

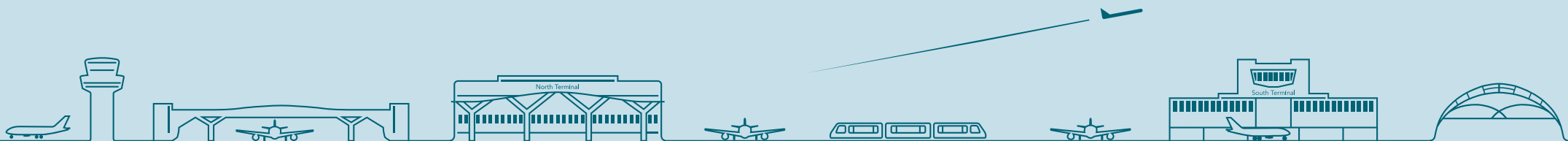
# Airspace Modernisation - Gatwick Airport

## Outline Design Principles

26 April 2019  
DP Version [0-2] For Public Release  
CAA Reference ACP 2018-60

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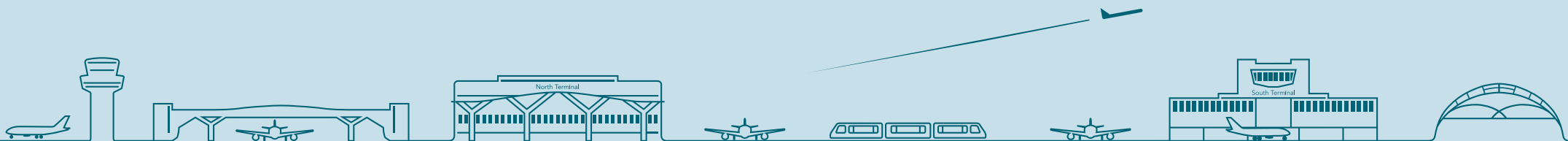
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# Purpose of this Document

The purpose of this document is to:

- Continue our engagement on the development of design principles; these will support the evaluation of design options for airspace modernisation at Gatwick Airport
- Share a summary of the feedback we received from organisations on our 'Introduction to Design Principle Development' document which we published on 19 March (Sections 1 & 2)
- Explain how we have reflected on feedback received and set out an outline proposal of the design principles we believe would be appropriate to present to the CAA (Sections 2 & 3)
- Seek further feedback on the evolving design principles (Section 4)
- Set out the next steps (Section 5)



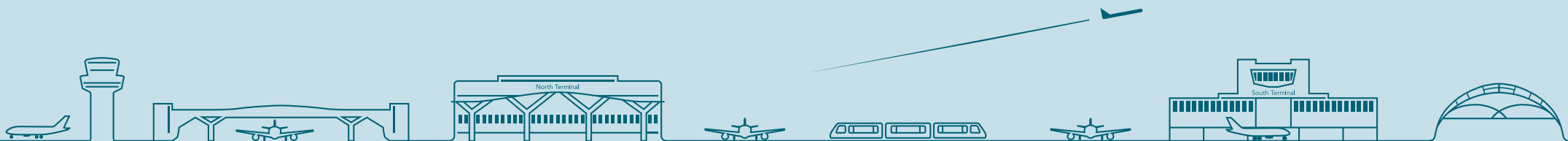
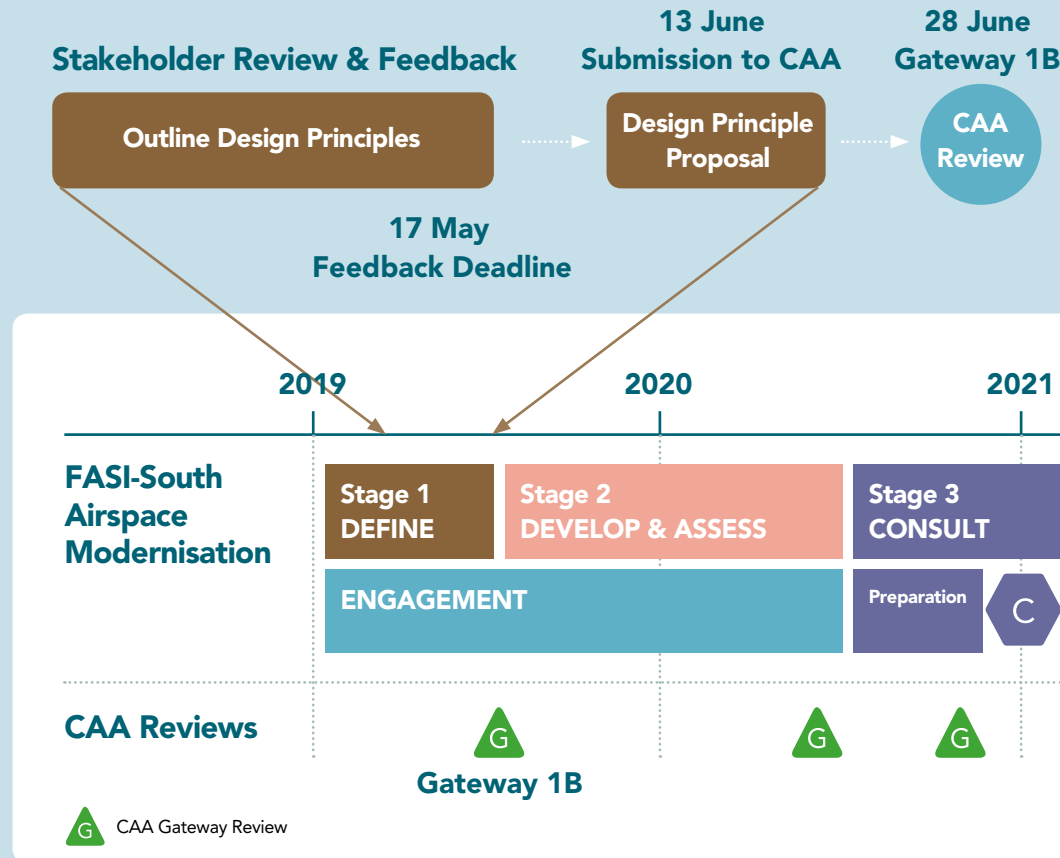
# How and when to provide your feedback

The feedback we are seeking centres on six questions around the adoption of a new core principle and the adaptation of other areas of consideration. These questions build on the first document and are summarised on page 18.

Please note that feedback will be used to explain to the CAA how we have developed the suite of design principles. In our proposal to the CAA, we expect to reference the viewpoints of individual organisations and/or groups of stakeholders.

As outlined in our introductory document and briefings, it is important for the schedule of the overall programme that airports submit proposals in line with the review dates agreed with the CAA. For Gatwick, that means we are aiming to submit our proposal to the CAA before 13 June, in order to provide them with sufficient time to review the full portfolio of feedback ahead of the Stage 1B Gateway review on 28 June.

Please submit your feedback by **18:00** on **17 May** to: [LGWairspace.FASIS@gatwickairport.com](mailto:LGWairspace.FASIS@gatwickairport.com)



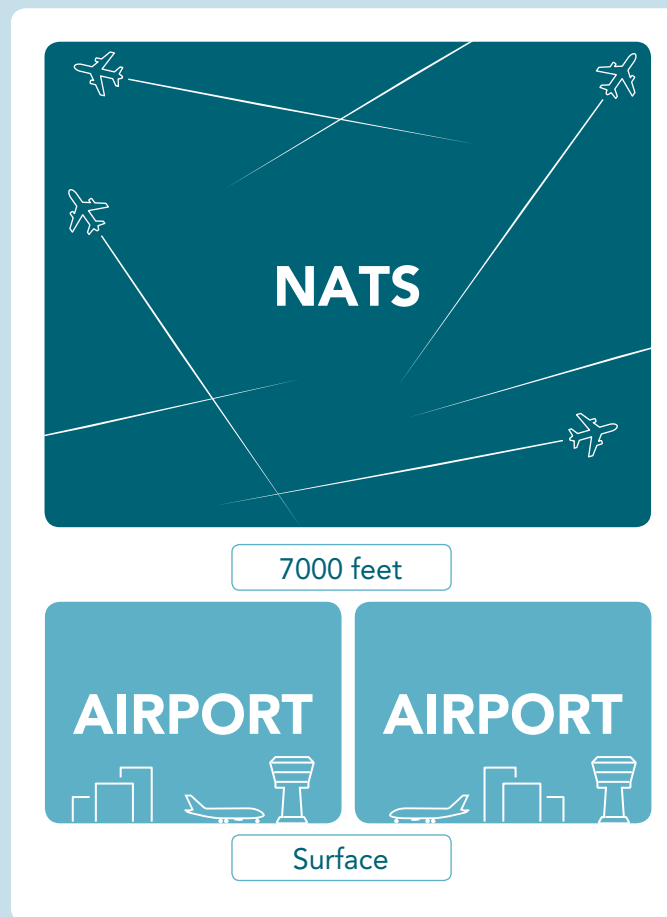
# Airspace Modernisation Programme Summary

The next two pages provide a summary of why airspace modernisation is important, who is responsible for it and how stakeholders will be engaged.

The airspace above and around London is some of the busiest in the world but is approaching the limit of its design capacity. Department for Transport analysis<sup>1</sup> predicts that without fundamental change there will be increasing passenger disruption leading to personal and commercial costs and unnecessary environmental impacts.

The Government and the CAA have agreed to sponsor an Airspace Modernisation Strategy which aims to make flights 'Quicker, Quieter, Cleaner' and to ensure the better use of airspace capacity.

For Gatwick that means working collaboratively with 16 airports & NATS on the FASI-South programme. To provide a road analogy: NATS will build a new motorway structure in the sky above 7000 feet and Gatwick will define the slip roads and entry and exit points to the airspace network. This will be a complex programme involving a wide range of stakeholders over a number of years. The current expectation is that FASI-South will be implemented in 2024/25.



<sup>1</sup>DfT Strategic Rationale, 2017



## Airspace Modernisation Programme Summary (continued)

The CAA's 7-stage guidance on airspace change is set out in [CAP 1616](#). As the sponsor of a change, Gatwick Airport must demonstrate to the CAA that it is being transparent about the potential change and engaging appropriately with those that may be impacted. For this airspace change Gatwick has selected a number of organisations to engage with and will seek their views about a range of topics. Following these stages of engagement the Airport will hold a public consultation which we currently anticipate will be held in 2021; see figure on page ii.

The CAA will be the decision makers on final proposals. They use a wide range of criteria including safety, environmental, economic and strategic impact assessments to reach a judgement. Gatwick will present assessments based on 2018 traffic, with assumptions applied to factor in for anticipated changes, such as airline fleet mix adjustments, ahead of implementation (2025); the health and economic analysis from WebTAG is projected for a further 10 years.

To assist those that may be unfamiliar with the topic or the CAA's process, a glossary of the terms can be found at Annex A.

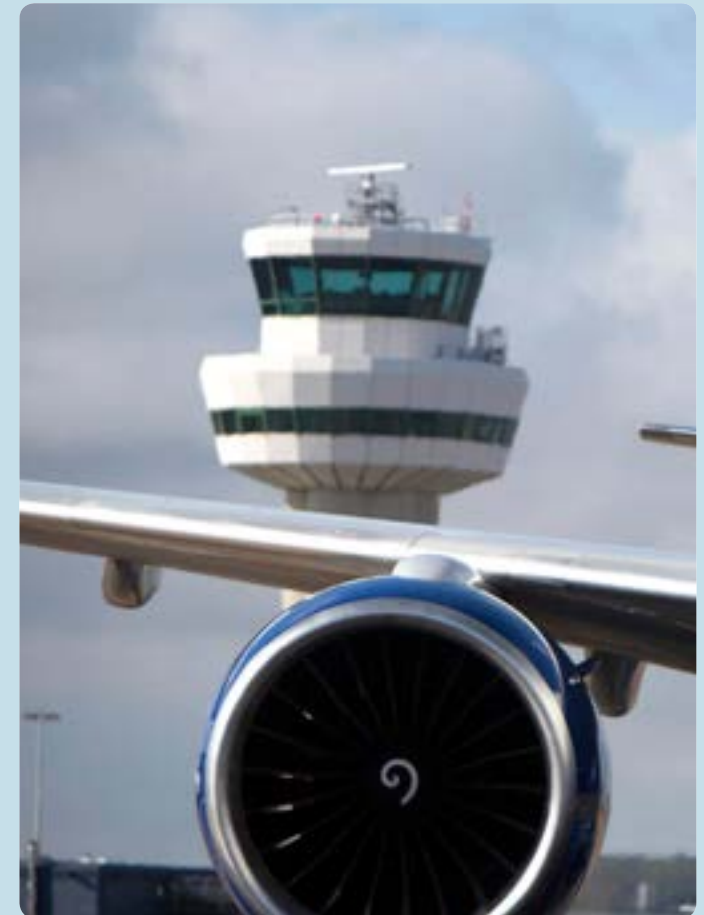
For those that would like to know more about a particular topic please use the links for more information:

[Airspace Modernisation Strategy](#) – Government and CAA co-sponsored strategy and integrated programme of work, encompassing the FASI-South programme for the South-East

[Our Future Skies](#) – Details about the Airspace Modernisation Programme

[Airspace Change Process](#) – CAA's guidance document CAP 1616

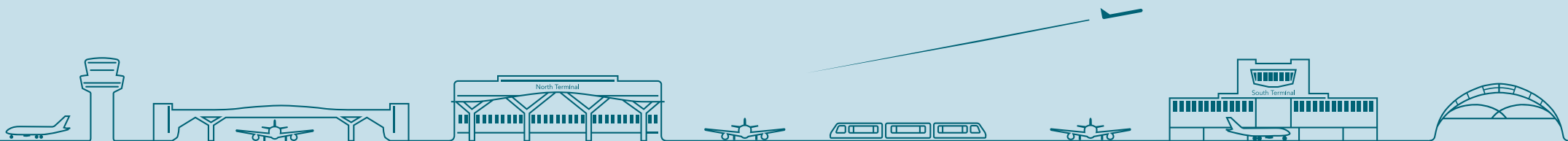
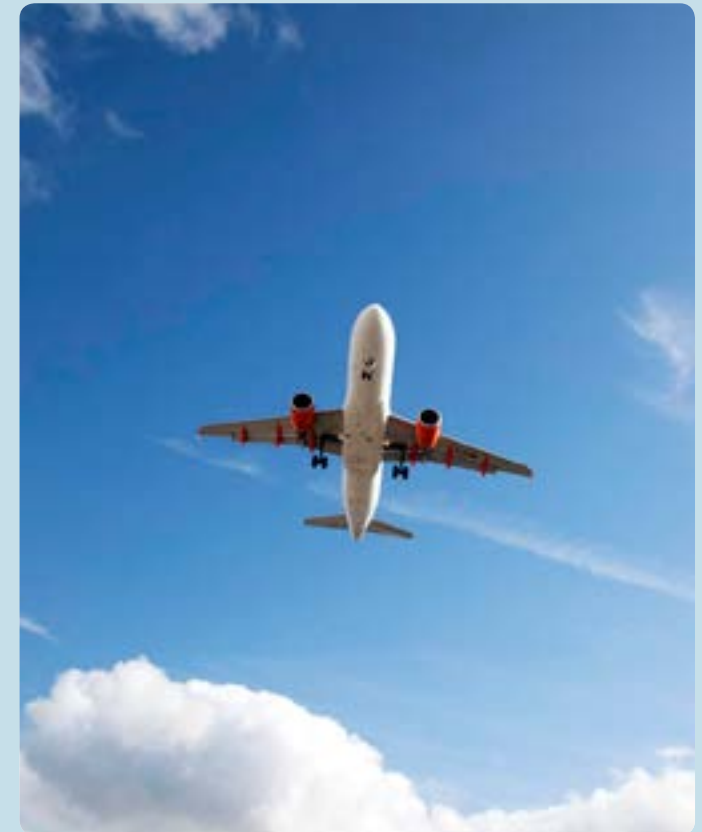
[Airspace Change Portal](#) – easy access to all material Gatwick has published in support of this airspace change including our 'Introduction to Design Principle Development'.



# Section 1 – Your Feedback on Design Principle Introduction

In this section we outline the general feedback we received to our 'Introduction to Design Principle Development'. We also provide further information about our approach to stakeholder engagement and provide additional explanation about the impact of airspace modernisation.

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## 1.1 General Feedback

We welcome and have reviewed all of the feedback we have received and look forward to reviewing your additional feedback and the views of the organisations that have chosen to defer their feedback until the publication of this document. We are also pleased to that we received responses from all stakeholder groups. The three briefings we held were well attended by a broad range of organisations. There was widespread recognition that the maximum overall benefits were most likely to be gained by the development of a solution that sought to find a compromise that offered benefits to all stakeholders.

By way of some examples, an airline said that they 'support 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.'

By comparison a local council offered that it: *'recognises the potential improvements to the noise environment by the design of more fuel-efficient routes, faster climbs, quieter descents, and accurate navigation around populated areas; however, in some areas communities will not benefit. It is very possible that the South East is one of these areas, where demand for more flights from the country's busiest airports is growing in a densely populated region. This will make it nearly impossible that routes will be found that sufficiently avoid creating negative impacts for communities on the ground even with aircraft with the most enhanced capabilities, therefore airspace design should make provision for multiple routes that offer respite for affected communities.'*

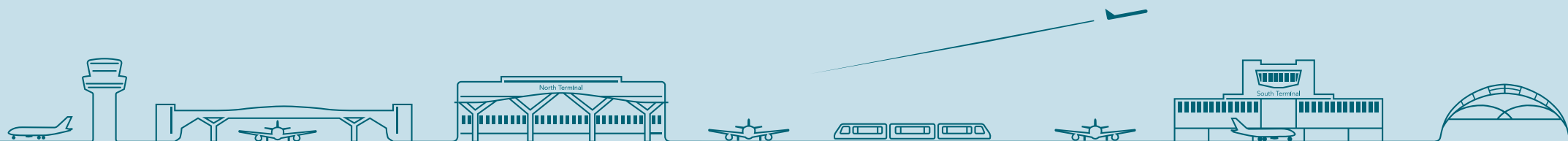
The briefing slides and a summary of the Q & A from the briefings has been published on the CAA's [Airspace Change Portal](#).

Overall, feedback on our introductory document was that it presented a new and complex topic in a way that could be readily understood and many found the icons helpful in signposting the potential impacts.

In this document, where we have quoted a particular point of view, we have anonymised the source.

When we present our portfolio of feedback to the CAA they will have the ability to trace the source of all comments and our analysis.

In response to our request for your suggested design principles we received 14 proposals and have adopted a number of these into the overall suite. A full list, including details of the proposer, and our commentary is at Annex B.



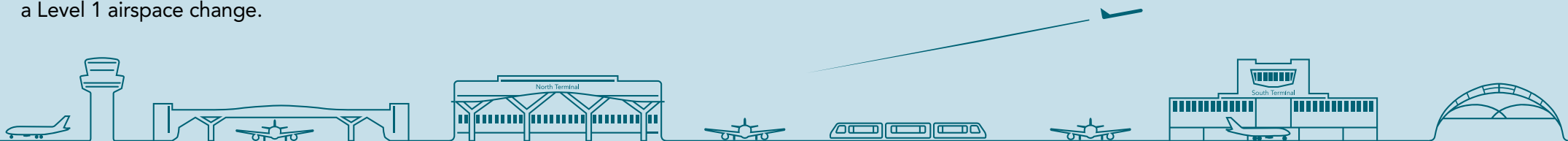


## 1.2 Stakeholder Engagement

Within the responses we received to our initial document there was strong representation from the major airlines, neighbouring airports and airfields, county councils, local community groups and environmental groups.

We considered that the topic of airspace change, under the CAA's new process, was likely to be new to most organisations, and therefore elected to split our engagement into two periods of three weeks. We had hoped that in our correspondence we had been clear that the CAA expects us to engage with stakeholders in Stages 1 & 2, rather than formally consult with them; this consultation follows much later in the process at Stage 3.

We believe that engagement offers us a more flexible approach to developing a constructive dialogue with, and between, stakeholder groups and we plan to continue to follow the CAA's guidance during Stage 2, 'Develop & Assess Option'. The total time of six weeks we have allocated to engage with stakeholders in Stage 1 is commensurate with the CAA's guidance on a typical timeline for a Level 1 airspace change. We anticipate the CAA will confirm, at a later date, that we must adhere to the consultation requirements at Stage 3 associated with a Level 1 airspace change.



## 1.3 Airspace Modernisation

The airspace modernisation strategy has set the objective of making journeys 'Quicker, Quieter and Cleaner' and to make better use of airspace capacity. We believe that there are a wide range of positive impacts that airspace modernisation could unlock.

To help stakeholders for whom airspace change may be a new topic, we have introduced icons as a way of understanding what outcomes a potential principle might create. However, it is recognised that the concepts at the disposal of airspace designers can also have adverse effects if not recognised and mitigated. Some responses asked that we set out the consequences of some of the more common concepts and we have indicated how we might balance the impacts in the mitigation column of the table to the right.

Airspace Modernisation Concepts	Adverse Impact	Mitigation
<b>Application of Enhanced Navigation Standards</b> <ul style="list-style-type: none"> <li>Increases the accuracy of flight track keeping</li> <li>Defines the flight profile in 3-dimensions</li> </ul>	Higher levels of route conformance resulting in narrower spread of flight paths, and potentially, a higher frequency of overflight for some people	<ol style="list-style-type: none"> <li>Multiple flight path options to spread flight path tracks and reduce frequency</li> <li>Introduction of time-based respite to reduce impact.</li> <li>Set altitude gates, some of which could be higher.</li> <li>Curved routes that avoid sensitive areas.</li> </ol>
<b>Multiple flight paths (to or from a common point)</b>	Has the potential to impact people who have not previously experienced aviation noise	Points 2-4 above

Some respondents also made a direct link from airspace modernisation, and the creation of additional capacity, to increased traffic at the airport. Whilst the Government analysis indicates that passenger demand is expected to steadily increase this does not automatically translate into additional aircraft movements. Airports,

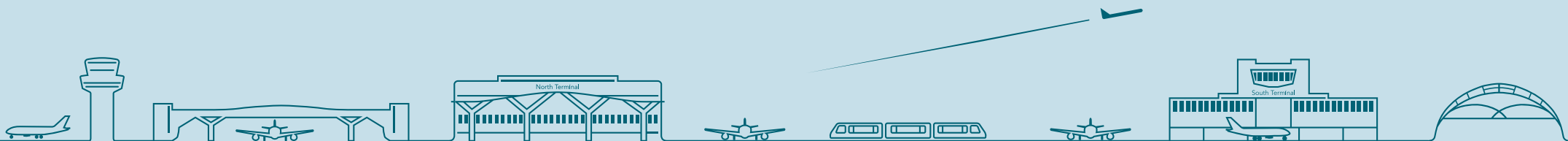
such as Gatwick, would need to make a planning submission if they wish to make major infrastructure changes. Creating a new airspace design that makes better use of existing airspace capacity unlocks a range of benefits and provides mitigation of the increasing delays that the airspace network will suffer if the airspace is not re-designed.



## Section 2 - Design Principle Development

In this section we briefly outline how design principles are used and summarise specific feedback received on the design principles and areas of consideration we introduced in our introductory document.

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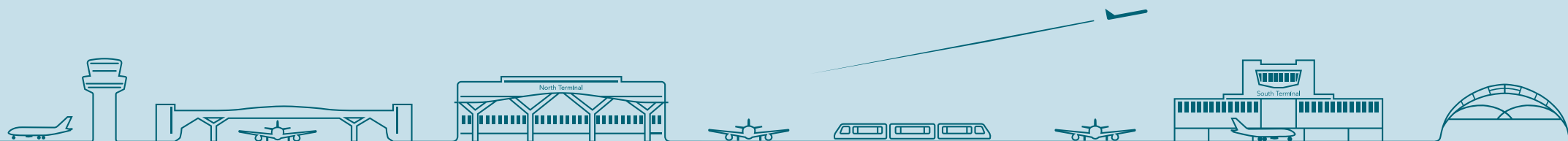
## 2.1 How are Design Principles Applied

Design Principles form a **qualitative framework** that is used to assess the suitability of airspace design options against a range of strategic outcomes which we set out in our Statement of Need.

This framework is shaped by an understanding of stakeholder requirements, including local communities, airlines and other airspace users, environmental bodies and industry groups.

The airspace change process requires Gatwick to consider all options including the 'do nothing' and 'do minimum'. In order to assess the options that offer the most benefit/least impact we use design principles as a guide to reduce the options to a shorter list. We then use a range of perspectives to assess detailed options. It is important to understand that design principles are not the criteria by which an airspace change proposal is assessed by the CAA at Stage 5.

In the introductory document we proposed a number of core and potential design principles for your review and also highlighted a number of areas for consideration. We asked for feedback on our suggested approach.



## 2.2 Feedback on Core Design Principles

We offered two core design principles that we felt should act as foundation stones upon which an airspace design fit for the 21st Century should be built.



There was full consensus that 'Safety by Design' should be adopted as a design principle and the vast majority of stakeholders indicated that this should attract the highest priority.

Some stakeholders suggested that the definition of safety should be extended to include the health of people impacted by aviation noise, but we don't believe that would be appropriate as this would merge two distinct factors; we offer an alternative design principle in Section 2.3. Others urged restraint in the application of safety enhancements as other benefits may be diluted or lost at the expense of small safety improvements.

We propose that the definition of the principle be modified to:

**'Airspace design must at least maintain, and ideally enhance, aviation safety, by reducing or removing safety risk factors, provided enhancement does not have a disproportionately detrimental impact on other benefits'**



There was strong support for the adoption of these standards, and a recognition that they could enable a number of positive impacts. However, many respondents stated reservations about the potential

consequences that could materialise if there was unmitigated application. We propose that the definition of the principle is unchanged, but we should recognise the potential adverse impact on communities and therefore propose an additional core principle in Section 2.3.

We also noted NATS' comment that Gatwick, and other airports, 'may need to take into account the change in vertical reference caused by the transition altitude, particularly with interactions with other airports'. The potential implications of this is that airports may have responsibility for the design of departures and arrivals above 7000 feet, in conjunction with NATS; this would not change our responsibility to publically consult on flight paths below 7000 feet.

Our proposed design principle remains:

**'Airspace design should adopt the most beneficial form of enhanced navigation standards for arrival and departure routes'**



## 2.3 New Core Principle

Local community stakeholder and local authority feedback repeatedly commented on the adverse effects of aircraft noise associated with the potential for narrowing of flight path swathes and that some people may be newly affected by a new airspace design. This was recognised as a direct consequence of the adoption of enhanced navigation standards.

We outlined some of the potential mitigations at page 4. To balance the overall design we are proposing that we adopt a new design principle in which:

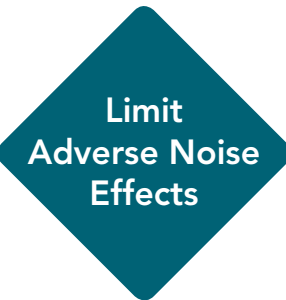
**'The airspace design should aim to limit and where possible seek to reduce the adverse impacts of aircraft noise'**

This would include seeking to minimise the impact of overflying AONBs and other noise sensitive areas in accordance with government policy.

This recognises the suggestions that AONBs and other organisations made in response to our initial introduction to design principles. This may include minimising the number of people newly overflown, managed dispersal and respite and using noise efficient operational practices.

**Qu 1** Should Gatwick include a principle that seeks to create an airspace design that aims to limit and where possible seek to reduce the adverse impacts of aircraft noise?

**Qu 2** Should Gatwick adopt the design principle to limit adverse noise impacts as a core principle?



Adoption of this design principle potentially supports the following:



Reduced noise



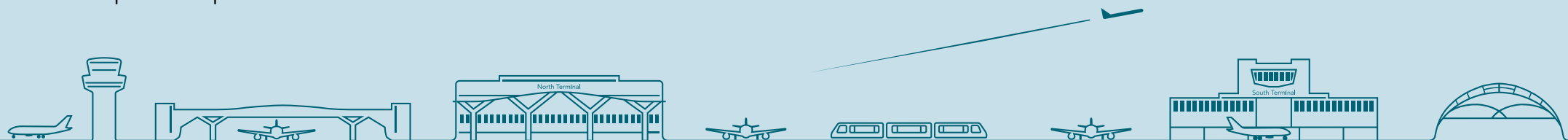
Improved conservation of tranquility



Reduced overflight of people



Reduce frequency of overflight



## 2.4 Feedback on Potential Design Principles

We offered 4 potential design principles that we felt could unlock a number of benefits if applied in a manner consistent with the core principles. We summarise the feedback and proposed changes.

**Qu 3** Do you agree with the adjustments to the following design principle?

- Safer by Design
- Long-term Predictability & Adaptation
- Optimise Use of Aircraft Capabilities
- Deconfliction by Design



There was universal support for the adoption of this principle as it offered the potential to reduce reliance on the use of holding stacks, and was likely to offer fuel/carbon efficiencies. An airline reported that 'incorporation of the 4th element will become more and more critical to utilising the full capabilities of modern aircraft navigational systems. A number of councils and community groups commented that *'Time based operations should provide the predictability required to allow an arrival route design which maximises dispersal allowing noise to be shared as equitably as possible'*. The adoption of time based operations, may not always correlate with the most fuel efficient pathway as there would need to be a balance between operating efficiency and the impact on residents'. The development and application of Time Based Operations may also be one of the ways we can seek to improve air quality. We may in the future be able to further limit the amount of engine running time on the ground by reducing operational delays.

We are proposing to retain the design principle as drafted:

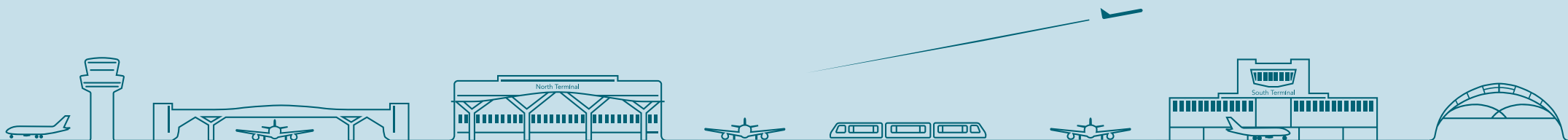
**'Route design below 7000 feet should be compatible with the adoption of time-based arrival operations'**



This potential principle also received a very high level of support. Airlines concerns centred on *'designs should not result in unreasonably long flight tracks or steep turns and climb gradients'*. Council/ community groups asked that where possible the extent to which people are newly overflown was minimised. Both NATS and neighbouring airports supported the adoption of this principle. A council highlighted the need for Gatwick (and NATS) *'to have an awareness of existing and proposed communities, which are identified in Local Authority development plans'* which we will review prior to options development.

We are proposing to make a small change to the design principle to recognise the potential adverse impact of a significantly longer departure route:

**'The airspace design should seek to deconflict routes by design below 7000ft, and the prevalence of overflight of a community by flights on different routes and/or by neighboring airport traffic, provided this does not significantly extend a departure route'**



## 2.4 Feedback on Potential Design Principles (continued)

### Predictable & Adaptable Routes

This potential principle also received very high levels of support. Airline operators highlighted that *'... there should be no constraints to efforts to systemise the network and maximise capacity, efficiency and resilience'* and also recognised 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'*. An ATC provider urged caution in that *'predictability can sometimes remove ATS flexibility options'*. Councils offered that *'by enabling long term predictability, those which, regrettably, are affected by aircraft noise can be identified at an early stage and procedures put in place to minimise disruption and to mitigate where possible the impacts.'* Whilst some community groups were concerned that predictability leads to concentration and people being newly overflown, another offered that *'If "long term predictability" means the design of the network*

*of flight paths produced under the FASI programme should be capable of standing the test of time for at least a generation without the need for further significant change, then we can cautiously answer 'yes'.*

We conclude that the consensus view was that predictability was supported but should be accompanied by measures to manage the impact of aircraft noise on those communities that are affected. Councils and community groups commented that route predictability should also be implicitly linked to respite predictability and the design principle should reflect this.

We concluded that we should make a minor adjustment to the design principle and redefine it as:

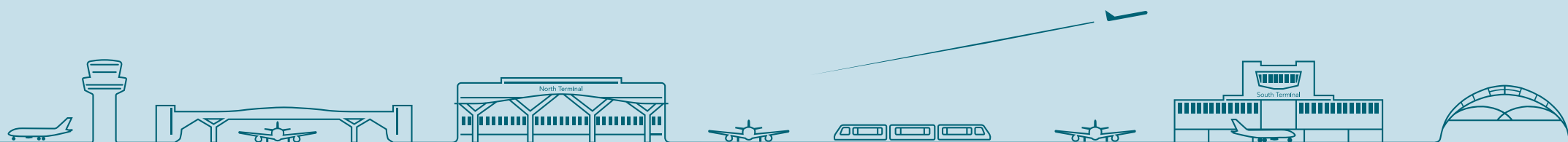
**'Airspace design should offer long term predictability of flight paths and respite and offer adaptation for the future airport development scenarios outlined in our draft Masterplan'**

### Optimise Use of Aircraft Capabilities

There was widespread support for the creation of an airspace design that promoted the adoption of enhanced aircraft capabilities, for the benefit of communities, airports and airlines. However, many airline operators pointed out that *'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'* and that *'... the industry has not fully realised the benefits of existing technology already on board the aircraft'*. At the other end of the spectrum airlines with older fleets expressed concerns that promoting the adoption of aircraft capabilities in some circumstances might exclude them. Communities and local authorities highlighted that the promotion of aircraft capabilities should primarily be used to mitigate the environmental impacts of aviation.

To reflect these viewpoints we believe it would be appropriate to adjust the design principle to:

**'The airspace design should enable aircraft operators to optimise the capabilities of their fleets to improve operational efficiency and environmental performance'**





## 2.5 Feedback on Areas of Consideration

We posed four areas on which we asked for stakeholder feedback, and invited other suggestions.

### Multiple v Single Pathways

Airline operators raised concerns that multiple route options may be accompanied by an increase in track miles and a reduction in predictability, which has implications for fuel planning. However, they also recognised that this may be a necessary trade-off and could offer respite and help mitigate the potential impact of procedure designs with a high degree of track conformance. Airlines serving North America and Scandinavia would also support additional routes with a northerly trajectory.

Whilst there was a strong preference for multiple pathways, communities and local authorities support was often caveated with concerns about noise concentration and new noise in areas not previously overflowed. Communities did share the sentiment that moving towards a fairer and more equitable distribution of aircraft noise but there was a range of viewpoints on how it should be achieved from the

airspace design. General aviation stakeholders were in favour for multiple arrival pathways provided this didn't create new controlled airspace below 2500 feet.

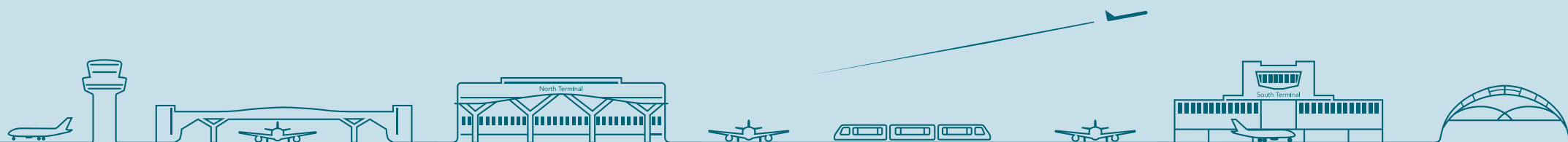
One council remarked *'We recognise that reducing the concentration of flights over a particular locality will have a negative impact on others who may not currently be affected by overflights, and whilst this is regrettable it is our preferred option. Where possible we recommend that unpopulated and unprotected areas are overflowed'* another shared a similar view *'that the use of multiple arrival and departure routes should be specified "to provide predictable rotating respite and spread the burden of over-flight more equitably between communities."*

Our conclusion is that the number of route pathways on departures would need to be considered on a case by case basis. For arrival routings, whilst there was strong support for multiple pathways, the number, location and profile of each route would need to consider a range of factors.

### Managing Overflight

Of the five options we offered, as examples, the general preference in priority order was for sharing by managed dispersal, minimising the number of people newly affected and minimising the total number of people affected. A council's position was that *'priority should always be given to those most affected by noise'*. Communities considered that it should be made clear that in most cases relief from overflight will mean relief from aircraft directly overhead at low altitude, but not will not mean relief from all overflight/noise. Communities also expressed concern that avoiding overflight in one area may lead to more acute impacts on other areas.

Operators understand that route design standards could be used to avoid overflight of specific areas but raised concerns about the extent of additional track miles. However, one operator offered that *'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.'*



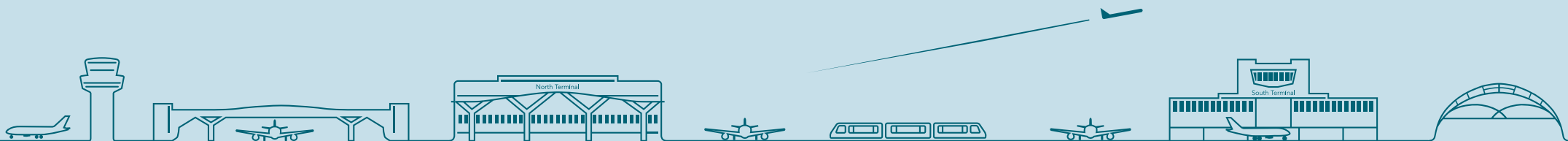
## 2.5 Feedback on Areas of Consideration (continued)

### Operational Efficiency v Environmental Impact

The majority view of stakeholders favoured minimising the local environmental impacts, although there was a similarly strong sentiment, mainly from the airline operators, that operational efficiency was important for a number of reasons. However, at least one airline recognised the dilemma *'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.'* Some stakeholders recognised that operationally efficient and environmentally sensitive route design was not mutually exclusive; design compromises should be considered.

### Operational Resilience

There was strong support for building in resilience or at least finding a balance that minimised the impact. A council remarked *'Operational resilience is a complicated issue which requires careful consideration. Disruption has a significant impact on passengers, airlines and communities, all of which needs to be delicately handled so that operations can resume quickly and efficiently with as few negative repercussions as possible.'*



## 2.6 New Potential Design Principles

As a result of stakeholder feedback we are proposing 2 additional design principles.

**Qu 4** Should Gatwick adopt a principle to 'Build in Resilience' where practical?

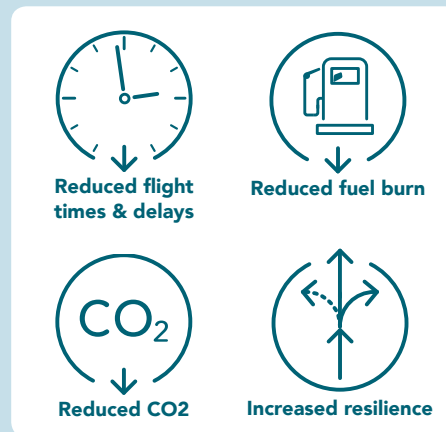
**Qu 5** Should Gatwick adopt a principle of 'Locally Tailored Designs'?



Given the strong support for embedding resilience measures, where practical, into the airspace design we are proposing a principle that states:

**'The airspace design should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies'**

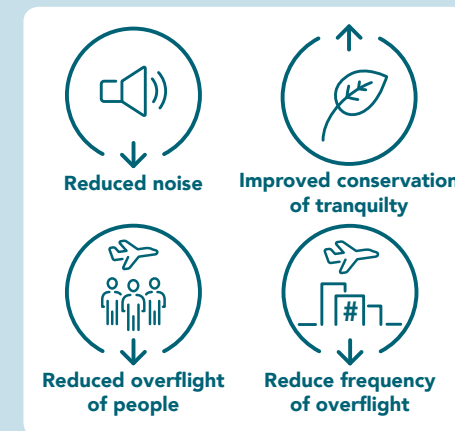
Adoption of this design principle potentially supports the following:



In light of the stakeholder feedback on multiple pathways, overflight management and the view on balancing the requirement to facilitate both operational efficiency and minimise local and global environmental impact, we propose a principle that states:

**'Airspace design should enable decisions which affect how aircraft noise is best distributed to be informed by local circumstances and consideration of different options including multiple routes and the management of overflights (as per principle 3)'**

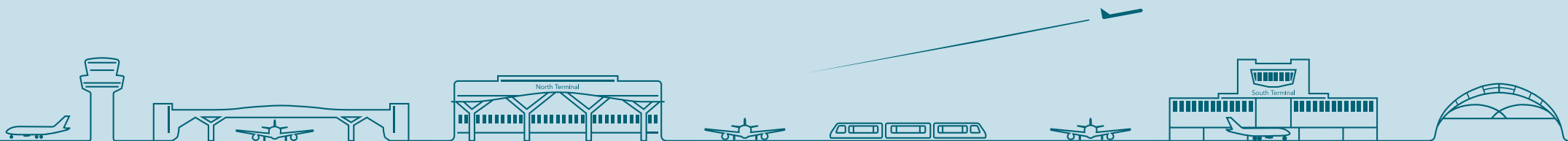
Adoption of this design principle potentially supports the following:



## Section 3 - Design Principle Prioritisation

In this Section we outline the importance of prioritising, in relative terms, individual and groups of design principles. We would also like you to consider which of the non-core principles should attract the highest priority.

- 3.1 Prioritising Design Principles 15
- 3.2 Core Design Principles 16
- 3.3 Prioritising other Design Principles 17

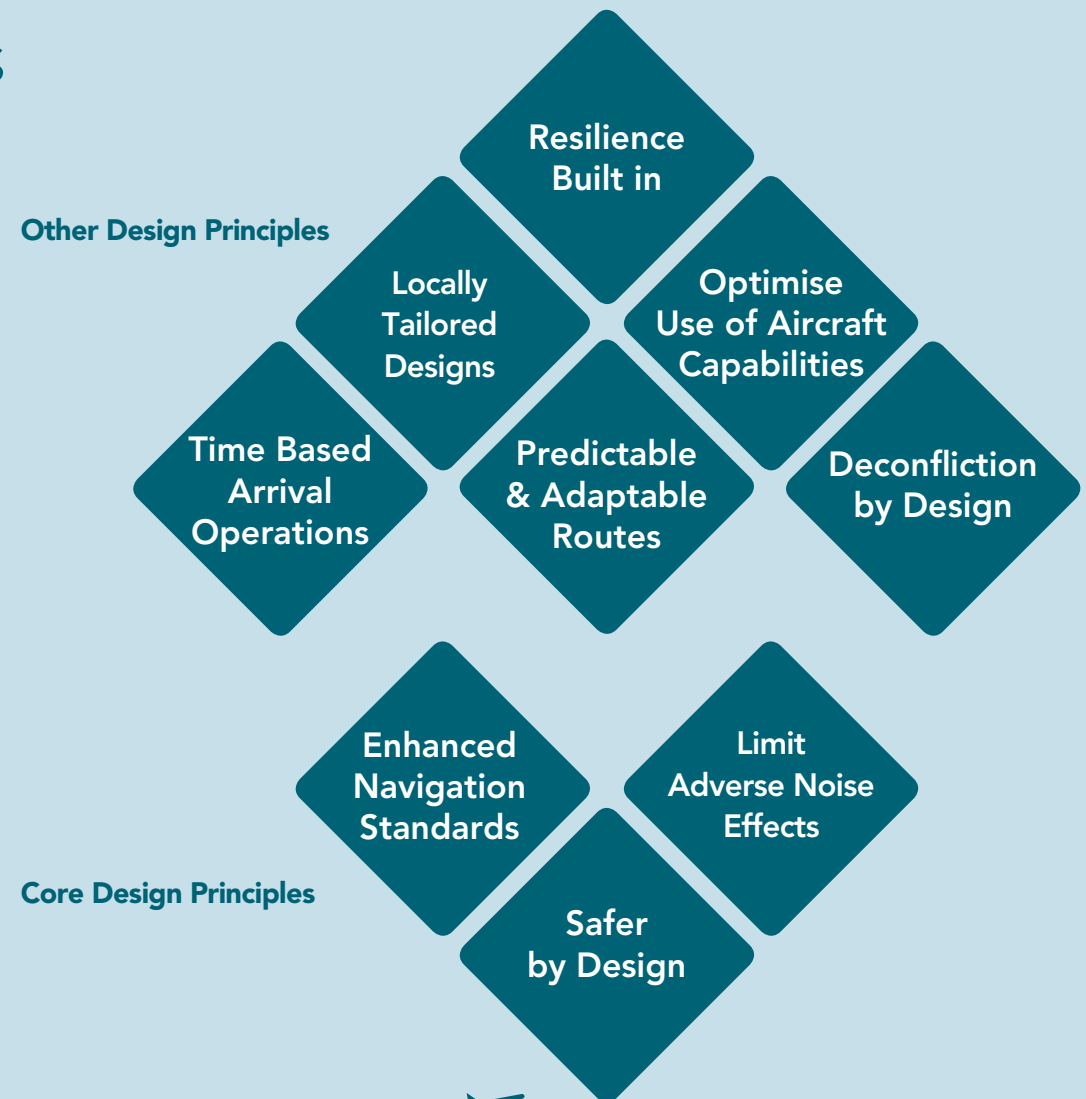


## 3.1 Prioritising Design Principles

As stated at Section 2.1, design principles are used to help us identify the suite of options that has the greatest potential to achieve the desired outcomes and should also assist in maximising the potential benefits. Prioritising the design principles allows us to assess the merits of each option on a relative basis and make better trade-off decisions. As part of Stage 2 of the airspace change process, we will develop and assess all the options, including do nothing/minimum, using an options assessment framework. We will share this with the CAA and stakeholders to help explain why we have elected to progress a short list of design options.

Design principles often have a logical hierarchy. For this airspace design we are simply placing the design principles into two groups: core and other desirable principles.

The non-core design principles have the potential to enable some positive outcomes, or they can be used to mitigate adverse effects.



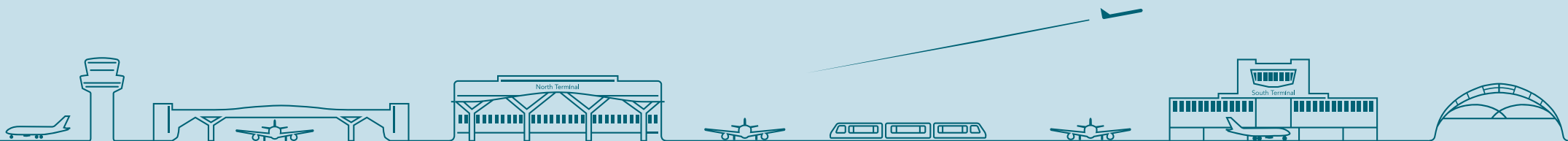
## 3.2 Core Design Principles

We are proposing to have 3 core design principles.

- Safety by Design
- Enhanced Navigation Standards
- Limit Adverse Noise Effects

We consider, and there was strong agreement, that safety should attract the highest priority. However, there is a recognition that discretionary enhancements to safety should not be pursued if they had a disproportional and adverse impact on other benefits.

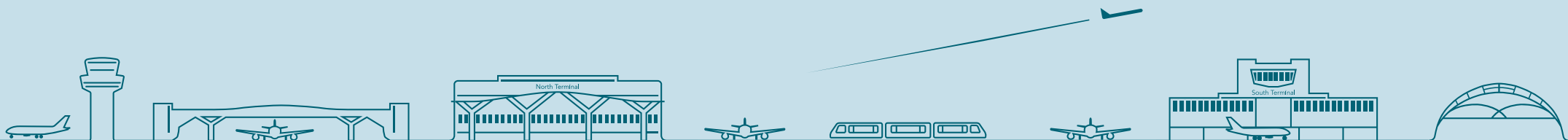
In our view, the other two core design principles carry equal relative weighting. The adoption of enhanced navigation standards is an enabler of many potential benefits and the other new principle acts a balance. It also recognises that the potential adverse effects that improvements in aircraft navigation accuracy could have if not appropriately managed and mitigated.



## 3.3 Prioritising Other Design Principles

Stakeholder feedback indicated strong support for four of the other six design principles listed in our introductory document, and more cautious support for the widespread adoption of multiple pathways or promotion of enhanced aircraft capabilities for the benefit of others. As a result we have adjusted the latter and proposed a design principle that recognises that each pathway may need to adopt different design features in recognition of community concerns and operational imperatives.

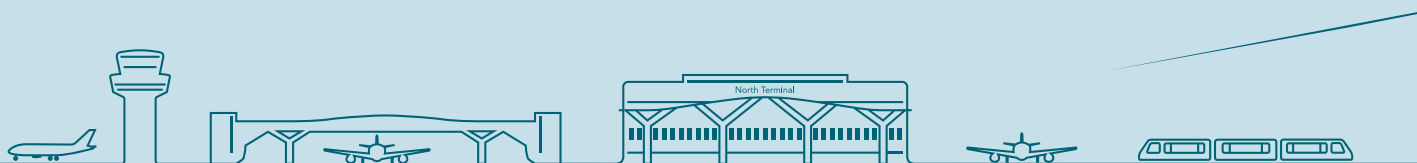
**Qu 6** Please provide your feedback on whether you believe any of these six design principles warrants a higher relative priority.



## Section 4 - Feedback Question Summary

As part two of our engagement on design principles we are asking for specific feedback on the following questions:

1	<p>Should Gatwick include a principle that seeks to create an airspace design that aims to limit and where possible seek to reduce the adverse impacts of aircraft noise?</p> <p>Additional comments: _____</p>	YES <input type="checkbox"/> / NO <input type="checkbox"/>
2	<p>Should Gatwick adopt the design principle to limit adverse noise impacts as a core principle?</p> <p>Additional comments: _____</p>	YES <input type="checkbox"/> / NO <input type="checkbox"/>
3	<p>Do you agree with the adjustments to the following design principles:</p> <ul style="list-style-type: none"> <li>a. Safer by Design</li> <li>b. Long-term Predictability &amp; Adaptation</li> <li>c. Optimise Use of Aircraft Capabilities</li> <li>d. Deconfliction by Design</li> </ul> <p>Additional comments: _____</p>	<p>YES <input type="checkbox"/> / NO <input type="checkbox"/></p> <p>YES <input type="checkbox"/> / NO <input type="checkbox"/></p> <p>YES <input type="checkbox"/> / NO <input type="checkbox"/></p> <p>YES <input type="checkbox"/> / NO <input type="checkbox"/></p>

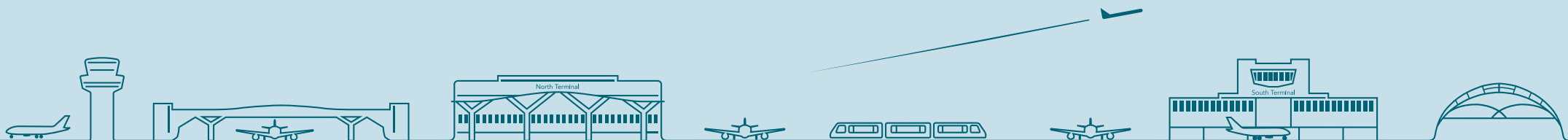




## Section 4 - Feedback Question Summary continued

4	<p>Should Gatwick adopt a principle to 'Build in Resilience' where practical? YES <input type="checkbox"/> / NO <input type="checkbox"/></p> <p>Additional comments: _____ _____</p>
5	<p>Should Gatwick adopt a principle of 'Locally Tailored Designs'?</p> <p>Additional comments: _____ _____</p>
6	<p>Do you believe any of the six non-core design principles warrant a higher relative priority? YES <input type="checkbox"/> / NO <input type="checkbox"/></p> <p>Please explain why: _____ _____ _____ _____</p>

Please provide your responses to these questions by **18:00** on **17 May** by emailing: [LGWairspace.FASIS@gatwickairport.com](mailto:LGWairspace.FASIS@gatwickairport.com)



## Section 5 - Next Steps

We will be using your second round of feedback to shape our submission on design principles to the CAA and we will be submitting this on or before 13 June. It is therefore critical we receive your feedback by **18:00** on **17 May**.

We expect to hear back from the CAA in early July after which if no further changes are required we will be publishing the design principles on the CAA's airspace change portal.

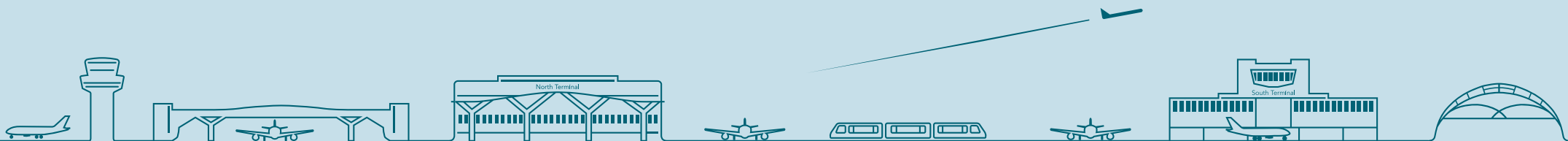
Over the Summer of 2019 we will be contacting local planning teams at County and Borough/District level for information on planning allocations and long term development intent. In parallel we will be undertaking a review of those buildings and areas that may have a higher sensitivity to noise to inform our option appraisal.

We will also be continuing our engagement with stakeholder groups which will cover a range of topics, including the technical capabilities of airlines and how fleets might change over the next 5 years.

By September we plan to be in a position to run a series of workshops that will aim to further explain some of complexities of airspace design and start to discuss with stakeholders our option analysis and where we think this may lead; we expect to notify you of these events before the end of July.

### Stage 2 Activity June-December 2019

<b>June &amp; July</b>	Planning & Other Data Requests Focus group discussions Bilateral discussions Airports & NATS
<b>August</b>	Data Analysis, Workshop preparations
<b>September - November</b>	Technical briefings Options focus groups & workshops
<b>December</b>	Design option analysis Design options evaluations



## Annex A - Glossary

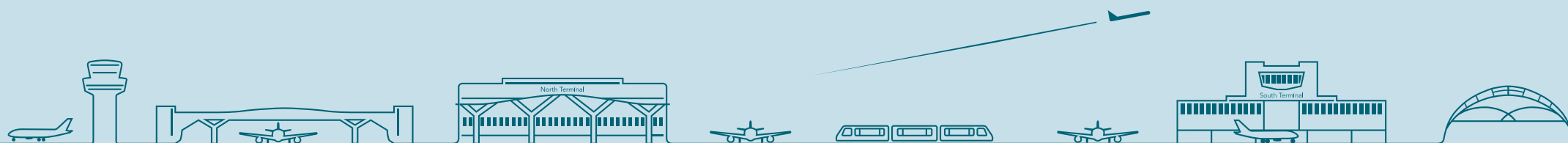
Throughout this document we have tried to use plain English to convey how aircraft navigate and are managed, but we also use common terms which

form part of the lexicon of airspace change; the common abbreviations are explained below:

<b>ACP</b>	Airspace Change Process. A 7-stage process explained in the CAA's document CAP 1616 Airspace Design Guidance
<b>APCH</b>	Approach – Sub-set of a navigation standards – See RNP
<b>ATC</b>	Air Traffic Control – Responsible for the safe separation of traffic in controlled airspace
<b>CAA</b>	Civil Aviation Authority – Independent aviation regulator and responsible for the adjudication of airspace change proposals
<b>DfT</b>	Department for Transport. Co-sponsors with the CAA of the Airspace Modernisation Strategy
<b>DP</b>	Design Principle – Developed as part of Stage 1 of the airspace change process
<b>FASI</b>	Future Airspace Strategy Implementation. An integrated programme of change sponsored by the DfT and CAA and coordinated by NATS

<b>GPS</b>	Global Positioning System – Aircraft navigation systems interrogate constellation of navigation satellites to determine their location
<b>GNSS</b>	Global Navigation Satellite System – Term used for all satellite based systems; GPS, Galileo and GLONASS are in use examples
<b>ICCAN</b>	Independent Commission on Civil Aviation Noise – Established by the Government in 2018
<b>LAMP</b>	London Airspace Modernisation Project – redesign of airspace above 7000 feet
<b>NATS</b>	Formerly known as 'National Air Traffic Services' – Provide air traffic services across the UK
<b>NPR</b>	Noise Preferential Route – Established in law to constrain the routing of departing aircraft until they reach a set altitude, often 4000 feet
<b>PBN</b>	Performance Based Navigation – Concept developed to utilise GPS/GNSS and improve navigation accuracy and performance

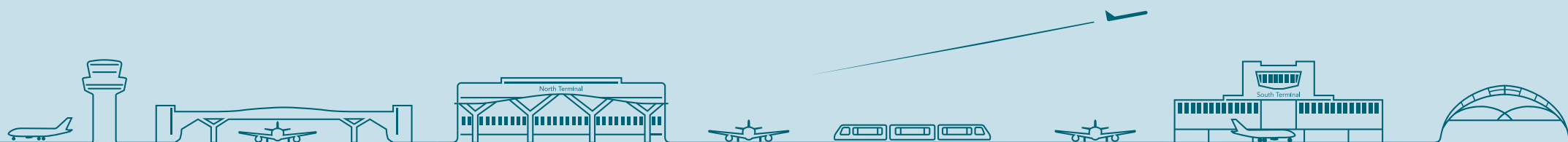
<b>RNAV</b>	Area Navigation – A method of space based navigation which permits aircraft operations on a desired flight path
<b>RNP</b>	Required Navigation Performance – Type of performance based navigation. Different standards of navigation accuracy can apply



## Annex B - Responses to Suggested Design Principles

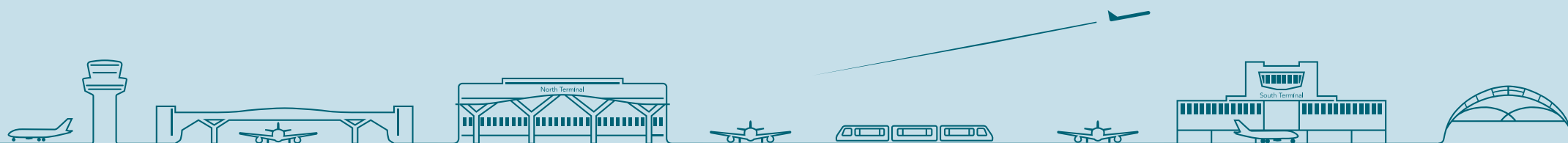
The table below lists the design principle suggestions made by organisations in response to Qu 14 of our 'Introduction to Design Principle Development'. We have offered comments on the suitability of these suggestions, and explained, where relevant, how they have been incorporated into this outline proposal.

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>High Weald AONB</b>	A design principle that seeks to conserve and enhance the natural beauty of the High Weald AONB through its airspace design by reducing the impact of aircraft flightpaths on the tranquillity, habitats and wildlife of the AONB and reducing harmful emissions and noise of aircraft.	<p>We recognise the value of preserving areas of tranquillity. The Government recognises this and places a requirement on us, through the application of Air Navigation Guidance, in accordance with the CAP1616 process, to take account of potential impact as part of our option development. Given the proximity of the High Weald and South Downs AONBs to Gatwick it would not be practical to avoid overflying these areas completely. We believe the use of new, more accurately defined arrival routes, based on enhanced navigation standards, will assist with keeping aircraft at higher altitudes for longer.</p> <p><b>We have suggested a Design Principle that specifically recognises the ambition to seek to limit, if not reduce, the adverse effects of noise.</b></p>
<b>South Downs AONB</b>	It is therefore urged that a design principle be adopted that especially low level aircraft flight paths should avoid the nationally protected Surrey Hills AONB parts of which rise to almost 1,000ft because such noise intrusion into the relative tranquillity and beauty, so increasingly valued by the public, undermines their health and wellbeing and with additional harmful emissions may impact upon its habitats and wildlife.	As above



## Annex B - Responses to Suggested Design Principles continued

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>Rochester Aerodrome</b>	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.	Systemisation of the airspace, including Gatwick's arrival and departure routes will, we anticipate, reduce the chances of infringement and may reduce the volume of controlled airspace necessary to protect our arrival and departure routes. Systemisation should we believe make the structure simpler and flight paths may also be more predictable; we hope that this will offer alternative ways to manage airspace.
<b>BA (IAG)</b>	<p>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.</p> <p>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.</p>	<p>The Government has articulated its policy on noise in the Air Navigation Guidance. CAP 1616 sets a requirement that all airspace changes are compliant with the policy. Noise policy tests – check applicability.</p> <p>We have proposed a new core principle to <b>'Limit the Adverse Impact of Noise'</b> that recognises this.</p> <p>We have also proposed a design principle that recognises the need to <b>'optimise the utilisation of aircraft capabilities'</b> to help reduce the extent to which fuel is used at low altitudes; this would in turn seek to mitigate the impact of aircraft emissions on local air quality and climate change.</p> <p>Many of the proposed design principles are already likely to provide benefits to passengers and businesses that rely on air transport. We believe our proposed design principles will enable us to support airspace modernisation objectives, and specifically the priorities of local communities and airspace users.</p>
<b>easyJet</b>	Linking multiple departure SIDs to routes ie there are alternative ways of flying due south other than via BOGNA	It is the responsibility of NATS to link the end of Gatwick SIDs to pathways that offer expeditious routes which are aligned to the destination trajectory. We have communicated this requirement to NATS.



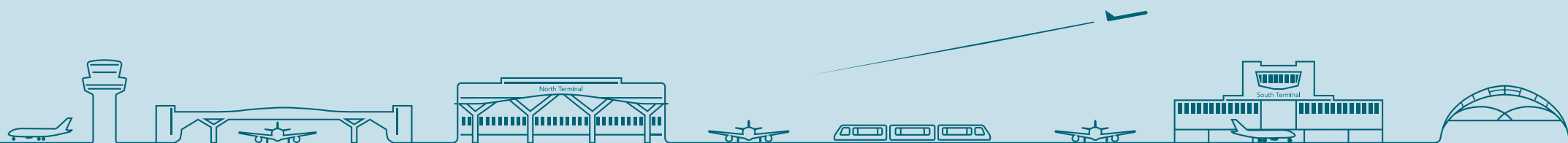
## Annex B - Responses to Suggested Design Principles continued

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>Norwegian</b>	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.	Gatwick has set out a series of growth scenarios as part of its draft Masterplan consultation. Future airspace design will be cognisant of this along with a number of other factors.
<b>ANS</b>	Vertical separation on departures to enable performance on departure to become an efficiency element warranting consideration.	We are seeking to employ continuous climb profiles on all departure routes. The profiles may employ different types of enhanced navigation standards which may assist with the management of vertical separation. This may also cater for the varying climb performance capabilities of different aircraft types.
<b>NATS</b>	NATS does believe that there should be two or more separate design principles, for each of: Operational Efficiency and Environmental impacts.	We have proposed a range of design principles that recognise the potential conflicts between operational efficiency and the environmental impact of aviation and asked stakeholders to prioritise these.
<b>GATCOM</b>	There is also a need to avoid overflight of noise sensitive buildings such as hospitals, hospices and schools at lower altitudes and to preserve areas of tranquillity.	In this outline design principle booklet we have proposed design principles that recognises the importance of tranquillity in AONBs and in other locations at different times of the day. We will be collecting data ahead of options analysis on present and planned buildings that may warrant additional consideration of their sensitivity to aviation noise.
<b>Kent County Council</b>	KCC has continually recommended the use of Nx contours (rather than the usually-used Leq contours) when showing the noise impact of overflight because they better represent the number of noise events an overflown community will experience at a given volume rather than an average noise level for the day or night across a whole season. Given the potentially profound changes to overflown and currently not overflown communities, it is imperative that these alternative metrics are used by airspace change promoters to ensure that communities are fully aware of the implications.	The CAA requires us to present noise impact in a consistent way using a variety of measures; the Nx contours will form part of these. Our analysis may also consider alternative forms of assessing impact and benefits of different options.  Gatwick is working separately on a suite of noise metrics to help communities better understand noise impacts.



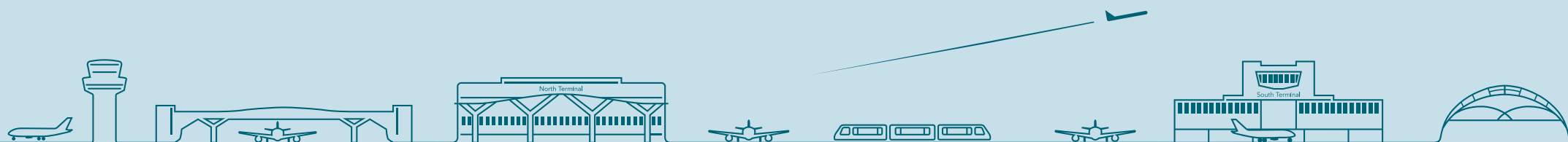
## Annex B - Responses to Suggested Design Principles continued

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>Surrey County Council</b>	We would be supportive of Gatwick designing flight paths over less sensitive land uses such as commercial and industrial areas, in order to avoid residential areas.	We have offered a design principle that recognises the need to <b>tailor designs around local issues</b> and the nature of the built environment. As part of our considerations we will be examining whether commercial areas offer opportunities that could limit impact on local communities. However, we recognise the difficulty of applying this principle given the often interspersed nature of industrial and residential buildings and size of the noise swathes at different altitudes.
<b>Crawley Borough Council</b>	There needs to be joined up thinking within Government with regards noise and land-use planning. There is little point modernising airspace in the south east and reducing the number of people affected by noise and the level of noise which affects them if another Government Department then permits 100's or 1000's of new houses to be built under a flightpath	We will be seeking information from all district, borough and county council planning departments in the very near future.
<b>Reigate &amp; Banstead Borough Council</b>	<p>We consider the other core principles should be:                      Not increasing – and where possible reducing – noise disturbance to communities and residents (note that this is not the same as ‘limiting and where possible reducing’); and                      Minimising newly overflowed people and minimising the total population overflow</p> <p>Including these as core principles would help provide reassurance for the Council and local residents that Gatwick Airport is committed to protecting the amenity and health of local communities and residents.</p>	<p>In seeking to create a new airspace design that offers as many improvements for all stakeholder groups it is likely that some people may be newly affected, as a result the impact on them will be an increase in noise.</p> <p>We have suggested an additional core principle that specifically sets out the ambition to limit the adverse noise effects. As the CAA requires us to consider all options we are unable to commit to a principle that maintains or reduces noise impacts. It is our hope that we can minimise the areas that experience an increase. Government policy clearly sets out the requirements on airports.</p> <p>We have suggested principles that seek to limit, if not reduce noise impacts and to consider the local issues.</p>



## Annex B - Responses to Suggested Design Principles continued

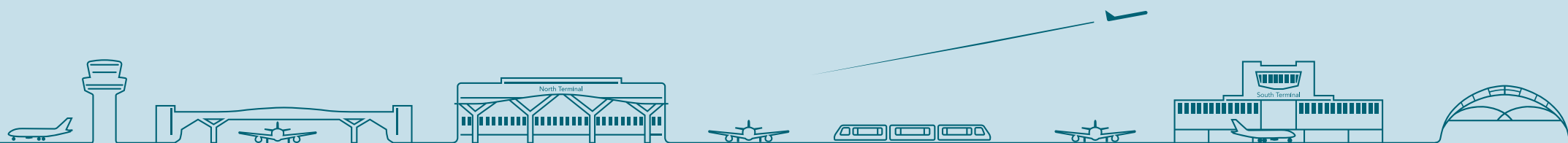
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>TWAANG</b>  <b>(NMB Group)</b>	<p>Present radar vectoring methods for arrivals are very unsatisfactory, and combined with loose standards for CDAs and excessive latitude for pilots on arrival the present performance is not acceptable. The wide variation in performance is evidence of the lack of satisfactory standards and control, an issue that needs to be addressed with urgency.</p> <p>TWAANG think that the health issues arising from disturbance, including noise, frequency and pollution, need to be taken into account especially as the trend is to realise that the effects are greater than previously thought. This reinforces the policy objective to minimise the number of people affected, which points to avoiding overflying densely populated and sensitive areas. As an example, Tunbridge Wells has around 30 schools with 15,000 children attending.</p>	<p>We agree that the arrangements for managing arrivals is sub-optimal, from a noise management perspective, and have proposed a number of design principles to help us make improvements. We have also introduced a design principle that will help to minimise the number of people affected.</p> <p>Your comments don't appear to suggest additional design principles.</p>
<b>ESCCAN</b>  <b>(NMB Group)</b>	<p>Aircraft should spend the minimum time overland. Aircraft from a northerly direction should go straight to the ILS, not circumnavigate the south east. Aircraft from the east /south east should use the existing M20 noise corridor when on westerly approaches. Offshore holds only and consider steeper approaches (&gt;3 degrees). Alternative routes /respice to be on a daily frequency and not hourly except at night</p>	<p>We agree that there are a range of potential benefits to be secured from minimising the track of the ground of both departing and arriving aircraft.</p> <p>We have offered a range of design principles that will assist us in this, but we also recognise that there are other factors to consider.</p> <p>The options you refer to will all be considered at a future stage of the process.</p>
<b>APCAG</b>  <b>(NMB Group)</b>	<p>A principal noise benefit of airspace redesign should be that all arriving aircraft will, on all occasions, adopt the noise emission minimising profile in relation to height and low power low drag.</p>	<p>We recognise the merits of this concept and our design principles are crafted to help ensure this happens. It will be an option, rather than a design principle, that will be considered for all arrival routes.</p>





## Annex B - Responses to Suggested Design Principles continued

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
<b>PAGNE</b>  <b>GON</b>  <b>(NMB Group)</b>	<p>A principal noise benefit of airspace redesign should be that all arriving and departing aircraft will, on all occasions, adopt the most appropriate noise emission minimising profile e.g. continuous climb departures and low power, low drag approaches. This should be set as a specific design principle. The airspace design should ensure this goal is achieved for all categories of aircraft, taking account of current and future fleet mix.</p>	<p>Continuous climbs and descents are both operationally efficient and are likely to offer opportunities to mitigate the impacts of aircraft noise. We will consider these options on all departure and arrival routes. They are supported by the proposed suite of design principles.</p>
<b>Plane Wrong</b>  <b>(NMB Group)</b>	<p>Plane Wrong believes that the enhanced technology now available should allow all departing aircraft to make a continuous climb to at least 7,000feet. This would greatly reduce noise and emission impact and in addition provide greater fuel efficiency for the airlines.</p>	<p>This will be an option we consider for all departure routes and is catered for through our proposed set of design principles.</p>



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