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? YES / NO<br>Additional comments: |
| **4** | Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? YES / NO<br>Additional comments: The airspace should be designed to take maximum advantage of modern aircraft performance. The base of the CTA should be raised to a minimum of 2000ft AMSL. This would allow GA aircraft operating outside CAS to fly at higher altitudes adding to the overall noise reduce to local communities. |
| **5** | Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? YES / NO<br>Additional comments: |
| **6** | Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time based operations? YES / NO<br>Additional comments: |
| **7** | To what extent should London Gatwick consider multiple pathways on:<br>(a) Departures procedures Consideration should be given to multiple departure routes , possibly more departures to the south from 26. If this creates more controlled airspace below 2500ft AMSL then NO.<br>(b) Arrival procedures Yes. Provided there is no increase in controlled airspace below 2500ft AMSL. |

## 2 Redhill ATC response DPv0-1

# 3.15 Summary of Questions continued

| | | |
|---|---|---|
| 8 | In what order would you prioritise these 5 overflight management options? | A B C D E |
| 9 | Are there other options we should consider and how would you prioritise them relative to your response to Qu 8? | |
| 10 | Where on the spectrum of A – E would you wish Gatwick airport to prioritise these factors? | A B C D E |
| 11 | Where on the spectrum of A – E would you wish Gatwick airport to prioritise operational resilience? | A B C D E |
| 12 | What are your top 5 Airspace Modernisation objectives?<br>1 Reduction in controlled airspace<br>2 Minimise overflight of existing residential areas.<br>3<br>4<br>5 | |
| 13 | What other Airspace Modernisation objectives do you believe we should consider? | |
| 14 | What other design principles do you believe we should consider and why? | |

## 8 Rochester Reply and Answers 1 Design Principle Development 5th

3.15 Summary of Questions

**1a**

Do you agree that airspace design must be safe and further promote safety management systems? Y E S

**1b**

Should 'Safer by Design' attract the highest design principle priority? Y E S

**2**

Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? Y E S

**3**

Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? YES

**4**

Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? Y E S

**5**

Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? Y ES

Additional comments: Remembering not to add additional restrictions to GA (General Aviation)

**6**

Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time-based operations? YES

**7**

To what extent should London Gatwick consider multiple pathways on:

(a) Departures procedures: Yes, these should be considered without effecting GA airspace.

(b) Arrival procedures: Yes, these should be considered without effecting GA airspace.

**8**

In what order would you prioritise these 5 overflight management options? 1.A 2. B 3.C 4. D 5.E

**9**

Are there other options we should consider and how would you prioritise them relative to your response to Qu 8? Whatever route you have, it will not stop the local planning authority giving planning permission on new builds, and then the complaints! Best to find routes that minimise the number of people effected, and with less or minimal impact/effect on GA

**10**

Where on the spectrum of A – E would you wish Gatwick airport to prioritise these factors? C

**11**

Where on the spectrum of A – E would you wish Gatwick airport to prioritise operational resilience? E

**12**

What are your top 5 Airspace Modernisation objectives?

1.D 2.F 3.G 4.L 5.N

**13**

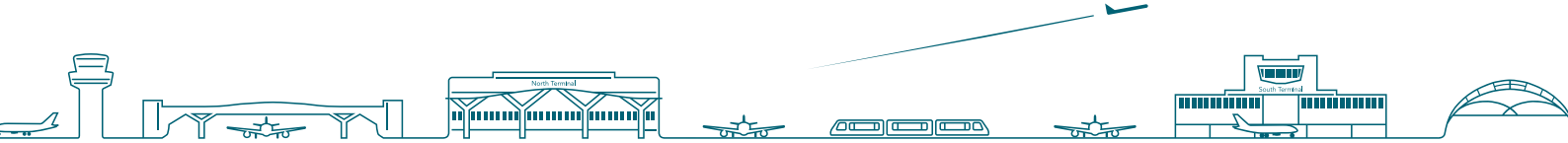
What other Airspace Modernisation objectives do you believe we should consider?

Any changes should, minimise the impact on GA in the area.

**14**

What other design principles do you believe we should consider and why?

Consider minimising the impact on the GA community. The GA airspace is very restricted in the South East of England and keeps getting smaller. This would also reduce the possibility of infringements.



# 15 GAL Airspace Principles Consultation _IAG Response to GAL_05APR20192019

## Introduction

1. International Airlines Group (IAG) is pleased to submit comments in response to the Gatwick Airport Limited (GAL) consultation on Airspace Design Principle Development for Gatwick Airport.

2. IAG is the parent company of British Airways (BA), Aer Lingus, Vueling, Iberia Express and LEVEL (Vueling Austria) all of whom operate at Gatwick. Collectively, IAG airlines operate approximately one quarter of all movements at Gatwick, with BA the second largest based carrier. In 2018, IAG carried 113 million customers in 573 aircraft to 280 destinations across the world. In the UK, IAG employs over 40,000 people.

3. IAG holds a strong view that **modernisation of UK airspace is fundamental to protect against current and future delays** and ensure that airlines can continue to provide consumers with safe, efficient connections to destinations across the world, and deliver the economic benefits that air transport offers the UK. The need for modernisation in London and the South-East is particularly vital. We firmly believe that the need for political and legislative support and regulatory oversight to deliver this is now at unprecedented levels of urgency. The time for action is now and this requires **Government to take a leading role at ministerial level** and for the **CAA to be adequately resourced** to cope with the anticipated deluge of airspace change proposals (ACPs) under CAP1616. Further delay is unthinkable.

4. IAG fully supports Gatwick's proposals to modernise its routes and believe this should be progressed at the earliest opportunity. The same is true for wider elements of the FASI-South Airspace Modernisation programme where **Gatwick needs to engage collaboratively with NATS and sponsors of neighbouring airspace changes** to create an airspace system in the South East that is safe and efficient for all. For the redesign of airspace from the surface to 7,000 feet, GAL has a responsibility to lead engagement and formal consultation with its customers (airlines, passengers and cargo-owners) and local communities to ensure that the most optimal airspace change is delivered within the wider airspace modernisation timetable. To date we have no view of what NATS plan to do above 7000ft and therefore, until more clarity is received for the LAMP2 plans, we reserve the right to a change of view in terms of our response to GAL's proposals in this consultation and any feedback offered on GAL's approach to redesigning its airspace network.

5. IAG aims to be the world's leading airline group on sustainability and continues to engage with airports, air navigation service providers, the CAA and other industry specialists to minimise the environmental impact of our operations on local communities. We expect ACP sponsors, including GAL, to work with us to ensure a balance is struck, such that airspace principles achieve the best overall outcome. All measures designed to achieve **optimum levels of noise, air quality and environmental performance must be balanced with delivering an improved economic and operational outcome** for consumers in terms of minimising delays and maximising safety, runway throughput and resilience on a sustainable basis. For example, by operating adaptable and predictable routes (see Para 26-29), emissions will be reduced while consequences for noise impacts will have to be managed effectively in a balanced way.

6. Accomplishing optimal outcomes from a technically complex and interdependent set of criteria will require a keen focus on key facts, evidence and an accurate understanding of the **logistical and cost practicalities of delivery**. Airlines are subject to a high level of technical, operational and safety regulation and must therefore be integral to the process and meaningfully engaged by GAL to ensure vital and ongoing feedback.

## General Views on Airspace Modernisation

8. In 2017, IAG responded to a DfT UK Airspace Policy consultation, which outlined the challenge of managing increasing numbers of civil air traffic movements in our current, inefficient airspace system. It is evident that continuing to operate without airspace modernisation will see **passengers face longer journeys and delays**. As airspace becomes increasingly congested, delay levels will increase, cancellation rates will multiply, more emissions will be generated, and noise improvements will be prevented.

9. Even without the expansion of Heathrow airport, commercial air transport is forecast to grow by around 2% a year in the UK, from 2.25m flights in 2015 to 3.25m flights by 2030. With no improvements to airspace, forecasts show that 1 in 3 UK flights will be delayed by more than half an hour by 2030. This equates to 5 million minutes of delay annually with the total cumulative cost of delay and cancellation from 2016 to 2030 totalling c.£1bn in 2016 values. Beyond 2030 delays and cancellations will get progressively worse.

10. Airspace is a key part of the UK's national transport infrastructure. Like surface transport modes, airspace infrastructure facilitates travel for leisure and business, supporting jobs and trade and delivering considerable economic and social benefits. However, air travel is severely hampered by airspace design in the UK and consumers, whether passenger or cargo-owners, currently experience significant delays due to airlines operating in an airspace structure that has been devoid of significant transformation for over 50 years. This is felt most strongly in London and the South-East and therefore at Gatwick. **Modernisation is long overdue and in urgent need of the same attention and priority as our rail and road infrastructure.**

11. It is striking that IAG airlines are retiring aircraft equipped with precision navigation equipment that has been used in modern airspace across the world but cannot be used with the UK's out of date navigation systems. In its consultation response on UK Airspace Policy, the DfT correctly identified that **many routes and practices are not utilising modern technologies available**. Aircraft continue to use flightpaths that are outdated, often longer or lower than they need to be, and are not optimised to reduce noise impacts or offer relief. This means routes and practices can be both inefficient and ineffective, leading to unnecessary delays for consumers and excessive impacts on the environment and those living near our airports.

12. **Airspace modernisation would improve environmental performance** by allowing aircraft to fly more efficiently, using more flexible departure and arrival routings and more agreeable operating procedures, including continuous climb and descent, and reducing or eliminating the need to hold arriving aircraft in orbital queues. These improvements will result in lower fuel use and improved carbon efficiency. Industry studies show that they could deliver a potential carbon saving to UK aviation of between 9% and 14% by 2050. Combined with the introduction of quieter aircraft, these **improvements would deliver the potential to accommodate significant growth in air transport movements** to 2050 and at the same time achieve a potential reduction to UK aviation's total noise output compared to 2010[1].

13. Changing airspace will inevitably mean changing aircraft routings and we do recognise the impact departing and arriving flights will have on certain communities. We continue to work hard to reduce noise and emissions with new aircraft in our fleets already cleaner and quieter than ever before. IAG also supports the Government's overall policy on aviation noise to limit, and where possible reduce, the number of people in the UK significantly affected by aircraft noise, with the benefits of noise reduction shared between industry and communities.

14. Ultimately, whilst every effort should be made to identify the best available solutions and mitigations for affected communities, the reality is that there may be no perfect solution that suits everyone. Airspace change will always be controversial, but it is up to the Government, CAA and industry to demonstrate that

[1] Sustainable Aviation: *CO2 Road Map* and *Noise Road Map*

the overall outcomes lower the impacts of airspace modernisation and management across the UK system as much as possible; and that balanced decisions are made in the overall public interest.

15. IAG must stress the importance of **maximising airspace capacity, efficiency and resilience** to cope with anticipated growth in air traffic and future-proof for airport developments which are designated to be of national significance. We consider this to be a priority second only to safety principles when it comes to modernising UK airspace. IAG takes the view that maximising airspace capacity and **creating headroom** is the key to unlocking everything else. This includes enhanced safety/technical standards, resilience and new operational efficiencies, improved environmental/economic performance, reduced noise and reduced impacts on other users. Just as maximising airspace capacity unlocks these key benefits, so airspace modernisation is vital to delivering the aims of the government's wider aviation policy. We will be urging the government to explicitly adopt this strategy as part of its overall aviation strategy development. The CAA's own strategy and on-going reporting to the Secretary of State should also endorse this connection.

16. IAG has long supported the Future Airspace Strategy (FAS) as formulated in 2011 to address the need for airspace modernisation. This was successful in bringing together different industry stakeholders, but we viewed the delays in progressing the programmes and projects identified to deliver any transformation with considerable frustration. We hope the new DfT and CAA Airspace Modernisation Strategy (AMS) and the governance structure designed to oversee the delivery of the AMS initiatives, will make effective progress and we expect to play a fundamental role in this as part of the delivery and engagement groups.

## Views on Gatwick Design Principle Development

### Core Principle – Safer by Design

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|---|
| **Qu 1a:** Do you agree that airspace design must be safe and further promote safety management systems?<br>**Qu 1b:** Should 'Safer by Design' attract the highest design principle priority? |

17. IAG strongly agrees that safety is a fundamental requirement of the industry and should never be compromised by other airspace design principles. We agree that **'Safer by Design' should be a core principle and attract the highest design principle priority**. Any design must be able to handle the anticipated growth in UK air traffic with levels of aviation safety that are at least equivalent, and preferably strengthened, compared to today. Compliance with EC metrics should be a given but stretch targets at a more detailed level to offset the increased risk from UK traffic growth should also be expected. Please note the frequent references to safety considerations throughout this response.

### Core Principle – Enhanced Navigation Standards

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| **Qu 2:** Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its design? |

18. IAG supports this principle and the **need to stretch navigation standards** beyond 1990s RNAV technology. The lack of progress in modernising UK airspace over the last 20 years is particularly disappointing when put in a global context. To optimise performance in current and future airspace, our airlines devote significant resource to the tactical and strategic management of air traffic control, airport and airspace related issues. However, new aircraft operating in the UK are still forced to use traditional beacon navigation infrastructure, despite being able to use their advanced navigational capabilities in other parts of the world. We will start to see aircraft, like the Boeing 777, being retired before their advanced on-board technology has had a chance to benefit consumers and communities in the UK by flying more efficiently and precisely.

19. Full attention should be paid to designs that match current aircraft capabilities that make use of satellite-based navigation, data link communications and enhanced surveillance. IAG supports the ICAO requirement for **Precision Based Navigation (PBN) in all phases of flight** and we must ensure compliance with EU legislation in the SESAR Deployment Pilot Common Project. Where it can be proven to optimise the capacity and resilience of the network and where we are capable (through equipage to meet EU legislation), we should be pressing for advancement of RNAV/RNP operations in the London Terminal Manoeuvring Area (LTMA) and taking advantage of existing technology now, where it is not already used.

20. In other recent airspace consultations, we have advocated full alignment with NATS LAMP2 design principles which puts the emphasis on using **'an appropriate standard of PBN'**. Requirements for PBN specifications (such as RNP1) must be based on agreed operational and safety requirements, projection of **fleet equipage** and stakeholder consensus on noise objectives. It is important that GAL follows established principles and guidelines for **PBN specifications**, rather than creating a bespoke approach which could have unintended circumstances.

If we consider the BA fleet, setting a **minimum PBN specification** of **RNP1 + RF for departures** would be acceptable but GAL should not set a minimum speciation of say **RNP-AR 0.15 for arrivals** as this would require expensive and potentially prohibitive upgrades for the B777 & A320 fleets, whilst certain fleets could never be compliant.

21. Virtually all modern aircraft can take advantage of satellite-based navigation; however, GAL must consider the timelines associated with the phasing out of older navigational technologies. There are marginal gains to be had by equipping legacy aircraft with specific levels of PBN capability such as RNP AR, but this comes at significant cost and is not possible on some aircraft fleets.

22. To ensure designs are safety compliant and within the technological capabilities of all aircraft types, NATS, HAL, GAL and others should work with users to establish the **technology road map** required to meet the performance and navigational needs for the LTMA, e.g. the equipage and flight crew training needed to meet potential long-term technical, design and airspace change deployment mandates.

23. Whilst we believe current equipage levels should be sufficient to deliver 'an appropriate standard of PBN', we are somewhat **wary of the proposals for multiple flight paths**. We would hope the number of options would be limited both to simplify flight planning and minimise confliction (and a reduction in capacity) at LTMA airfields, including Gatwick. Aircraft **Flight Management System/Computer (FMS/FMC) capacities** also vary by aircraft type, with limitations on the quantity of different PBN flight paths that can be stored. These must be manageable to avoid prohibitive upgrade costs, excessive complexity for crews and associated safety risks. The greater the permutations of PBN routes at Gatwick and beyond, the more memory space is required of the FMS/FMC.

As an example, the following is a list of **FMS/FMC memory capacities** for aircraft in the BA fleet: -

- A320 5MB (Honeywell FMS 20MB)
- A380 64MB
- B747 100MB
- B777 6MB
- B787 51MB

Note: BA cannot buy extra memory for the B777 and regardless of the memory space available, there is a SID/STAR partition limit, so if Gatwick produce circa 50 procedures, the FMS/FMC will not accept them all! Other airlines will have a similar problem.

24. With sufficient notice the **training of crews** should be relatively straightforward. There would be no specific training requirement except for RNP-AR approaches and **no need for a phased transitional introduction of revised airspace** from a training point of view.

25. Taking into account these factors and aiming to optimise the available capacity, IAG believes that there is a case to review the NATS licence policy of "first come, first served" for managing aircraft in UK airspace. With the delay to the London airspace programme and increasing demand resulting in furthers delays and congestion, it may be more appropriate to move to a **"best equipped, best served"** policy that incentivises airlines and aircraft operators to invest in and deploy newer aircraft navigational technology. Whilst this would represent a departure from accepted practice worldwide, London and South-East airspace is the busiest and most congested airspace in the world and so this approach does merit careful review. The mechanism for how this could be undertaken should be jointly established by NATS, airports and airlines.

**Potential Principle – Adaptable & Predictable Routes**

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|---|---|
| **Qu 3:** | Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptions? |

26. IAG would be in favour of **long term predictability of flight paths and a design principle that enables beneficial system adaptions and future demands on airspace to be met**. As mentioned in our general views on airspace modernisation, it's well known that many routes and practices are not utilising modern technologies available and aircraft continue to use flight paths that are outdated and are often longer or lower than they need to be. This means that routes and practices can be both inefficient and ineffective, leading to suboptimal environmental performance and unnecessary delays for passengers and freight.

27. Airspace modernisation, combined with the introduction of more technically advanced aircraft and air traffic systems, offers a one off opportunity to address this by developing designs that could allow aircraft to fly more efficiently, using more flexible departure and arrival routings and more agreeable operating procedures. In the interests of improving safety, we should also be moving to a world with less congested radio frequencies, where we have ATC intervention by exception rather than intervention by norm.

28. These advances will result in lower fuel use and improved carbon efficiency. They are also vital for accommodating growth in UK air transport movements to 2050 and so there should be **no constraints to efforts to systemise the network and maximise capacity, efficiency and resilience** (see Paras 44-47).

**Potential Principle – Promote Enhanced Aircraft Capabilities**

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|---|---|
| **Qu 4:** | Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? |

29. IAG would be comfortable with adopting a principle that promotes **enhanced aircraft capabilities**. The introduction of new quieter and more technologically advanced aircraft to airline fleets has delivered substantial reductions in noise and this trend will continue. Over the next five years, BA alone will take delivery of 84 committed new aircraft, with more orders for IAG airlines still to come. These aircraft are substantially quieter and better equipped than the aircraft they replace. BA also plays a leading role in implementing solutions to mitigate noise and in demonstrating the potential for advanced **noise abatement techniques** such as steeper approach angles and macro arrival and departure design concepts.

30. IAG airlines will continue to support the introduction of **innovative techniques** for mitigating any impacts on communities and facilitating more efficient management of air traffic, as long as they meet safety,

operational efficiency requirements and deliver a balanced outcome. Going forward, we would expect to work with GAL to provide aircraft capability expertise for potential technical/operational programmes.

31. Consideration should also be given to how airspace design can help reduce infringements of controlled airspace, which currently account for a third of all losses of separation. This could largely be achieved by raising the required standards of general aviation pilots and compelling airspace users, including new entrants such as drones, to use available technology to achieve required levels of conspicuity for all aircraft.

**Potential Principle – Deconfliction by Design**

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|---|---|
| **Qu 5:** | Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7,000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? |

32. IAG supports the inclusion of a principle that seeks to deconflict Gatwick arrival and departure routes. In the interests of efficient operations, with the commercial and wider environmental benefits that brings, designs must avoid compromising trajectories and entry/exit point links with upper airspace. Furthermore, **designs should not result in unreasonably long flight tracks or steep turns and climb gradients**. Gatwick must consider that higher track mileage would not only lead to increased fuel burn but could end up sustaining aircraft noise over a larger population for longer periods of time. Please refer to the section on 'Managing Overflights (Paras 36-43) in which we expand upon this point.

33. Regular **interfaces between NATS, aircraft operators and other airports** will be a key element of this design process. Importantly, GAL must have collaborative engagement links with LAMP2 and sponsors of other lower-level airspace changes, with gateways/milestones agreed with industry to ensure delivery. We would expect NERL, HAL and GAL to lead on airspace modernisation. A strong governance framework and Government enforcement mechanisms will be necessary to secure the commitment required by all stakeholders to manage all the programme risks in a more expedient, dynamic and focussed way, with full integration across a variety of technical disciplines and full alignment of ACP's across different organisations (See Paras 57-58). Please refer to our caveat regarding lack of clarity on NATS LAMP2 plans (See Para 4).

**Potential Principle – Time Based Arrival Operations**

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|---|---|
| **Qu 6:** | Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time based operations? |

34. IAG is comfortable with exploring the concept of time based operations as long as GAL are not aiming to inflict delay on away based airports or proposing to resurrect an unworkable NATS initiative from a few years ago where they wanted to give all Heathrow inbound pre-0900 a fixed time to arrive at the hold that applied to the whole season. In considering any intervention to maintain **on-time arrival operations**, an account of **surface management** and **departure management**, as well as **runway slot times** should be made in maintaining a fair and equitable approach to the delivery of service to all operators. We would welcome the removal of **holding stacks,** but we do not believe that linear holding can fully accommodate extended delays and so suspect that holds will be required to some extent to ensure we have firebreak capacity.

35. Given the similarity of this proposal to the Targeted Time of Arrival concept at Heathrow, IAG would not wish to see essentially identical concepts have isolated development processes and would urge the airports to co-operate. This would ensure both a common operational procedure and enable costs to be kept down for all parties; for example, NATS would not be required to integrate 2 different systems, airlines would not be required to invest resource in supporting the development of separate systems and pilots would not be required to learn bespoke airport procedures rather than a single operational concept.

**Areas of Consideration – Multiple vs Single Pathways & Managing Overflight**

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|---|---|
| **Qu 7:** | To what extent should LGW consider multiple pathways on: (a) departures and (b) arrival procedures? |
| **Qu 8:** | In what order would you prioritise the 5 overflight management options? Either singularly or groups. |
| **Qu 9:** | Are there options we should consider and how would you prioritise them? |

36. We have always said that the lateral and vertical positioning of flight paths within any given design envelope should take account of **local community consensus**, to the extent that this is possible to achieve fairly and equitably whilst ensuring safe and efficient operations. Decisions over whether modernised airspace leads to multiple routes to provide respite, or concentrated routes avoiding populated areas or specific sites/locations, should again reflect the views of local communities.

37. In the main, we are prepared to operate airspace based on a community-led approach to the sub principles outlined here, provided this is **balanced with delivering an improved system for consumers** in terms of minimising delays and maximising safety, capacity, efficiency and resilience on a sustainable basis.

38. **Alternating airspace and flight paths several times during the day** to provide **managed respite** for communities will introduce **complexity for ATC**. To ensure safety is maintained, ATC would have to build in a significant margin for error. Although having fewer changes is operationally preferable, we are nevertheless open to further exploring the idea of alternation patterns that provide respite; as long as this can be managed on a **predictable** basis. Predictability is a key aspect for respite and equally, pilots need to be able to make appropriate flight plan selections and calculate required fuel uplift based on known routings to be used. Certainty in this respect leads to more efficiency.

39. **Safety compliance and the technical capability of aircraft** must also be considered here. Whilst we believe current equipage levels should be sufficient to deliver an 'appropriate standard of PBN', we would be somewhat wary of having an **excessive number of multiple pathways**. As highlighted, FMS/FMC capacities limit the quantity of different PBN flight paths that can be stored and so these must be manageable to avoid excessive complexity and associated safety risks. We hope that the number of options would be considered with **FMS/FMC limitations** in mind (See Para 23). Flight path options should also be optimised to simplify flight planning and minimise conflictions (and a reduction of capacity) at LTMA airfields, including Gatwick.

40. As already mentioned, in the interests of efficient operations and wider environmental benefits that brings, the sub principles outlined here must not limit or constrain throughput or compromise trajectories and entry/exit point links with upper airspace. Furthermore, **designs should not result in unreasonably long flight tracks or steep turns and climb gradients**, especially as this often has detrimental consequences in terms of noise and emissions.

41. Whilst Government policy prioritises noise over carbon emissions below 7,000ft, design principles should reflect the fact that there is provision for CAA intervention to **address disproportionate increases in carbon emissions**. There are also international obligations/commitments made by both Governments and industry to mitigate against climate change issues; noise should not be the sole focus. Each proposed flight path should be compared against a baseline flight path designed to minimise emissions, with the additional $CO_2$ emissions reported. Lateral/vertical requirements that would increase $CO_2$ emissions from the minimum emissions baseline should be avoided and excessive increases in $CO_2$ emissions deemed unacceptable.

42. IAG would like to see airline operators consulted in the development options and scenarios to **optimise network fuel performance** and meet the **environmental goal of reducing $CO_2$ emissions per flight**. Care must be taken to ensure there is a balanced approach, especially when trading between fuel burn and noise. Longer routings will have an impact on airline operating margins and schedules and so these will have to be

considered as part of consultations. Simulations have shown that extended track miles tend to be worse for fuel burn over a small level-off segment. This is true for both the departure and the arrival phase.

43. GAL could consider priorities that move flights over **parks and open spaces** rather than built-up **residential areas**. However, there is the issue of 'peace and tranquillity' in rural areas versus higher ambient noise in urban areas. It's worth recalling that Gatwick LAMP1 plans were ultimately rejected due to a successful campaign carried out by a small pocket of influential residents living in low population density rural areas. Prioritising flights over **commercial/industrial areas** rather than residential areas is also worth considering.

**Areas of Consideration – Operational Efficiency v Environmental Impact and Operational Resilience**

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|---|
| **Qu 10:** Where on the spectrum of A-E would you wish Gatwick airport to prioritise these factors?<br>**Qu 11:** Where on the spectrum of A-E would you wish Gatwick Airport to prioritise operational resilience? |

44. IAG must stress the importance of both **operational efficiency and operational resilience.** It is critical that both are identified as core principles. This is required just to cope with current and short term anticipated growth in air traffic, irrespective of any future airport expansion.

45. On the operational efficiency vs environmental impact spectrum, IAG would opt to **'maximise operational efficiency, reduce cost and minimise national environmental impact' – Option A**. As identified and as explained in the previous section, airline operators would prefer airspace designs that minimise fuel burn and emissions. For all the reasons mentioned in the section above, we believe that maximised operational efficiencies will, more often than not, bring wider environmental benefits, including reduced noise impacts.

46. On the operational resilience spectrum, IAG would opt for **'fully resilient' – Option E**. It is vital to **safeguard headroom capacity and redundancy** in the system to cope with anticipated growth in traffic, with the same levels of safety and increased operational resilience. The need for resilience is not only about ensuring airspace is designed to enable recovery from disruption on a bad day, but also about managing day-to-day traffic with minimal Air Traffic Management related delays and cancellations. **Future proofing** by creating headroom is also the key to unlocking everything else, including other operational efficiencies, enhanced safety/technical standards, improved environmental/economic performance, reduced noise and reduced impacts on other airspace users. Given past tendencies for GAL to over-schedule the runway without regard to operational resilience, the need for a 'fully resilient' design is greater at Gatwick than most airports.

47. Realistically, increased operational efficiency and resilience will only be achieved by increasing and indeed maximising capacity. Therefore, **maximising capacity** and **maximising benefits for passengers and freight** should also be core principles. It feels unrealistic to achieve capacity benefits within the current volume of airspace and consequently we believe more airspace above and below 7,000 feet is likely to be required to deliver safe, efficient and resilient design without impacting other users. Options to deliver this should not be discounted. Indeed, one of the strategic goals of the Airspace Modernisation Strategy is that "airspace capacity should not be a constraint on the growth of commercial aviation".

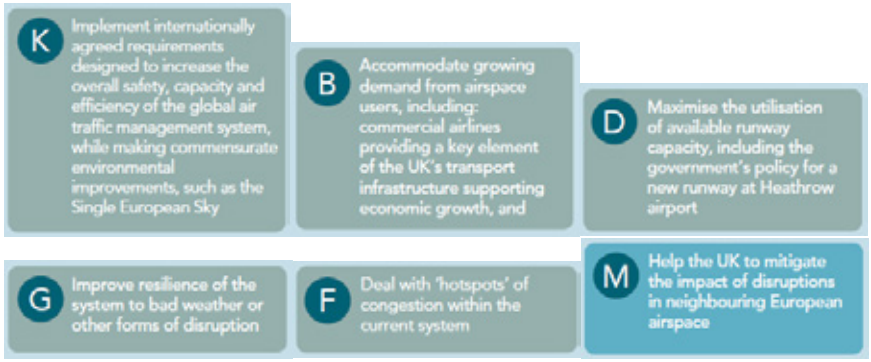
**Areas of Consideration – Programme Objective Priorities**

| |
|---|
| **Qu 12:** Where are your top 5 Airspace Modernisation objectives? |

48. IAG would list objectives **A (Safety), K (Capacity & Operational Efficiency), G (Operational Resilience), E (Environmental Performance) and H (Technological Development)** as its 'Top 5 Airspace Modernisation objectives'. These are listed in priority order below with aligned objectives grouped alongside.

49. **Priority A – Must be safe** (See Para. 17 and references to safety considerations throughout this response)


50. **Priority B – Maximise capacity, operational efficiency & resilience** (See Paras 15, 19, 28, 37, 44-47, 54, 61)




51. **Priority C – Optimise environmental performance** (See Paras 5, 12, 15, 26, 32, 40-42, 45-46, 56, 60)

52. **Priority C – Use latest technological developments** (See Paras 11, 18-31, 39, 46)


53. **Priority D –** IAG is comfortable with the objective of **minimising the impact of airspace change proposals on other airspace users**, as long as designs are ultimately optimised for all airspace users, with the primary goal of unlocking the anticipated environmental and economic benefits that maximising airspace capacity, efficiency and resilience will bring. Where increases in controlled airspace volumes impact other users, trade-offs can be explored to achieve common goals. IAG would put defence requirements to access appropriate airspace above the needs of general aviation and other civilian users of airspace.

**Qu 13:** What other Airspace Modernisation objectives do you believe we should consider?

54. **Objectives K, B and D** – On the theme of **maximising capacity**, these objectives should also acknowledge the need to, (i) future proof for airport developments which are designated to be of national significance, (ii) consider the phasing and alignment of airspace capacity developments in line with relevant airport masterplans and (iii) develop detailed and integrated upper/lower airspace plans with gateways/milestones agreed with the industry to ensure delivery in line with national policy commitments.

55. **Objective G** – We would point out that the need for **resilience** is not only about ensuring airspace is designed to enable **recovery from disruption** on a bad day, but also about **managing day-to-day traffic with minimal Air Traffic Management related delays and cancellations**. Disruption, delays and cancellations at any level can lead to severe passenger hardship, late runners with associated community impacts, significant additional costs, reputational damage and compound disruption over several days. Enforced delays and cancellations for flights carrying time-sensitive freight has major ramifications. Clinical samples or perishables may become unusable; production lines may be halted if supplies are held up; and business deals may fail if essential legal and financial documents cannot reach their destination in time.

56. **Objective E** – Alongside the need to **minimise noise** and meet **noise policy tests** we would add a stand-alone objective covering the need to also **optimise fuel performance** and **minimise carbon and greenhouse gas emissions**. As mentioned in previous sections, there are **international/local air quality obligations** and **climate change commitments** to consider here.

57. **UK Network Alignment** - As mentioned, regular interfaces between NATS, aircraft operators and other airports will be a key element of this design process. Importantly, GAL must have collaborative engagement links with LAMP2 and sponsors of other lower-level airspace changes, with gateways/milestones agreed with industry to ensure delivery.

58. In the context of the wider network and as a 'primary' airfield, Gatwick should work to ensure it is not unduly penalised in seeking a balance of fuel trade-offs for upper airspace change. In so far as optimising capacity, fuel burn and resilience is concerned, IAG believes that an element of optioneering is needed with different weightings for different airports based on the relative benefits of the network. Principally, we judge that primary airfields like Gatwick should be prioritised with higher weightings. If primary airfields fail the network fails, and so airports like Heathrow and Gatwick should be the starting point for design before building out from there.

59. **International Network alignment -** Looking further afield, a key part of achieving the optimal network performance will be ensuring that UK airspace is effectively integrated with surrounding airspace, particularly in Europe. This needs to be done both tactically at an operational level, and strategically at a pan-European policy level. The UK's airspace modernisation strategy will need to be predicated on working closely with other European states and air navigation service providers as part of EUROCONTROL, SESAR and EASA.

**Qu 14:** What other design principles do you believe we should consider and why?

60. As explained above, IAG would have expected to see a standalone principle related to **minimising noise** and **meeting noise policy tests**. Alongside this, we would also have expected to see a standalone principle related to **optimising fuel performance** and **minimising carbon and greenhouse gas emissions**.

61. Linked to increasing operational efficiency and resilience, we would like to see principles that emphasise the need to **maximise capacity** and **maximise benefits for passengers and freight.**

## 17 DPv0-1 Response easyJet - 20180328

3.15 Summary of Questions
**1a.** Do you agree that airspace design must be safe and further promote safety management systems? Y E S
Additional comments: The design of airspace must balance the needs of providing additional capacity with providing flexible routeing options to provide alternative solutions to handle inclement weather whilst also facilitating more optimal use of modern aircraft design by delivering continuous climb and descent profiles.

**1b.** Should 'Safer by Design' attract the highest design principle priority? Y E S
Additional comments: The public and professionals within Industry always hold safety as the highest priority level, notwithstanding the current scandal highlighted by the conflict of interest between Boeing and the FAA over the 737-Max 8, but whilst safety must always be the highest design principle, quality risk assessments must exist alongside to deliver the tangible operational improvements.

**2.** Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? Y E S
Additional comments: Neither the public nor Airline Operators (AO) be held hostage by not delivering the maximum operational improvements available by operating aircraft equipped with modern navigation systems. Where aircraft fleets are unable to meet these standards they should be routed in a manner which does not impact on the majority of AOs

**3.** Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? YES
Additional comments: Route designs should be predictable and definitive to allow flight planning systems to accurately integrate the track miles required into the calculations to make accurate fuel burn calculations.

**4.** Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? Y ES
Additional comments: Whilst this should be a principle, it should not be held as a contingent factor as there is limited airspace available and it may not be possible to optimally deliver this principle in all cases.

**6.** Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time based operations? YES
Additional comments: Incorporation of the 4 th element will become more and more critical to utilising full capabilities of modern aircraft navigational capabilities.

**7.** To what extent should London Gatwick consider multiple pathways on: Further definition of 'multiple' is required. Does this mean different tracks within a 5 mile corridor that differ by creating a track down the centre line as well as a track on either edge of the corridor to provide alleviation to direct overflight but effectively staying within the same corridor.
(a) Departures procedures - Yes
(b) Arrival procedures - Yes

## 17 DPv0-1 Response easyJet - 20180328

**8.** In what order would you prioritise these 5 overflight management options? A B D C E

**9.** Are there other options we should consider and how would you prioritise them relative to your response to Qu 8? The integration of route structure to be compatible with ways of working to consistently deliver the runway declared capacity, with resilience measures in place, and to factor in the ability to be less affected by weather factors which currently require flow control measures to be put in place.

**10.** Where on the spectrum of A – E would you wish Gatwick airport to prioritise these factors? A after B

**11.** Where on the spectrum of A – E would you wish Gatwick airport to prioritise operational resilience? A after A

2. What are your top 5 Airspace Modernisation objectives?

1. Minimum track miles
2. Continuous climb
3. Continuous descent
4. Pre-planned arrival routes communicated to crews prior to descent
5. Time based separation on arrival

**13.** What other Airspace Modernisation objectives do you believe we should consider? Ability to conduct en route holding to meet an arrival time

**14.** What other design principles do you believe we should consider and why? Linking multiple departure SIDs to routes ie there are alternative ways of flying due south other than via BOGNA

## 18 Emirates Airspace Modernisation Design Principles - EGKK - Emirates Response

| Q. | Y / N | Remarks |
|---|---|---|
| 1 A/B | Yes | |
| 2 | Yes | Some benefits may be mutually exclusive. For example – reducing the overflight of people and noise may actually increase track miles and fuel burn. The benefits Gatwick Airport is seeking to achieve should be prioritised, quantifiable and measurable. |
| 3 | Yes | |
| 4 | Yes | With the caveat: within the existing capabilities of modern commercial jet aircraft. There is no appetite to add more hardware to aircraft as the industry has not fully realised the benefits of existing technology already on board the aircraft.<br>Additional strategies can also be implemented to push airlines towards enhancing aircraft capabilities – eg: increased fees for using ground based navigation infrastructure, or for operating aircraft into Gatwick that do not meet Chapter III (IV?) noise standards. |
| 5 | Yes | |
| 6 | Yes | Suspect opportunities to achieve this will be limited unless co-ordinated with upper and adjacent airspaces. |
| 7 A/B | Yes | Provided relatively simple and for the purpose of delivering capacity and efficiency.<br>Of more benefit is continual climb and continual descent operations.<br>Gatwick airport could consider additional strategies such as time-based rotation of runways when winds are light and variable. |
| 8 | | No preference. Noise complaints at or above 4,000 ft. are generally pretty rare. |
| 9 | | Assist local communities within, say, 2-3 km from the airport and directly under flight paths to sound-proof their homes. A potential trade-off could be that curfew hours are reduced for Chapter III (IV?) noise compliant aircraft, in turn increasing the number of movements through Gatwick. |
| 10 | | Option “C” – equal balance. |
| 11 | | Option “C” – equal balance. |
| 12 | | 1 – H<br>2 – K<br>3 – N<br>4 – B<br>5 – G |
| 13 | | We would like to see as one of the programme objectives: *‘Most capable, best served.’* In other words – airspace users who have equipped and trained to the latest and highest standards should reap the rewards of that investment. |

**20 DPv0-1 Response Iberia- 20180405**

Please see below the answers to the 13 questions:

1a. Yes

1b. Yes

2. Yes

3. Yes

4. No. That would be unfair for operators with older fleets, and could have a detrimental effect on LGW traffic.

5. No. Only whenever possible, not affecting the distance or time of the flight (thus fuel and CO2 consumption).

6. Yes

7. Should be considered if multiple pathways increase the airport capacity.

8. C D B A E

9. N/A

10. A

11. C

12. F D B K N

13. N/A

**21 DPv0-1 Response Norwegian - 20180404**

3.15

**1a** YES

**1b** YES

**2** YES

**3** YES

**4** YES

**5** YES

**6** YES

**7a.** YES as a means to increase aerodrome capacity. Norwegian would favour improved departures to the North, North East and North West to better serve our North Altantic and Scandinavia flight departures.

We would also like to see separate departure procedures from both runway directions for traffic via BOGNA and HARDY exiting UK airspace at the French FIR boundary.

**7b.** YES as a means of increasing aerodrome capacity. Norwegian would like to see the introduction of arrivals from the North West and North East to better serve our arrivals from Scandinavia and the North Atlantic.

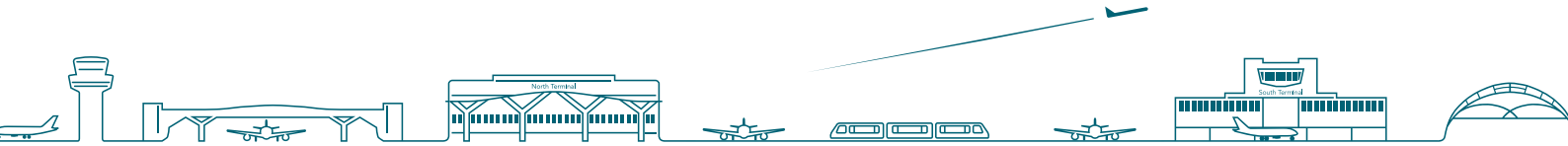
**8** A - 3

B - 2

C - 1

D - 4

E - 5



**21 DPv0-1 Response Norwegian - 20180404**

**9**. The design of specific routes based on aircraft noise category, perhaps restricting new routes which overfly the most noise sensitive areas to the quietest aircraft.

**10** A

**11** E

**12** 1 - B

2 - G

3 - I

4 - K

5 - N

**13** Introduce a greater number of optimized routes between Gatwick and the UK FIR boundary. Minimise track distance flow and improve vertical profiles to reduce fuel consumption and emissions, while contributing to on-time performance.

**14** The design principles should provide sufficient future airspace capacity allowing for continued growth in Commercial Air Traffic and proposed increases in future airport capacity.

For Gatwick, this should include future proofing for a second parallel operational runway.

May I suggest future PDF documents are designed to allow responses to be typed into the document itself using form functionality.

**25 DPv0-1 Response Thomas Cook - 20180404**

At this stage the proposals seem to be in line with discussions I've had at Gatwick.

From a Thomas Cook perspective I would see our priorities as;

**1.** Predictability of arrival for safe and efficient fuel planning.

**2.** Provision of a robust diversion plan for mass diversion events and resilience in the system for this.

**3.** Continuous climb whenever possible.

**4.** If using multiple arrival routes and TBS, use of ACARS to give early notice to pilots to plan for expected arrival.

**5.** Design of routes and other strategies such as Point Merge to align with modern FMS to give predictability to enable the execution of CDAs with minimum pilot intervention. This allows for monitoring and reduced pilot workload.

**6.** Consideration for adjacent airspace to minimise stepped climbs on departures and extended level segments on arrivals through London TMA (e.g. BRS, EMA and BHX traffic).

## 29 Virgin GATWICK AIRSPACE DESIGN PRINCIPLES RESPONSE 050419 Final - R

**Introduction**

Virgin Atlantic Airways (VAA) welcomes the opportunity to respond to this part of the airspace change process, as published by Gatwick Airport on the 18th March 2019, as part of the overall airspace modernisation plan for the UK.

**Summary**

VAA supports the case for airspace modernisation in order to provide the necessary capacity, efficiency and resilience, necessary for a modernised national infrastructure. However we recognise the potential environmental implications and considerations and understand that Gatwick Airport will take all such factors into consideration, as part of the airspace modernisation requirements and specifically the airspace change process.

**Responses to specific questions**

**1a Do you agree that airspace design must be safe and further promote safety management systems? YES**

**Additional comments:** Airspace design and therefore the design principles have to first and foremost meet the necessary safety standards and requirements.

**1b Should 'Safer by Design' attract the highest design principle priority? YES**

**Additional comments:** We do not believe there are other design principles that come before safety.

**2 Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? YES**

**Additional comments:** The benefits of enhanced navigation standards will be required and necessary to properly modernise the airspace around Gatwick and the wider UK.

**3 Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? YES**

**Additional comments:** We support this principle, recognising that the predictability of flight paths is important to local communities situated around the airport and at the same time to enable the optimised use of the airspace, based on the improved design necessary for the airspace modernisation process.

## 29 Virgin GATWICK AIRSPACE DESIGN PRINCIPLES RESPONSE 050419 Final - R

**4 Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? YES**

**Additional comments:** VAA fully supports this design principle in order to utilise the aircraft capabilities that in most cases have been present for many years, including those aircraft operating into London Gatwick airport. Airlines have invested in the latest technologies and the airspace design must now reflect this in order to fully maximise the potential this technology brings.

**5 Should Gatwick adopt a design principle that seeks to de-conflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? Y ES / NO**

**Additional comments:** The design principles and the subsequent design, should optimise the airspace, both in terms of the capacity and considerations for the local communities. In this context our requirements are primarily for a safe and efficient airspace environment and trust that consideration of areas of overflight will be taken into account at the design stage.

**6 Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time based operations? YES**

**Additional comments:** We believe that the use of time based operations will help to optimise the airspace and potentially improve capacity.

**7 To what extent should London Gatwick consider multiple pathways on:**

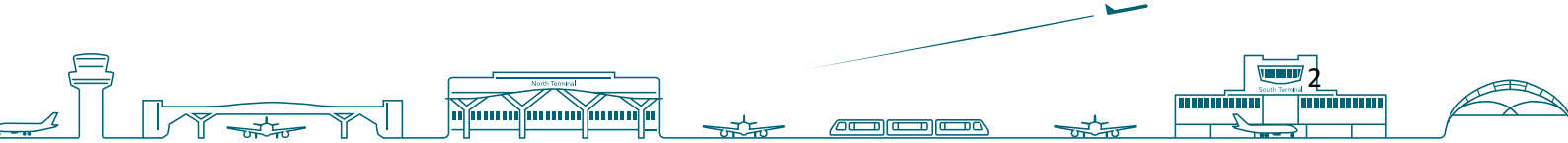
**(a) Departures procedures:** The design(s) should maximise the efficiency and capacity of the airspace, but must also consider aspects of complexity of operation and therefore safety implications, if multiple pathways are proposed.

**(b) Arrival procedures:** As above.

**8 In what order would you prioritise these 5 overflight management options? A B C D E**
As stated above, we wish to see airspace that is modernised to improve efficiency and capacity. The specific overflight management options must be established by Gatwick Airport and following any policy guidance as provided by Government.

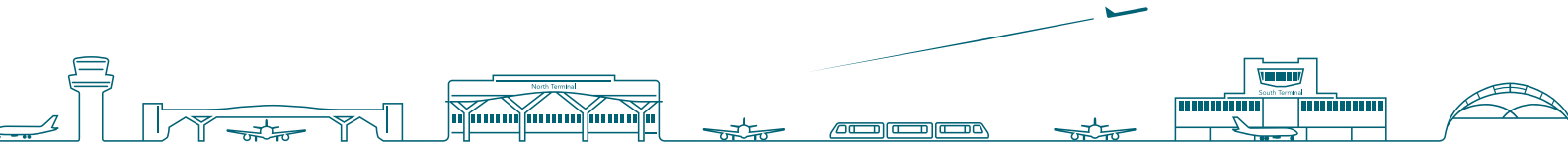
**9 Are there other options we should consider and how would you prioritise them relative to your response to Qu 8?** See response to Q.8 above.

**10 Where on the spectrum of A – E would you wish Gatwick airport to prioritise these factors? A B C D E:** We understand that this is an important debate and consideration and whilst we strive for optimised efficiency, we recognise the importance of minimising the environmental impact. We believe that the balance between local and national environmental impacts will be one that Gatwick Airport will fully address in following its airspace modernisation process.



**33 Biggin Hill Re Feedback on Gatwick DPs - FASI-S - Biggin Hill**

Please just ensure that your design principles include equitable access to airspace for neighbouring ATSUs and Aerodrome. Thanks.



## 35 Heathrow response to Gatwick 190403

Thank you for the opportunity to comment on your emerging design principles in support of Gatwick's plans to modernise its airspace.

As a member of the Future Airspace Strategy Implementation – South (FASI-S), Heathrow is committed to working together with NATS and other airport operators to bring about the airspace changes required to deliver the benefits of a modernised airspace in the south of England.

Having passed through Stage 1b (Design Principles) of the CAA's CAP1616 airspace change process for our airspace change proposal to deliver a third runway at Heathrow, we recognise the value of engaging with stakeholders to deliver a comprehensive suite of design principles against which emerging airspace designs can be evaluated. In particular, our local community engagement, including discussions with our community forums, our Community Engagement board, local authorities and smaller public focus groups provided invaluable insight into the differing priorities held by those living and working close to Heathrow.

Views from our industry stakeholders provided a balance of views on how flights should be 'delivered' into and out of the airspace around Heathrow. As such, Heathrow's comments focus on how Gatwick's proposed design principles could impact the delivery of a coordinated approach to airspace modernisation in the south of England.

**Gatwick's proposed design principles**

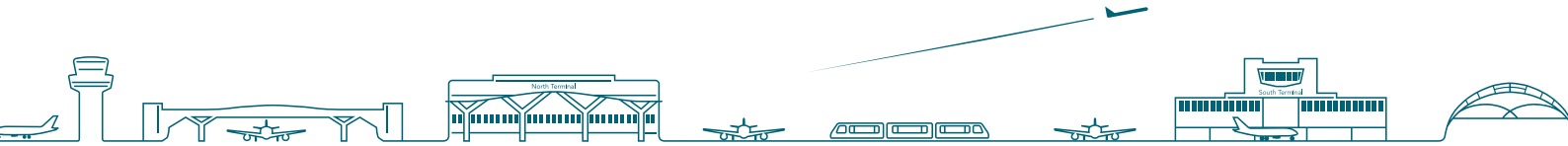
We consider that Gatwick has set out a comprehensive list of design principles and agree that safety should always be the number one priority. Gatwick's proposed core set of design principles appears to encompass many of the required operational considerations to ensure that the airspace design is fit for the future. However, a more explicit focus could be given to the environmental objectives that Gatwick is seeking to achieve through its airspace change.

Of particular interest to Heathrow is Section 3.8: 'Deconfliction by design'. We support the principle of 'reducing the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic below 7000ft' and look forward to working with Gatwick Airport, and other neighbouring airports to achieve this. Our design Principle for Expansion include the aim to minimise the number of people newly overflow, to avoid overflying communities with multiple flights, and to maximise sharing to provide predictable respite. The potential adoption by Gatwick of multiple routes (Section 3.10), while potentially offering a greater degree of respite to local communities, could increase the challenge of minimising the number people overflown – both by Gatwick flights, and by flights from multiple airports. This highlights the need for airports to cooperate through the FASI-South work programme to ensure that

## 35 Heathrow response to Gatwick 190403

the future airspace design for the south of England provides the optimal solution to the network as a whole, and to our local communities .

Gatwick has requested views on the level of operational resilience to be offered (Section 3.13). We are surprised to see that Gatwick would offer up 'minimal' or 'limited' resilience. Heathrow believes that a resilient service delivers benefits to all stakeholders including a reduction in disruption – both locally and at a network level – and delay to passengers from unanticipated events, and a reduced risk of late flights impacting local communities. A resilient service also provides environmental benefits and reduced fuel costs to airlines through the reduction in the need for aircraft holding.



## 38 Gatwick Airport FASIANSLv2 - R

### Gatwick Airport FASI-S Design Principles – ANSL feedback

| Page | Answer | Further ANSL Feedback (Feedback from ops in bold) |
|---|---|---|
| 1a. Do you agree that airspace design must be safe and further promote safety management systems? | Categorically yes,<br>Development of safety management systems and of regulatory oversight demands that the design principles at the core safety level will be set as a foundation and delivered in line with the developing SMS.<br>Effort should be focussed to avoid blurring these definitions as the design regime becomes more complex which in this new environment is somewhat inevitable | **Yes.**<br>**Core fundamental of ATC.** |
| 1b. Should 'Safer by Design' attract the highest design principle priority? Y | In the opinion of ANSL yes,<br>However, if GAL decide to adopt the ALARP principle to meet the requirements of other design principles a safety level assessed as acceptable may differ from the best option available in 'safer by design' | **Not Necessarily.**<br>The design drivers<br>We find them a bit general. Operational is a catch all.<br>Will performance of the design solutions be a factor in any specific or all? As innovation in performance will be a requirement for us do, we need to add that as a driver or acknowledge it exists as a priority? |
| 2. Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? | ANSL would ask for the clear definition of 'most beneficial' but in general our answer would be yes. | **Yes.**<br>**Use of S-BAS approach system for example would reduce the impact of A380's, 777-9 and LVO's**<br>NATS function as coordinator - is this a functional coordinator ie making sure what has been done but not driving it (the design)? I assume Gatwick will remain solely responsible for its pieces |
| 3. Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? | ANSL view is predictability is a strategy in the design that can/ could adopted as a principle.<br>The adoption of predictability can sometimes remove ATS flexibility options and therefore would be (in some cases) less attractive. | **In an Ideal world. Yes.**<br>**How to implement?**<br>**e.g. Staggered SIDS. 3 different NOVMA's short medium and long!**<br>Choice of design features - what integration will there be between this and NATS design principles. Integration of principles will be needed as well as integration of design<br>Is the statement of need ring fenced or can that be changed by the process too? |
| 4. Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? | Again, ANSL is in general agreement but would ask for clarity in the statement benefit communities and the more efficient management of air traffic?<br>We assume the principle builds in a balance of these but add that any bias may have an exponential effect on the other factor. | **Yes.**<br>**Steeper Approach profiles. Less noise.**<br>**CDA/Less holding over land.**<br><br>See original national presentation<br><br>Explanation needed what does is mean 'explicitly looking to see how identify those who helped'<br>What does helped mean? |
| 5. Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? | Not sure this is possible in the way it is written without very complex arrangements<br><br>The other principles will safeguard this one<br><br>It does appear that this is a layered set of principles. The foundations are needed to support them. | **Again, in an Ideal world. Yes… All Arrivals would get a CDA with no holding.**<br>**All departures would be separated from other routes and would climb straight to cruise.**<br><br>**Not practicable.**<br><br>The engagement sessions - what is the structure How do you arrange them? Is there a national framework?<br>See original national presentation. |

## 38 Gatwick Airport FASIANSLv2 - R

| | | |
|---|---|---|
| 6. Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time-based operations? | Yes | |
| 7. To what extent should London Gatwick consider multiple pathways on Departures and arrivals? | A study into flexibility will be needed.<br>Adding multiple pathways adds flexibility so we are again into the inevitable trade off to achieve a practical design that gets close to the aspirations of all stakeholders. | **Yes**<br>**Potential to create a better Split bias. Would affect local communities.** |
| 8. In what order would you prioritise these 5 overflight management options? | D-E-C-B-A<br>Based on ATC retaining the ability to meet performance standards whilst retaining some flexibility. | |
| 9. Are there other options we should consider and how would you prioritise them relative to your response to Qu 8? | Rather than add an option ANSL would like to suggest an additional area for consideration.<br>Should expedition – interpreted as the safest and quickest method of getting an aircraft from A to B (approach to landing) be a base consideration?<br>In which case any principle that requires an aircraft to fly for longer than needed due to predictability shall be considered negatively. | |
| 10. Where on the spectrum of A – E would you wish Gatwick airport to prioritise these factors? | B-C with emphasis that an optimum standard based delivery of B-C-E is possible provided these are afforded some flexibility both strategic and tactical. There is scope here for some innovation. | **A-B**<br>**Efficiency/Ops cost/ environmental impact.** |
| 11. Where on the spectrum of A – E would you wish Gatwick airport to prioritise operational resilience? | If by resilience the best operational option is meant, then as ATC provider we would naturally like to retain this flexibility<br>Therefore<br>E would be the ANSL preferred priority | **D-E** |
| 12. What are your top 5 Airspace Modernisation objectives? | D-F-H-N-G | |
| 13. What other Airspace Modernisation objectives do you believe we should consider? | Increased options in the flexible use of airspace and resilience areas. This can best be described as a surge capability.<br>This would have safety, environment and resilience benefits if delivered properly and tailored again as a balance. | |
| 14. What other design principles do you believe we should consider and why? | Vertical separation on departures to enable performance on departure to become an efficiency element warranting consideration.<br>See below for scoring/rating system | |
| NOT A QUESTION | Regarding stakeholders and their status | Stakeholder and participator status - will we need to be more careful how we define ANS status when laying of parts of the project. As far as I can see we will be the following:<br>1. Stakeholder in GAL initiated projects<br>2. Stakeholder in NATS projects<br>3. Contractor in Route 4 and other contracted work<br>4. Stakeholder in third party ACP<br>5. Interested party in third party |

## 39 NATS Gatwick DP Response

Thank you for providing NATS with the opportunity to attend the presentation you held on 28th March, and to respond on your suggested areas for Design Principles in support of your airspace modernisation process. GAL and NATS have a longstanding positive relationship with regards to not only the day to day operation but also to developments in air traffic and it is with this in mind that we offer our response.

- Core Principles

Safer by design
NATS fully supports this principle as safety should always be the highest priority in the aviation industry.

Enhanced Navigation Standards
NATS welcomes the commitment in this principle that GAL will utilise the latest navigation standards in their future designs in order to meet with their regulatory requirements.

- Potential Principles

Adaptable & Predictable Routes
NATS will be designing the overall network in the South East of England and as such we look forward to working together with GAL on the interface between the two.

Deconfliction by design
In line with the Core Principle regarding safety NATS firmly support this as a topic for consideration. We believe that working together with other airport stakeholders, as well as NATS, to design airspace that is safe and efficient will be key to the success of the programme of work in the SE of England and welcome this as a design principle. NATS would expect that any design work undertaken will ultimately take into account the change in vertical reference caused by the transition altitude, particularly with interactions with other airports.

Time Based Arrival Operations
NATS believes that this design principle should be augmented by the inclusion of the operational resilience topic described below in order to create an operation that can meet all of the situations that may arise.

Promotes enhanced aircraft capabilities
NATS believes that this topic goes hand in hand with the 2nd core principle, Enhanced Navigation Standards. Whilst it is certainly true that mandates do not state "how and to what end" it is our opinion that it would be beneficial to all that designs and procedures should utilise Advanced PBN to their maximum capability in order to provide benefits to all stakeholders.

## 39 NATS Gatwick DP Response

- Areas of Consideration

Number of routes – departures or arrivals
NATS have no specific comment to make on this other than to reiterate the close relationship between the NATS LAMP project and GAL will have in designing complementary structures to drive an efficient airspace in the future.

How to manage the impact of overflight
Whilst NATS has no direct response to this we fully recognise the efforts that all airports will go to in order to ensure that the impact of aircraft is minimised for their local communities.

Operational Efficiency vs Environmental Impact
Again whilst NATS has no specific comment on this with regards to GAL's priority it will be important for GAL to consider their local stakeholder needs and how they may relate to the wider programme of change.

NATS does believe that there should be two or more separate design principles, for each of:
Operational Efficiency
This should evaluate the design on the basis of

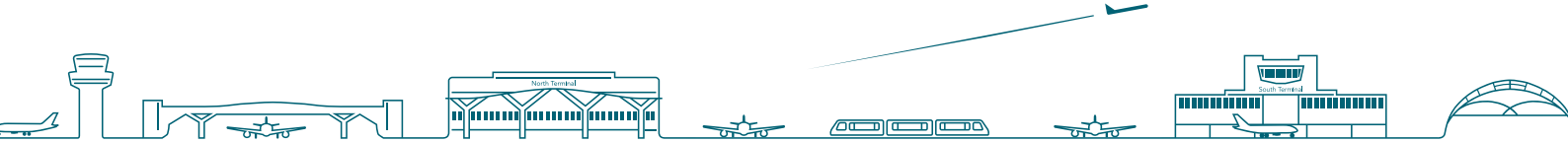
- network capacity,
- airport capacity,
- airline economic factors, inc delays, fuel burn etc.

Environmental impacts
This may be split into many different sub-categories i.e.

- Noise impacts (including population overflown, respite considerations etc),
- GHG emissions,
- local air quality

Operational Resilience
The nature of air traffic means that there will occasionally be emergencies and unforeseen situations. The resilience of the Gatwick operation will be a key part of the ongoing success of the airport and therefore NATS see this as a higher priority in terms of designs than others may be.

NATS looks forward to working closely with GAL on the development of their design principles and, further into the process, their designs for the airspace around the airport.



**43 DPv0-1 Response GAA- 20180405**

Thank you for consulting with the General Aviation Alliance (GAA).

This is an independent group and partnership of organisations representing, as far as possible, UK General Aviation (GA), and Sports and Recreational Aviation interests (S&RA). Its objective is to promote and protect the cost-effective use of GA and S&RA aircraft, and their owners, pilots and the associated operations, and to actively participate in the formulation of regulations and actions that may affect their interests so as to ensure the welfare and the free and safe movement of these aircraft, pilots, owners and the associated operations.

We welcome the opportunity to comment on your design principles within the CAP1616 airspace change proposal (ACP), but remind you that you are required to identify, and engage with, local General Aviation stakeholders who will allow you to develop these principles into Options to consult further on.

At this stage we believe it is too early to comment on your questionnaire but would welcome the opportunity to comment further at the Option appraisal stage, which we understand will be completed in a co-ordinated, and efficient, way to optimise the release of Class G airspace for use by General Aviation, or where that is not possible allows integrated access where risks are a low as reasonably practicable.

We are at a challenging point in the development of UK Airspace: the Airspace Modernisation Strategy (AMS) has not as yet considered the needs of lower airspace and we remain very concerned that the CAA has yet to lay down minima, methodology and guidance on how overall airspace safety is assessed, and then incorporated into its decision-making process. We are also responding at a time when the Government is consulting on a green paper that is related to airspace and a CAA ÐCall for EvidenceÐ on e-conspicuity. Either of these may ultimately reveal a more integrated, than segregated, approach to commercial aviation containment at Gatwick which we will want embraced as your ACP develops.

Specifically, we think it is an absolute requirement of the Regulator to co-ordinate any ACP with others to ensure optimisation is achieved and that ACPs developed in isolation will fail to meet the GAA principles.

As an Alliance we have reminded the Government that overall airspace safety is the primary responsibility of the Regulator.

**43 DPv0-1 Response GAA- 20180405**

We hope you are able to develop your design principles to encompass those we believe reflect the needs of General Aviation in the UK which are stated below in no particular order of priority;

• An assumption that GA including sporting and recreational aviation is entitled to continued safe use of airspace and that commercial aviation does not have a right to limit airspace access
• Sponsors must show how they are integrating their proposal within the overall UK airspace modernisation context (for example, proposals which do not connect efficiently between upper and lower airspace (potentially under different airspace "management") would only inhibit overall airspace efficiency and therefore not receive our
support)
• Reiteration that the UK airspaceÐs default classification is G
• Reiteration that Class E airspace default is without the addition of a TMZ or RMZ
• Expectation that data used, particularly forecasts, will be verifiable including details of any and all assumptions
• Proper validation of forecast traffic levels
• Proper analysis of overall airspace safety changes, ie based on modelling and evidence rather than purely subjective opinion.
• Minimum size of controlled airspace
• Steeper and continuous climbs and descents for cost and environmental benefits as well as minimisation of CAS footprint
• Use of Class E airspace as an alternative to class A, C or D airspace
• Optimisation of the development work above and below the 8,000ft NATS en-route split.
• Flexible use of airspace including interoperability with existing e-conspicuity, eg FLARM and PilotAware
• Efficient consultation

**45 DPv0-1 Response MoD - 20180401**

**Qu 1a** Do you agree that airspace design must be safe and further promote safety management systems? Yes.

**Qu 1b** Should 'Safer by Design' attract the highest design principle priority? MOD has no comment.

**Qu 2** Should Gatwick adopt the most beneficial form of enhanced navigation standards as the foundation of its designs? MOD has no comment.

**Qu 3** Should Gatwick adopt a design principle that offers long term predictability of flight paths and enables beneficial system adaptations? MOD has no comment.

**Qu 4** Should Gatwick adopt a design principle that seeks, through its airspace design, to promote the adoption of enhanced aircraft capabilities that benefit communities and the more efficient management of air traffic? MOD has no comment.

**Qu 5** Should Gatwick adopt a design principle that seeks to deconflict by design all Gatwick arrival and departure routes below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic? MOD has no comment.

**Qu 6** Should Gatwick adopt a design principle that seeks to create an arrival route design compatible with time based operations? MOD has no comment.

**Qu 7** To what extent should Gatwick consider multiple pathways on: (a) departures and (b) arrival procedures? MOD has no comment.

**Qu 8** In what order would you prioritise these 5 overflight management options? Either singularly or groups MOD has no comment.

**Qu 9** Are there other options we should consider and how would you prioritise them relative to your response to Qu 8? Nil.

**Qu 10** Where on the spectrum of A Ð E would you wish Gatwick airport to prioritise these factors? MOD has no comment.

**Qu 11** Where on the spectrum of A Ð E would you wish Gatwick Airport to prioritise operational resilience? MOD has no comment.

Qu 12 What are your top 5 Airspace Modernisation objectives? MOD does not wish to rank the specific objectives listed in this document. The MOD recognises the importance of Airspace Modernisation and remains committed to ensuring airspace is used safely, efficiently and flexibly. Airspace modernisation and future airspace design must consider and allow for MOD access to airspace in order to meet future defence
requirements.

Qu 13 What other Airspace Modernisation objectives do you believe we should consider? Nil