YOUR LONDON AIRPORT
Gatwick

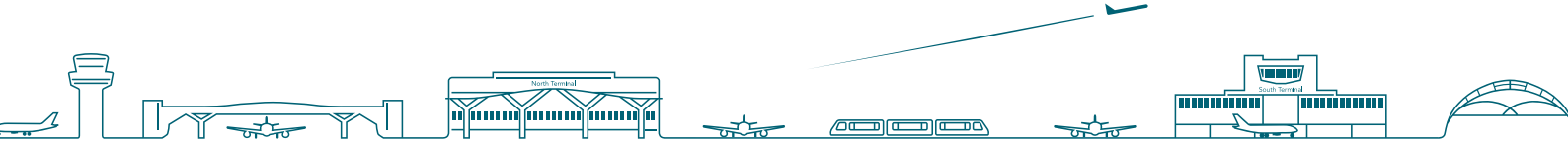
Airspace Modernisation Gatwick Airport

Design Principles

12 June 2019
DP Version 2 For Public Release
CAA Reference ACP 2018-60

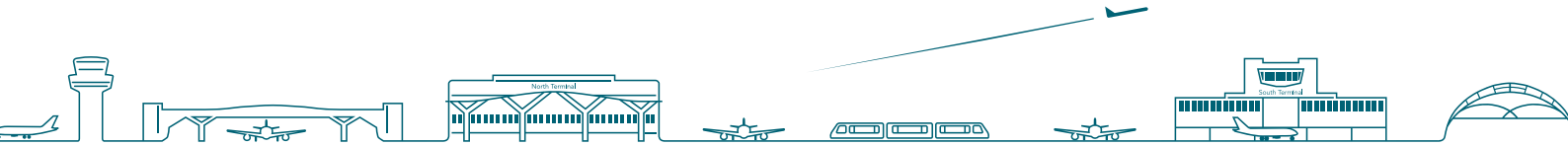
Document Management

Document Title	Gatwick Airport – Airspace Modernisation – Design Principles
Version & Status	DP Version 2 2 July 2019 Public – CAA Endorsed at Gateway 1B
Amendment History	Based on DPv0-3 dated 12 June 19 Amendments made to the following pages: i Document Management updated 3 Referencing 54 Referencing 64 Text replication DPv0-2 corrected



This document sets out Gatwick's design principles and references the information the CAA require to inform their decision making as part of the airspace change process under CAP1616.

This document has been developed to assist the CAA in the Stage 1B 'Define' Gateway review of Gatwick's airspace change ACP 2018-60 (CAA Reference). This airspace change is part of a national Programme of Airspace Modernisation co-sponsored by the Government and the CAA.



Contents

Contents

Section 1. Introduction

For your Notes

1.1 The airspace above the south-east of England is some of the busiest in the world, handling over 2.6 million aircraft a year but is approaching the limit of its design capacity. Department for Transport analysis[1] predicts that without fundamental changes there will be increasing airline schedule disruption leading to delays and cancellations that generate additional personal and commercial costs, and unnecessary environmental impacts.

1.2 The Government and the CAA have agreed to sponsor an Airspace Modernisation Strategy which aims to make flights 'Quicker, Quieter, Cleaner' and to create more capacity for the benefit of those who use and are affected by UK airspace'[2]. The implementation of this ambition[2] is a responsibility shared by NATS, affected airports across the UK and other aviation stakeholders ie MoD.

1.3 For Gatwick, this means working collaboratively with 16 other airports and NATS within the Future Airspace Strategy Implementation – South (FASI-South) to ensure that revised arrival and departure procedures in the lower airspace, below 7000 feet, integrate efficiently with a new terminal airspace design above 7000 feet. This will be a complex endeavour involving a wide range of stakeholders and will take many years to design and implement.

1.4 The redesign of the airspace network, including airport procedures, is governed by the CAA's Airspace Change Process, CAP 1616, which was introduced in January 2018. This process is designed to be more rigorous, inclusive and transparent but also places increased demands on both sponsors and stakeholders. This document is Gatwick Airport's submission to the CAA for its consideration, at the 'Define' gateway (Stage 1B), as part of FASI-South Airspace Modernisation Programme.

1 Upgrading UK Airspace – Strategic Rationale, DfT, 2017
2 CAP1711, p23

Section 1. Introduction

Purpose

1.5 The purpose of this document is to:

- Present a shortlist of proposed design principles that will inform the development of airspace modernisation design options for Gatwick Airport.

- Explain how these design principles were developed and influenced through a programme two-way conversations with stakeholders in accordance with the CAA's assessment criteria for Stage 1B of the airspace change process.

This Section goes onto cover the Stage 1B Gateway assessment criteria and the definition and application of design principles. Section 2 explains our approach and schedule of engagement and Section 3 sets out how our design principles were developed. Section 4 summarises the proposed design principles and Section 5 outlines the indicative programme of engagement for Stage 2A. The main body text is followed by a number of supporting annexes.

Section 1. Introduction

Stage 1B Gateway Assessment Criteria

1.6 The Define Gateway assessment criteria, as set out in Appendix D to CAP1616[3], require that sponsors present a range of information to the CAA. The table below summaries the criteria and indicates where the relevant information can be located in this document and its annexes and appendices. The table below sets out where to find this information in this document.

Key activities & total period of engagement:

CAA Stage 1B Criteria	Location of Evidence
List of stakeholders engaged	Annex B, List of Invited and Informed Parties Section 2, Stakeholder Engagement, paras 2.3-2.9 Section 2, Organisational Involvement, paras 2.10-2.12
Explanation of the engagement methods involved	Section 2, paras 2.15-2.17 Section 3, paras 3.2, 3.4-3.8
Approach to and chronology of the engagement activity	Section 2, Schedule of Stage 1B, Figure 1 Section 2, Activity Timeline Figure 4
Issues raised during the engagement	Section 3, Design Principle Development 3.3, 3.9-3.11 DP 1-9 – Stakeholder Feedback & DP Development Annex C, Stakeholder Suggested Design Principles
Evidence of two-way discussion	Material distributed to stakeholders via CAA Airspace Change Portal (ACP 2018-60): • Introduction to Design Principle Development Briefing (Slide Deck) • Consolidated Q&A from introductory briefings • Appendix 3 An Introduction to Design Principle Development (DP V0-1) • Appendix 4 Outline Design Principles (DPv0-2) • Appendix 1-1 to 1-4 Consolidated Stakeholder Feedback on DPv0-1 • Appendix 2-1 to 2-4 Consolidated Stakeholder Feedback on DPv0-2
Rationale to adopt or discount design principles	Section 3, Principle Evolution paras 3.9-3.11 DP 1-9 – Stakeholder Feedback & DP Development Annex C Stakeholder Suggested Design Principles inc Gatwick's response
Technical and strategic considerations	Section 1, Integrated Programme Objectives, paras 1.11-1.16 Section 3, Design Principles: 1-4 Section 4, Objective Alignment Matrix, Figure 7
Design Principles	Section 4, Prioritised List of Principles, Figure 6

3 D8, Appendix D, CAP 1616

Section 1. Introduction

Definition and Application of Design Principles

1.7 Design principles encompass the safety, regulatory, environmental and operational criteria which Gatwick Airport, as change sponsor, seek to achieve in developing this airspace change proposal. The design principles sit alongside the strategic policy objectives which we must achieve if we are to meet the requirements of the national Airspace Modernisation Programme and the desired outcomes of the related Gatwick Airport airspace change as expressed in the Statement of Need.

1.8 The design principles[4] will inform the development of airspace design options which can achieve those strategic policy objectives, and will provide a framework against which design options will be qualitatively evaluated. They are not in themselves the criteria that will determine whether the final option we propose to the CAA is acceptable or not. The design principles will, however, influence the CAA's assessment of our option appraisals as well as being part of the information available to the CAA when they make their decision at Stage 5.

1.9 The Glossary at Annex A contains the common technical terms and abbreviations referred to in this document. Where other aviation terms are used we are using the definitions as described in Chapter 8 of the Airspace Modernisation Strategy, CAP 1711.

1.10 Within this document reference is made to various government, regulator and aviation industry documents. A list of these documents and links to their location, where publicly available, is provided in the Bibliography at Annex D.

Integrated Programme Outcomes

1.11 The CAA's Airspace Modernisation Strategy sets out a range of ambitions for each component of a future airspace structure. The environmental aspects for each component are common to both the lower and terminal airspace.

4 CAP1616 paras 108, 116, D1 & D6

Section 1. Introduction

1.12 The programme objectives to which Gatwick will aim to contribute as part of the redesign of the 'Lower Airspace', in the vicinity of airports, and its procedures are set out below. In addition, Gatwick recognises the importance of enabling an efficient and effective integration with the 'Terminal Airspace' design being developed by NATS as part of the LAMP Project. In our design principle development, we have considered how we can help support the achievement of Terminal airspace environmental objectives.

Lower Airspace programme objectives[5] are set out below:

Areas for improvement	Airspace Objectives
Safety	Precision routes, separated by design
Efficiency	Greater runway throughput by deploying dedicated routes for each airport to secure more efficient use of airspace and strengthened resilience
Environment	Reduced track miles and continuous climbs / descents to reduce emissions per flight Opportunities to better manage noise impacts

Terminal Airspace programme objectives[6] are set out below:

Areas for improvement	Airspace Objectives
Safety	Capacity gains achieved while removing unnecessary interactions
Efficiency	Expeditious flow of traffic
Environment	As Lower Airspace

5 Airspace Modernisation Strategy CAP 1711, p87
6 Airspace Modernisation Strategy CAP 1711, p85

Section 1. Introduction

1.13 Gatwick has committed to work closely with NATS in the pursuit of these outcomes and therefore we have considered them in the development of Gatwick's design principles, to help ensure that our airspace design can be integrated efficiently.

1.14 Gatwick identified, in its Statement of Need, three outcomes that it is seeking from this airspace change which are aligned to the modernisation objectives. These outcomes are set out below:

Gatwick's Desired Outcomes	Beneficiaries
Develop and implement systemised departure and arrival procedures that improve safety and resilience, increase capacity and offer improved operational agility in line with the Governments policy on making best use of existing runways and infrastructure.	General Public, Airport Operations, Airlines, Local Communities & Businesses,
Efficiently integrate with LAMP airspace design and make best use of enhanced network system capabilities.	Airlines, Local Communities, Airport Operations
Limit, and seek to reduce environmental impacts on, and provide predictability for, local communities	Communities, Local Authorities, General Public

1.15 Overall system capacity will be increased by the application of modern navigation standards, as required by European legislation, and by reducing air traffic interactions. Reducing climb and descent constraints can also offer a range of environmental benefits. Moreover, a more effective airspace network should enable airports to design procedures that are not only more efficient, but also unlock a range of benefits that may help address some local community concerns.

1.16 For clarity and transparency, the baseline for Gatwick's impact and benefits analysis of airspace modernisation will be the air traffic that operated in and out of Gatwick in 2018. In addition, forward looking analysis will factor in any of the scenarios outlined in Gatwick's 2018 Draft Masterplan which are progressed. However, these scenarios are not dependent on the Airspace Modernisation Programme but may be associated with other airspace changes as deemed appropriate and necessary by the CAA.

Section 2. Our Approach to Stakeholder Engagement

2.1 In this Section, we set out details of our approach to engaging with stakeholders throughout Stage 1B. This Section sets out:

- Details of stakeholders engaged
- Explanation of the engagement methods employed
- Approach and chronology of our engagement activity

Schedule of Activity

2.2 We conducted Stage 1B ('Define') over a 14-week period including two phases of stakeholder engagement, as shown in Figure 1. Each phase of engagement lasted three weeks and was in keeping with suggested timescales as set out by the CAA's CAP1616 Guidance.

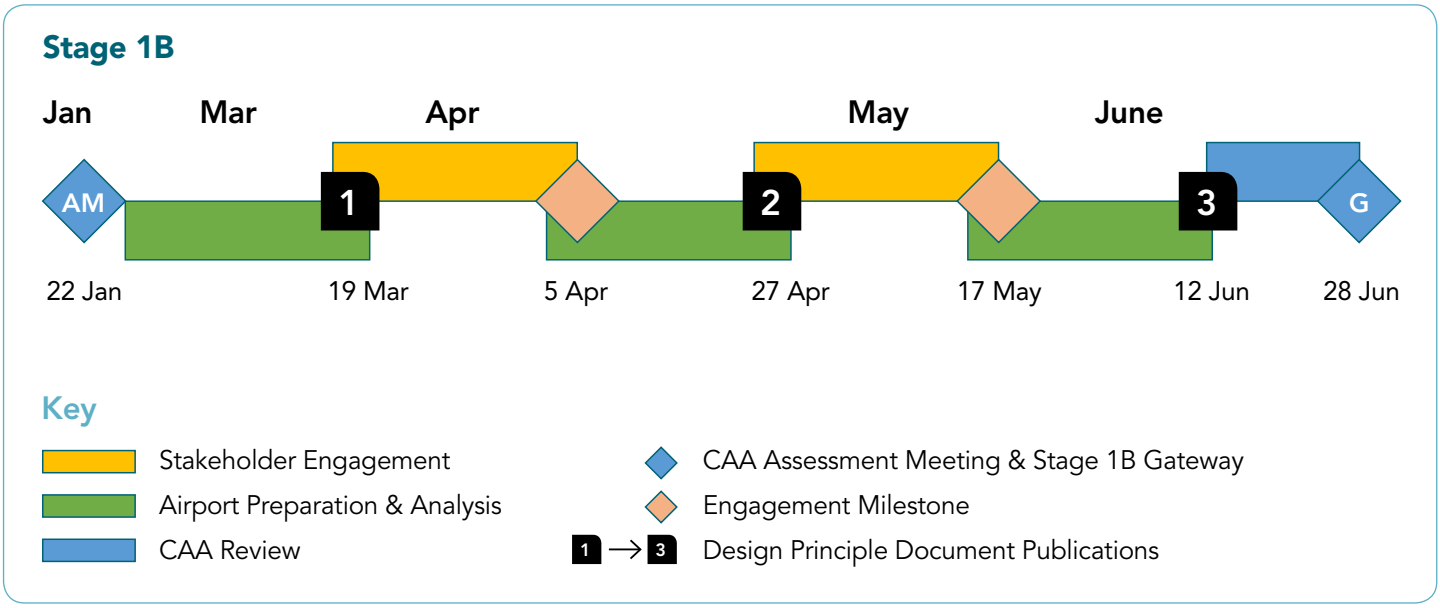
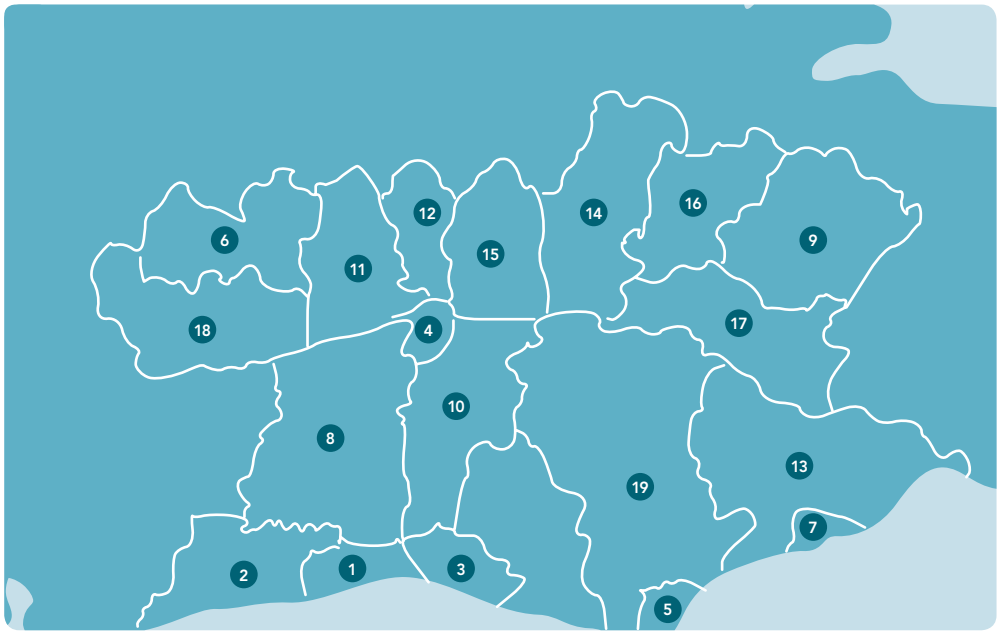


Figure 1 Schedule of conduct of Stage 1B

Section 2. Our Approach to Stakeholder Engagement

Areas Potentially Affected by Change

2.3 Gatwick identified that people within 19 district/borough councils could potentially be affected by changes proposed under this airspace change. These boroughs fall within Kent, Surrey, East and West Sussex Counties. The area also includes two Areas of Outstanding Natural Beauty and the South Downs National Park. Figure 2 shows the boundaries we used to provide an initial view on which stakeholders to invite to participate.



1. Adur & Worthing District Council
2. Arun District Council
3. Brighton & Hove City Council
4. Crawley Borough Council
5. Lewes District & Eastbourne Borough Council
6. Guildford Borough Council
7. Hastings District Council
8. Horsham District Council
9. Maidstone District Council
10. Mid-Sussex District Council
11. Mole Valley District Council
12. Reigate & Banstead Borough Council
13. Rother District Council
14. Sevenoaks District Council
15. Tandridge District Council
16. Tonbridge & Malling District Council
17. Tunbridge Wells District Council
18. Waverly District Council
19. Wealden District Council

Figure 2 Gatwick's preliminary assessment of areas potentially affected by Gatwick air traffic flying below 7000 feet (in 2025).

Section 2. Our Approach to Stakeholder Engagement

Stakeholder Engagement

2.4 To secure a broad spectrum of views, Gatwick invited a wide range of organisations and groups to help to develop and shape the design principles. These organisations were grouped in three categories as shown in Figure 3.

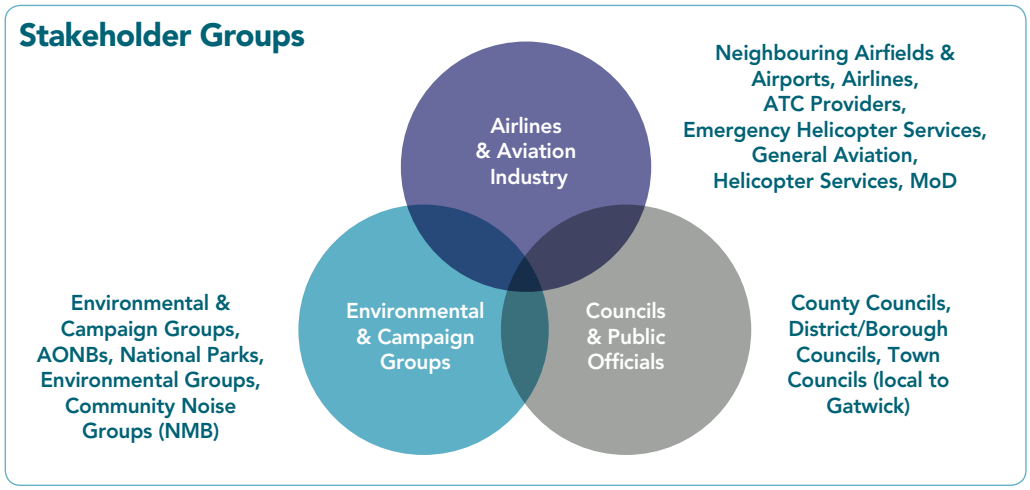


Figure 3 Range of organisations invited to participate in Stage 1B

2.5 Gatwick also engaged with a number of other stakeholders on this subject and offered to keep them informed on progress. A full list of the 81 organisations we invited to participate, and those Gatwick informed of our intent, is included at Annex B. Annex B also sets out the extent to which we received feedback.

2.6 Our aim was to encourage an open and straightforward dialogue, and to ensure that all stakeholder groups involved were given a fair and reasonable opportunity to input on issues that are important to their organisations. Gatwick's approach also followed the CAA's principles underpinning the new airspace change process, namely: transparency, proportionality, and the application of a consistent approach to engagement of stakeholders. As a consequence, the main mechanism used to support engagement was documents emailed directly to points of contact nominated by an organisation.

2.7 A consolidated set of stakeholder feedback to our first and second engagement rounds is made available to the CAA for their review as Appendix 1 and 2. All personal details contained within this feedback have been redacted.

Section 2. Our Approach to Stakeholder Engagement

Considerations for Engagement

2.8 In developing an effective approach and appropriate engagement strategy for Stage 1B, Gatwick recognised that there was a range of issues and challenges that would need to be considered. Key issues and challenges are highlighted below and Gatwick's strategy in response is outlined.

Challenge/ Issue	Strategy Integrated into Gatwick's Approach
A number of parties with whom Gatwick will ultimately need to engage are unlikely to have a working knowledge of airspace design and the application of a new airspace change process.	Initial documentation to assume almost no knowledge of airspace design and/or the new airspace design process. Most aspects will need to be introduced and developed iteratively.
The Airspace Modernisation Strategy was launched only in December 2018 and may still be subject to further public communication by DfT.	Be clear about Gatwick's intent, the potential benefits modernisation could enable and encourage an open mind to the opportunity this programme offers all stakeholders. DfT (Sponsor) communication may need to be factored into Gatwick's activity.
Some stakeholders may have expected to be formally consulted in a similar way that Heathrow has employed in its airspace change for its third runway.	Be clear in our communications that the CAA expects active engagement and not consultation of stakeholders at this stage; consultation of all stakeholders will be conducted at Stage 3C (indicatively to be held in 2021).
CAA technical resources to review airspace change material are limited and subject to increasing demand. CAA advised that any request to defer the Stage 1B gateway assessment (from June 2019) could result in a 3-month delay. This would prevent Gatwick meeting an agreed programme milestone in December 2019.	Be upfront and clear about the time cycles and deadlines associated with the provision of stakeholder feedback. Provide stakeholder feedback as early as practical to the CAA to allow them to spread the effort of review.
Given the scope and scale of the potential changes to airport procedures we calculated that around 400 parishes had the potential to be affected, although we anticipated that a far smaller number are likely to be impacted by a final design.	Be clear and upfront that Gatwick would not seek the active engagement of parishes during Stage 1B owing to the strategic nature of the considerations, although if comments were provided they would be taken into account. Some parishes, and other groups, would become involved during Stage 2.
Execution of separate airspace change, also at Stage 1B, at the same time and was likely to involve the same stakeholders	Try, where possible by deconflicting schedules, to reduce the effort burden on stakeholders who may be responding to separate airspace changes.

Section 2. Our Approach to Stakeholder Engagement

2.9 Our approach to engagement was shaped and informed by the following assumptions and considerations:

- **Level of Airspace Change.** Gatwick assumes that the CAA will advise at the end of Stage 2 that this airspace change is a Level 1 consultation in Stage 3; our engagement strategy for Stage 1B has been developed with this in mind.

- **Impact on Greater London Authority.** Gatwick assumes that given historic traffic patterns at Gatwick and neighbouring airports, and increasing traffic into Heathrow, it is unlikely that a future airspace design for Gatwick, below 7000 feet, would impact on Greater London Authority boroughs.

- **Local Elections.** The timing of local elections in May 2019 could limit the availability of locally elected councillors and there was a strong probability that new councillors would be elected mid-way through our engagement cycle.

- **Sponsor Communications.** Gatwick delayed the start of its engagement to align with the Secretary of State speech on Airspace Modernisation on 5 March 2019. This resulted in a small reduction to the total period available to complete engagement and feedback analysis.

Stakeholder Audience

2.10 Gatwick Airport Consultative Committee (GATCOM), the Noise & Track Monitoring and Advisory Group (NATMAG) and the Airline Operators Committee (AOC) were advised and apprised of Gatwick's stakeholder engagement plans prior to the distribution of invitations on 6 March 2019.

Section 2. Our Approach to Stakeholder Engagement

2.11 Overall Gatwick identified 81 organisations/groups which we believed it would be appropriate to invite and which would be interested in providing feedback on design principle development. These are summarised below and a full list is contained at Annex B:

- 24 County and Borough Councils
- 3 National Parks and AONBs
- 13 Community Noise/Action/Environmental Groups, some of whom were members of the Gatwick Noise Management Board.
- 9 local civilian airfields of significance and 5 airports within the geographic footprint.
- 22 Airlines that conduct > 1000 air traffic movements per year in/out of Gatwick.
- 10 Airspace managers and users including: Emergency helicopter services, Ministry of Defence, representatives of general aviation, helicopter operators, airline industry.

2.12 In addition to the 81 organisations from whom we sought active engagement, Gatwick also wrote to 30 MPs, council leaders, selected town councils and a range of business groups to inform them of our intentions.

Section 2. Our Approach to Stakeholder Engagement

Activity Timeline

2.13 Figure 4 sets out the timeline of significant events which Gatwick undertook throughout Stage 1B. It also includes activities which Gatwick undertook in the pre-engagement periods before the publication of our 'Introduction to Design Principle Development'; this is covered in more detail in Section 3.

Figure 4 Activity Timeline for Stage 1B

Section 2. Our Approach to Stakeholder Engagement

2.14 All of the documents which Gatwick used to engage on the topic of design principle development were published on the CAA's airspace change portal at the same time as they were sent to specific organisations.

Approach to Stakeholder Engagement

2.15 Gatwick's approach to engagement was informed by informal discussions with GATCOM, NATMAG and other airports who had recently completed, or were undertaking, Stage 1B of an airspace change. Details of our engagement are summarised as follows:

- Informal engagement throughout 2018 with a wide selection of the stakeholders, listed at Annex B, covering a range of topics covering the strategic, operational, environmental and safety considerations of airspace change.

- Regular updates were provided to GATCOM, NATMAG, Gatwick's Flight Ops Safety Committee and Noise Management Board in the lead up to the start of engagement on our timings and intent.

- Letters of invitation were sent to those organisations which Gatwick wished to actively engage, and advisory letters were sent to MPs, Council leaders and other groups, to notify them of our intent and how they could be kept informed of progress. Non-delivery of emails were investigated, and alternative points of contact sought.

- Our initial engagement document 'Introduction to Design Principle Development' (DPv0-1), Appendix 3, was distributed on 19 March to all organisations in Annex B with whom we were seeking participation. DPv0-1 was uploaded to CAA airspace change portal. Participants were offered three weeks to respond to fourteen questions.

- Three introductory briefings were presented to mixed audiences of stakeholders covering 32 organisations; a consolidated suite of the relevant Q&A and briefing material was uploaded to the CAA portal on 1 April.

Section 2. Our Approach to Stakeholder Engagement

- No secondary contact /No response was investigated pre – and post the first feedback close milestone (5 April), and prompts directed through a variety of direct and indirect mechanisms.

- Reminders offered by email, phone and to business contacts to submit feedback &/or questions via email in the run up to the first 'soft' deadline.

- Second engagement document 'Outline Design Principles' (DPv0-2), Appendix 3, was distributed ahead of schedule on 27 April to all organisations in Annex B with whom we were seeking participation. DPv0-2 was uploaded to CAA airspace change portal. Participants were offered a further three weeks to respond to six questions.

- Multiple reminders offered by email, phone and business to usual contacts to submit feedback via email in the run up to the 'hard' feedback deadline at 18:00 on 17 May.

Level of Participation

2.16 Annex B lists those organisations that accepted, formally or otherwise, our invitation to participate in Stage 1B. It shows which organisations attended an introductory briefing and provided feedback to the two documents we published. The Annex also identifies the source of the other 17 responses Gatwick received from MPs, town and parish councils, airspace users and members of the public.

2.17 The list reports the level of participation we achieved over the course of the two rounds of engagement. In terms of active 2-way engagement, we achieved a response rate of over 70% from those organisations that indicated a positive desire to be involved.

Section 3. Design Principle Development

3.1 This section describes how we engaged with stakeholders to develop airspace modernisation design principles and how these principles evolved following that engagement. It reports the levels of support which proposed design principles attracted and identifies specific areas that stakeholders did not support or were concerned about. This section also refers to Annex C in which we list all the design principles, and other suggestions that were offered throughout our engagement. Annex C also states our rationale on whether to adopt, integrate aspects of, or discount suggestions.

Origin of Initial Design Principles

3.2 Given the wide scope of potential airspace change, and the strategic opportunities that the development of an integrated airspace modernisation strategy presents, Gatwick undertook some informal pre-engagement with a selection of stakeholders to help us understand what was important to these organisations. These conversations took place at or alongside the following events:

- GATCOM & GATCOM Steering Group meetings
- Noise and Track Monitoring Advisory Group meetings
- NMB meetings
- Briefings to MPs
- Discussions with Airlines and Airline Operators Committee representative
- Individual discussions with personnel representing IAG, easyJet, Thomas Cook, Biggin Hill, Heathrow, ANS, NATS, MoD, County and District Councils, and with MPs

Section 3. Design Principle Development

3.3 To support these discussions Gatwick reviewed stakeholder contributions to the airspace modernisation strategy consultation, Gatwick's Independent Arrivals Review, complaints and flight performance and track keeping history. The aspects on which many of these organisations agreed were as follows:

- Existing airspace network and procedures were safe but subject to increasing demand and strains, which increased schedule delays.

- Current delay/holding arrangements were far from efficient and impacted on communities under them.

- The introduction of RNAV based departure procedures had, as expected, concentrated aircraft tracks. The design of departure procedures often constrained or prevented continuous climbs, resulting in aircraft being lower for longer than really necessary.

- Flight path variability on arrival spread noise over a broader swathe but could not offer managed respite.

- Whilst some aircraft were much quieter than their predecessors, steadily increasing passenger demand was likely to result in further increases in the number of movements. If traffic flows were concentrated without effective management, some communities could be disproportionally impacted.

- Some communities were affected by multiple routes, and by traffic from airports other than Gatwick.

- Aircraft capabilities were not being fully utilised and sequence management often required aircraft to burn additional fuel.

- Weather, specifically thunderstorms, can have a significant impact on aircraft operations which can take a long time to recover.

Section 3. Design Principle Development

Link between Principles and Potential Outcomes

3.4 In our 'Introduction to Design Principle Development', Gatwick suggested a suite of potential positive impacts that we believed may be possible. The intent was to help stakeholders to understand the relationships between different principles and potential outcomes. These are reproduced in Figure 5.

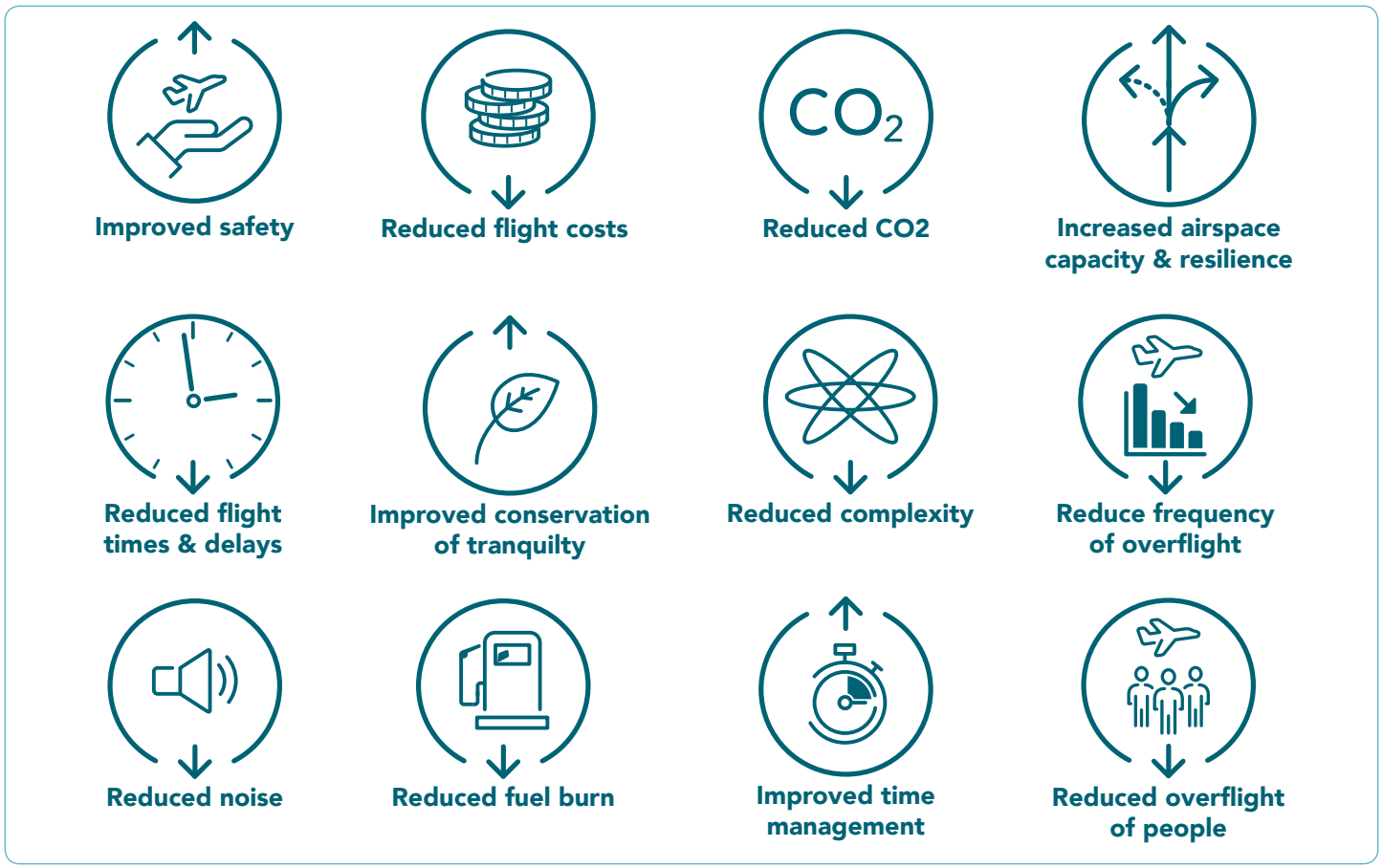


Figure 5 Potential impacts of Airspace Modernisation – Gatwick's View

Section 3. Design Principle Development

Design Principle Evolution

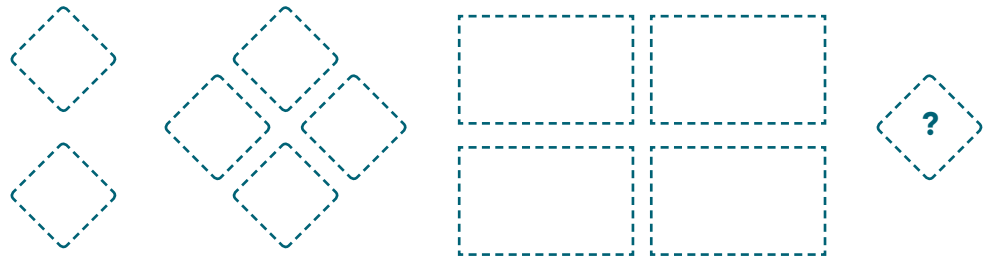
3.5 Based on our pre-engagement activity and considerations as to what types of improvements might be enabled by airspace modernisation, Gatwick developed the first of two engagement documents. The first was designed to introduce the Programme, topic and process of development. This first document was supported by a series of introductory briefings, which also resulted in a Q&A being published on the airspace change portal. Following feedback on the first document, Gatwick developed, distributed and published our 'Outline Design Principles'.

3.6 All the documents Gatwick developed were written using non-technical language, and were assessed for their clarity and understandability by Gatwick staff who were unfamiliar with the topic of airspace change.

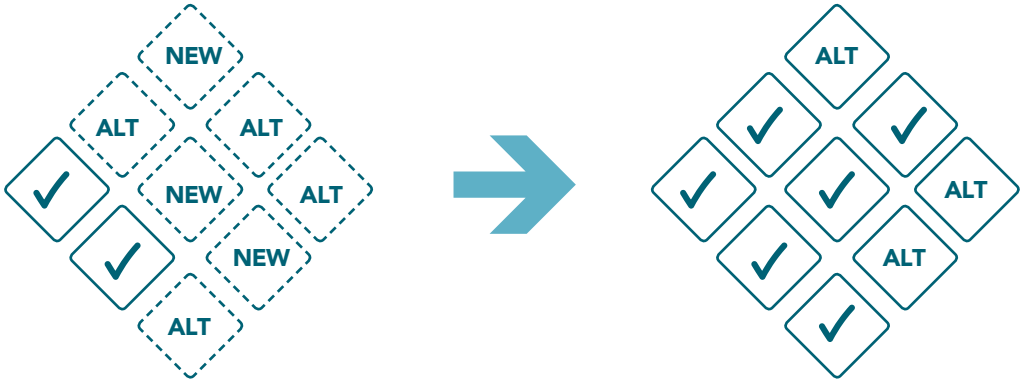
3.7 The diagrams on the next page demonstrate how the design principles were developed:

Section 3. Design Principle Development

Stage1 Our 'Introduction to Design Principle Development' suggested 2 core design principles, 4 potential principles and 4 other areas for consideration.



Stage 2 The feedback from Stage 1 indicated a strong agreement for 2 principles and suggested alterations (Alt) to 4 others. The feedback, combined with stakeholder suggestions, prompted the proposal of a further 3 design principles.



Stage 3 The feedback on the 'Outline Design Principles' provided support for a further 4 and prompted minor alterations to the definition of 3 design principles.

Section 3. Design Principle Development

3.8 Throughout this process stakeholders offered a range of design principle suggestions. Some of these were adopted, others, however, were not considered appropriate; Gatwick's reasoning is set out in Annex C.

Stakeholder Feedback on Design Principles

3.9 The remainder of this section sets out a selection of the key points of feedback Gatwick received on each design principle under consideration. Each page starts with a short section laying down the origin as to why this principle was considered and its initial definition.

3.10 The feedback provided in summary form that follows seeks to represent the views of those that were in favour, and of those that supported but had reservations or caveats. It explains how the principle may have changed and who remained opposed to its inclusion. Each entry concludes with a short summary in which we explain our rationale for including the principle and what we may also consider at a later stage. The entry ends with the proposed definition and the level of support the design principle received as part of the feedback to the 'Outline Design Principles' document.

Section 3. Design Principle Development

3.11 The table below summarises how design principles have developed and evolved over the course of the engagement as a consequence of stakeholder feedback. A summary of the proposed design principles and their final definitions can be found at Figure 6 in Section 4.

Design Principle Development	DP 1	DP 2	DP Proposal
Safer by Design	Introduced	Modified	As DP 2
Enhanced Navigation Standards	Introduced		As DP 1
Long Term Predictability & Adaptability*	Introduced	Modified	As DP 2
Time Based Arrival Operations	Introduced		As DP 1
Optimise Use of Aircraft Capabilities*	Introduced	Modified	As DP 2
Deconfliction by Design	Introduced	Modified	Modified
Limit Adverse Noise Effects		New - Core	Modified
Locally Tailored Designs		Introduced	As DP 2
Resilience Built In		Introduced	Modified

* Title amended for DP 2

Section 3. Design Principle Development

Safer by Design

Design Principle 1: Safer by Design

Basis for Inclusion

In keeping with Gatwick's safety management system and airspace change good practice, Gatwick wishes to maintain, and if possible, further enhance its safety performance.

Original Suggestion (DPv0-1)

'Airspace design must at least maintain, and ideally enhance, aviation safety, by reducing or removing safety risk factors'

Selection of Stakeholder Feedback

- Kent County Council (50) *'Fully believes safe airspace design is of upmost importance and would encourage Gatwick to where possible, utilise opportunities to further strengthen the existing safety culture beyond current national and international regulatory standards.'*
- easyJet (17) *'The public and professionals within Industry always hold safety as the highest priority level. … but whilst safety must always be the highest design principle, quality risk assessments must exist alongside to deliver the tangible operational improvements.'*
- Southdown Gliding Club (z1) *'Safety must be paramount, both for the users of Gatwick's airspace, but also for those Aviation Stakeholders operating outside of Gatwick.'*

Additional Perspectives

- ANS (38) *'If GAL decide to adopt the ALARP [As Low As Reasonably Practical] 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'.'*
- MVDC (63) *agrees that airspace design must be safe and further promote safety management systems. We believe that safety is paramount and should not be a matter for the key stakeholders of this engagement process, but instead for the regulatory bodies tasked with upholding safety standards.'*
- Others questioned the enhancement of safety at any cost or how enhancements may have a secondary impact on communities or airline operations.

Section 3. Design Principle Development

Safer by Design

- Concern was raised that safety would be used to introduce airspace change designs that cause more nuisance to overflown communities because they are predicated on safety.

Variations/Extensions

- PAGNE (77) *'if the Government's vision is to deliver "quicker, quieter and cleaner journeys" we feel it is imperative that, as long as current safety standards are not eroded, sustainability (noise & emissions) must also be included as a core design principle.'*
- Reigate & Banstead (64) and TWAANG (72) offered that the definition of safety should be extended to cover the health of those affected by aviation.
    - Gatwick declined this extension as the principle was orientated around aviation operational safety. The health and economic impact of change is covered by the application of the Government WebTAG tool. We made this point in the 'Outline Design Principles' document and offered a new core principle instead (which for reference is, 'to limit, and where possible reduce, the adverse impact of aviation noise'.

Scope of Support – Original Definition (DPv0-1)

This principle was supported by participants of all stakeholder groups but some stakeholders offered feedback about how the principle might be interpreted and a qualifying remark was considered appropriate.

Design Principle Definition Changed in DPv0-2 (Outline Proposal) 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'

Selection of Commentary on Outline Proposal

- ANS (38) reported that *'the change underpins the previous principle improving it overall'*.
- IAG (15) '*Strongly agrees that safety is a fundamental requirement of the industry. We agree that enhancements should not have a disproportionately detrimental impact on other benefits, provided that safety is never compromised by any restraints toward the application of enhancements.'*

Section 3. Design Principle Development

Safer by Design

- Wealden (71) *'The Council support the amendment to highlight that the application of safety measures should not be at the expense of other benefits.'*
- Surrey County Council (51) stated *'We welcome the addition of a balanced approach that takes into consideration the other design principles that need to be weighed against safety. Nevetheless, the paramount importance of the safety of both travellers and residents is fully recognised. We would anticipate that safety considerations would extend the need to take account of the health impacts of noise and air pollution to those living and working in the vicinity of the airport.'*

Opposing Views and Alternative Suggestions

- PAGNE (77), Plane Wrong (80), GON (78) APCAG (74) all made similar assertions to extend the definition of the principle to include the health impacts of aviation.
- CAGNE (76) The definition of safety should be extended to include the health of people impacted by aviation noise.

Gatwick's Summary

The outline proposal received high levels of support and stakeholders considered the alternation was appropriate. Whilst some wished to extend the definition of safety to cover health this was not the purpose of this principle. The health aspects of aviation, which Surrey County Council and others refer to are recognised through the use of WebTAG to assess the health impacts of a proposal. We also introduced a new core principle (Limit Adverse Noise Effects).

Proposal

Unchanged from **outline proposal (DPv0-2)** **High Level of Support**

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

Section 3. Design Principle Development

Enhanced Navigation Standards

Design Principle 2: Enhanced Navigation Standards

Basis for Inclusion

Gatwick Airport is required under EU Regulation 2018/1048 to introduce arrival and departure procedures based on performance-based navigation (PBN). Gatwick already uses a variety of these PBN standards to define its departure routes. Enhanced navigation standards which encompass the PBN standards referred to in the EU regulation have the potential to enable a range of benefits for all stakeholder groups if applied in an appropriate manner.

Original Suggestion (DPv0-1)

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

Selection of Stakeholder Feedback

- Surrey County Council (51) stated *'Given the likely concentration effects of performance based navigation (PBN), sharing routes over a wider area compared to a fully concentrated future scenario will be necessary in order to avoid unacceptable impacts from concentration. Concentrated flightpaths with no respite are not acceptable'*
- Tonbridge & Malling (68) offered a commonly held view *'As long as this is also beneficial to over flown communities, allowing departure and arrival paths to be optimised below 7000 ft'*
- Mole Valley District Council (63) *'As GAL will be well aware, the introduction of Performance Based Navigation (PBN) at Gatwick has had an adverse effect on some local communities in that the concentration of flights above certain areas has increased substantially, worsening noise impacts considerably. MVDC is supportive of enhanced navigation standards but only if used to provide an equitable and fair distribution of aircraft across NPR swathes.'*
- NATS (39) offered the 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 publicly consult on flight paths below 7000 feet.'*

Section 3. Design Principle Development

Enhanced Navigation Standards

- IAG (15) stated that *'Setting a minimum PBN specification of RNP1 + RF for departures would be acceptable but GAL should not set a minimum specification 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.'*
- CAGNE (76) supported but wanted caveats on its application *'Yes to benefit communities in a fair and balanced way without flying over new areas on departures or outside of the existing arrival swathe'*
- GACC (85) stated *'If new navigation standards permit the flexible design of flight paths that minimise disturbance to those on the ground, avoid the overflight of people not currently overflown, provide respite and distribute flights fairly, we welcome them. However, our experiences of Performance-Based Navigation was negative because it introduced concentration of flights which made disturbance worse in some areas.'*

Scope of Support – Original Definition (DPv0-1 unchanged at DPv0-2)

This principle was supported by participants of all stakeholder groups.

Commentary on Caveats

- Some stakeholders caveated their support by insisting that no people should be newly overflown, others asked for new overflight to be minimised.
    - We are required to consider all options and Gatwick can't rule out that some people may be newly affected by aviation noise.
- Plane Justice (79) was more specific *'… if removing "variation" and reducing "the variability of flight paths over the ground" means designing out any notion of more dispersed tracks as were in existence pre-2013 with RNAV overlays of conventional routes, then we would answer 'no' to this question.*
    - Gatwick have fedback to Plane Justice that it may be possible to offer dispersal of tracks within a procedure and this is covered by the design principle we introduced entitled 'Locally Tailored Designs', although the issue they are referring to relates to another airspace change running in parallel.

Section 3. Design Principle Development

Enhanced Navigation Standards

Gatwick's Summary

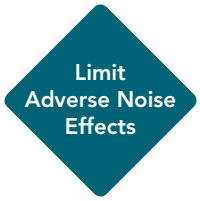
The original proposal received very high levels of support at stage 1 of our engagement. Gatwick recognises that the application of enhanced navigation standards, combined with the higher levels of precision that modern commercial aircraft can conform to, can lead to a narrowing of the swathe of flight tracks. However, greater design flexibility and navigational accuracy can also unlock other benefits. In response to initial feedback we commented on the options at our disposal to mitigate the potential adverse effects of 'concentration'. In addition, we offered an additional core principle to, 'Limit Adverse Noise Effects' designed to consider noise impacts at options appraisal. We also noted NATS' indication of the potential for the airport to take responsibility for the design of departures and arrivals above 7000 ft. following harmonisation of the Transition Altitude at a higher level.

Proposal

Unchanged from **initial introduction (DPv0-1)** **Very High Level of Support**

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

Section 3. Design Principle Development



Design Principle 3: Limit Adverse Noise Effects

Basis for Inclusion

This principle was introduced as a result of feedback received in the first round of engagement about the potential adverse effects that improved airspace design standards and higher levels of navigational accuracy may cause.

We offered further commentary as to how these adverse effects could be mitigated in our second booklet 'Outline Design Principles' at Section 1.3

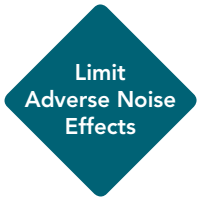
Original Suggestion (Introduced at DPv0-2, following feedback from DPv0-1)

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

Selection of Typical Stakeholder Feedback

- IAG (15) *'IAG suggested that a principle related to minimising noise and meeting noise policy tests should be considered in its response of 5th April. We therefore agree with the inclusion of this principle.'*
- Virgin (29) stated *'This principle should be followed, unless it becomes impractical to introduce necessary airspace changes as part of the overall airspace modernisation programme.'*
- TUI (26) stated *'While clearly desirable for local communities, and supported by us, care must be taken to ensure that concentrating on aircraft noise does not reduce some of the other benefits and advantages that may be afforded by this change.'*
- NATS (39) offered *'This is also in line with the aims of the Airspace Modernisation Strategy, and therefore NATS supports its inclusion'*

Section 3. Design Principle Development



- Surrey County Council (51) *'We support the inclusion of this principle as it reflects a key County Council concern regarding the impact noise can have on the health and quality of life of our local communities. We anticipate that the new core principle will comprise mitigation measures including minimising the number of people newly overflown, managed dispersal and respite and using noise efficient operational practices. We expect the extent to which it is intended to 'limit' the adverse impacts of aircraft noise and the way that these impacts will be reduced 'where possible' will be made clearer as the design for the airspace change is finalised.*

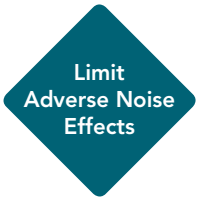
Scope of Support – Original Definition (DPv0-2)

This principle was supported by participants in all stakeholder groups

Additional Perspectives

- easyJet (17) *'Airspace design should accommodate higher rates of climb available in new modern aircraft'*
- Wealden (71) and some MPs supported the proposal but suggested that the phrase *'seek to'* be removed.
- GATCOM's (48) summary was that it *'is fully aware of the concerns of community noise groups about the need to ensure there is a balanced approach in the overall airspace design process which ensures that the negative impacts of aircraft noise and overflight are also considered. This new principle will therefore ensure that addressing noise impacts is also at the heart of airspace design. It is important however that the supporting text for this core design principle provides clarity on its aim. Firstly, it is suggested that the supported wording be revised to 'shall aim' rather than 'should'. Secondly, as the FASI-S project is likely to be a once in a several generation change in airspace it is important for GAL to provide more clarity than is currently given in the document on the term 'adverse impacts of noise' and what is meant by 'limit'.*
- APCAG (74), GON (78), Plane Wrong (80) offered the same feedback that suggested that *'the principle proposed by Gatwick is misleading and disingenuous. It would not, as Gatwick claim, "balance the overall design". Gatwick should include a core principle that airspace modernisation must achieve a fair balance between benefits for the industry and for the people it impacts, taking account of the additional capacity it will facilitate for the industry. At the heart of this principle must be an absolute obligation for the industry to reduce and mitigate noise as capacity grows, in accordance with government policy'*

Section 3. Design Principle Development



- Reigate & Banstead Borough Council (64) stated *'…we consider that a core principle should be to not increase – and where possible reduce – noise disturbance.'*
    - Their statement, as did some others, reference 2013 government policy which was updated in 2017; Gatwick's proposal is in keeping with current policy.
- Plane Justice (79) supported only if '*limit the spread of aircraft noise and other environmental impacts by taking every feasible step possible to avoid the overflight of new communities'*
- PAGNE (77) offered an alternative principle *'It is our view that the core principle should be that airspace modernisation must deliver a fair balance between the benefits accruing to the industry and for the communities it impacts, taking account of additional airport capacity.'*

Gatwick's Summary

The outline proposal received high levels of support, and two adjustments have been made based on the feedback from stakeholders. Gatwick's use of the term 'limit' is in keeping with its use in the Government's Air Navigation Guidance environmental objectives which does not instil or infer an absolute limit. Should government policy change as a result of the review of Aviation Strategy, we will take notice of new definitions. Whilst the principle only received a 'moderate' level of support to be adopted as a core principle, being rejected by some Airlines, ANSPs, GATCOM, some community groups, it was universally supported by the district/borough councils and we believe this is still the appropriate approach to take.

Proposal

Modified *from* **outline proposal (DPv0-2)** **High Level of Support**

The airspace design **shall** aim to limit and where possible ~~**(seek to)**~~ reduce the adverse impacts of aircraft noise'

Section 3. Design Principle Development

Design Principle 4: Time Based Arrival Operations

Basis for Inclusion

Within the timeframes of FASI-South deployment the inclusion of 'time-based separation and sequencing' will increasingly be a part of the network design and an important enabler of 'quicker, quieter and cleaner flights'. This is also reflected in the SESAR Pilot Common Project Implementing Rule out to 2024.

Original Suggestion (Introduced at DPv0-1)

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

Stakeholder Feedback – Typical of Supportive Comments

- easyJet (17) agreed that *'Incorporation of the 4th element [i.e. time] will become more and more critical to utilising full capabilities of modern aircraft navigational capabilities.'*
- Kent County Council (50) stated that *'The arrival management initiative is welcomed, especially where it will make the use of stacks obsolete and increase periods of respite. Kent is overflown most significantly by Gatwick arrivals and the noise and environmental impacts of these aircraft movements greatly affect residents within areas of west Kent in particular.'*
- CAGNE (76) stated *'Yes – If this allows holding stacks to be removed then this should be supported to save CO2 and reduce noise from circling planes.'*

Additional Perspectives

- NATS (39) 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.'*
- PAGNE (77) commented that *'On that basis we support this principle subject to understanding its consequences for route options, including the number and location of available routes, and capacity. 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'*

Section 3. Design Principle Development

Time Based Arrival Operations

- Crawley Borough Council (56) '*This is clearly the most efficient way for aircraft to fly as it should remove the need for fuel wasting holding stacks. However the most efficient method for airlines may not be acceptable for residents if not previously overflown. So there is a balance to be had.*'

Scope of Support – Original Definition (DPv0-1)

This principle was supported by participants of all stakeholder groups.

Commentary on Caveats

There were no related objections, but some stakeholders caveated their support by stating:

- IAG (15) *'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.'*
- TWAANG (72) '*We do not support this as a means of increasing capacity. It should be used to improve performance in reducing night flights and allow better flight profiles (CDAs).*'

Gatwick's Summary

The original proposal was universally recognised as a relevant principle associated with a number of beneficial changes. We recognise the feedback from airlines about the need for coordination in the way that time-based arrival operations are adopted and the requirements for updated ways of working. Gatwick believes that time-based arrival operations will be one of the main ways in which the airspace modernisation objectives in both the lower and terminal airspace will be achieved.

Proposal

Unchanged from **initial introduction (DPv0-1)** **Very High Level of Support**

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

Section 3. Design Principle Development

Resilience Built In

Design Principle 5: Resilience Built In

Basis for Inclusion

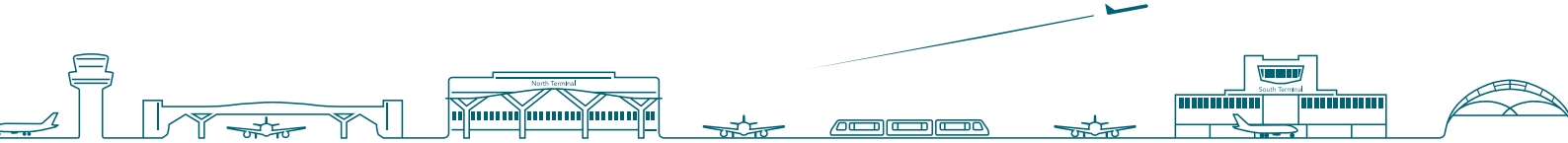
In the first round of engagement we asked stakeholders to consider the extent to which Gatwick should build additional resilience into a future design. The feedback indicated a strong preference for a fully resilient solution, although not all stakeholders shared this view. We offered a potential principle as part of the outline design principles.

Original Suggestion (Introduced at DPv0-2, following consideration on DP0-1)

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

Selection of Stakeholder Feedback

- easyJet (17) *'Resilience is key to recovering stability which minimises the overall impact of noise caused by late returning aircraft'*
- Virgin (29) *'Having resilience in the system is critical in order to avoid or at least minimise major operational disruption when applicable'*
- Norwegian (21) '*The design of future airspace should deliver a robust and resilient operating environment, whereby daily flight operations are materially unaffected by a degradation in meteorological conditions (such low visibility and thunderstorms) or technical failures. Adequate contingency measures should be provided in order to protect and maintain the operational efficiency of the airport and surrounding airspace'*
- Kent County Council (50) *'Airspace should be designed to ensure disruption does not negatively impact on local communities through an increase in overflight and usage of holds. Therefore, KCC would strongly support the adoption of a principle to build in resilience.'*
- Surrey *'We understand the need for Gatwick to design in a level of resilience to cope with unforeseen events, but we would be concerned if this were to be at the expense of local communities routinely experiencing more adverse noise effects'*



Section 3. Design Principle Development

Resilience Built In

Scope of Support – Original Definition (DPv0-2)

This principle was supported by participants of all stakeholder groups.

Opposing Views and Alternative Suggestions

- BHA (42) stated *'I would have thought that any design would take resilience into account from the outset and be a fundamental part of the design.'*
- CAGNE (76) *'This would mean flying over new areas to allow for Gatwick to operate without time delays whilst giving no consideration to the new communities impacted by Gatwick flying over new areas to avoid bad weather and to fan/disperse departures. PPR, in it present form, would allow this!'*
- Plane Justice (79) *'The difficulty we have is that question 4 refers to resilience 'where practical', but there is no reference to any such qualification in the wording you are proposing. Nor is there any sense of a limit to the measures that might be taken to build-in resilience, which could open the way to a whole host of airspace additions which unduly affect communities even when disruptions are not present. We propose this principle should be modified, by borrowing language from the safety design principle in 2.2:*

  "The airspace design should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies, *provided this does not have a disproportionately detrimental impact on other benefits*"

Gatwick's Summary

The outline proposal received very high levels of support which aligned to the preferences indicated from the first round of feedback. We considered that Plane Justice's suggestion, drawing on the sentiment from the safety design principle was appropriate and worthy of inclusion.

Proposal

Adjusted *from* **outline proposal (DPv0-2)** **Very High Level of Support**

The airspace design should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies, **provided this does not have a disproportionately detrimental impact on other benefits**

Section 3. Design Principle Development

Design Principle 6: Optimise Use of Aircraft Capabilities

Basis for Inclusion

Airline fleets are equipped with airframe capabilities and avionics to meet a wide variety of standards, however, a common complaint from some is that they are unable to use many of their capabilities because the airspace design and procedures does not offer them the opportunity to do so. Procedures are often designed to accommodate aircraft with lower capabilities and less advanced avionics, which in turn deters airlines from further investments to improve their fleets. New procedures that maximise the potential of modern aircraft capabilities and avionics are expected to be more fuel efficient, less disruptive to communities and facilitate greater punctuality.

Original Suggestion (Introduced at DPv0-1 as 'Promote Adoption of Enhanced Aircraft Capabilities')

'Airspace design should promote the adoption of aircraft capabilities that benefit communities and the more efficient management of air traffic'

Selection of Typical Stakeholder Feedback

- Virgin (29) *'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.'*
- Iberia (20) *'That would be unfair for operators with older fleets, and could have a detrimental effect on LGW traffic.'*
- Emirates (18) *'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.'*
- Wealden (71) *'It is agreed that future airspace design should offer the greatest benefits to those airlines that have made investments to adopt efficient operations and minimise their impact on local communities'.*
- Plane Justice (79) *'In principle we would support any additional aircraft capabilities which reduce noise and other environmental emissions per aircraft (e.g. the ability to fly with a cleaner wing for more of the time), and the industry should continually be looking for ways to incentivize such reductions.'*
- GACC (85) *'To the extent that enhanced aircraft capabilities can be used to fly routes that minimise disturbance while allowing distribution within areas currently overflown, we are in favour.'*

Section 3. Design Principle Development

Scope of Support – Original Definition (DPv0-1)

This principle was supported by participants of all stakeholder groups. However, in light of airline comments the definition was adjusted to 'optimise use of aircraft capabilities'. Options that make use of 'under-utilised aircraft capabilities' and offered benefits for airlines and/or communities would be given a higher weighting.

Design Principle Definition Changed in DPv0-2 (Outline Proposal) to:

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

Selection of Commentary on Outline Proposal

Commentary on Caveats

- IAG *'supports the adjustment to this principle however, we are concerned that across all the proposed DP's, there is nothing which adequately singles out the need to mitigate the impact of aircraft emissions on local air quality and therefore deal with the balanced approach needed when trading between fuel burn and noise.'*
    - Gatwick's response: See comments at Time-Based Arrival Operations and other DPs
- NATS *'firmly believes that this topic goes hand in hand with the 2nd core principle, Enhanced Navigation Standards. Whilst it is a business decision for GAL as to the range of operators it has at the airport it is still 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, fulfilling the requirements set out in European Commission mandates Comment on linkage.'*
- Kent County Council (50) *'agrees with the adjustments made to the 'Optimise Use of Aircraft Capabilities' design principle, in particular the enhanced focus on improving environmental performance. However, future growth means that despite the benefits of aircraft operators optimising the capabilities of their fleet, an increase in future aviation movements caused by growth will lead to some communities still being negatively affected. …… Gatwick is encouraged to ensure airspace design makes provision for multiple routes that offer respite for those affected communities.'*

Section 3. Design Principle Development

- Surrey County Council states *'Our primary concern is to minimize the noise impacts on our local residents and we would therefore welcome any operational efficiencies that lead to a reduction of noise impacts for local communities. The priority should be on improving environmental performance rather than operational efficiency. We would reiterate the importance of incentivising airlines to make investments that reduce noise impacts.'*

Opposing Views and Alternative Suggestions

- Mole Valley District Council (63) states *'reference to 'aircraft capabilities that benefit communities' should not be removed from the design principle. It is important to recognise that aircraft operators optimising the capabilities of their fleets improves operational efficiency and environmental performance and this should therefore remain in the design principle, however there should also be a specific reference to benefitting communities as there was previously, else 'environmental performance' could relate to savings in fuel burn but not noise impacts on local residents.'*
- Reigate & Banstead District Council (64) offered *'We consider that "benefit communities" should be reinstated. …. the Council considers that the impact on local communities should be the primary core principle and that all other design principles should be subsidiary to this.'*
- PAGNE (77) *'The proposed wording fails to place sufficient emphasis on the reduction of noise emissions and that the likely focus will be on using enhanced aircraft capabilities to increase capacity. In our view, the wording needs to make it clear that operators should optimise fleet capabilities to enhance operational efficiency and to reduce both individual plane noise and overall environmental impacts.'*
- CAGNE (76) *'Currently due to lack of trust of Gatwick Airport management this can not be accepted as it will be used to maximise growth for the airport instead of reducing noise for those on the ground as suggested by airlines in 2.5 'General aviation stakeholders were in favour for multiple arrival pathways provided this didn't create new controlled airspace below 2500 feet.'*

Section 3. Design Principle Development

Optimise Use of Aircraft Capabilities

Gatwick's Summary

The outline proposal received high levels of support in both rounds of engagement. Airlines considered the updated definition better reflected the issue that was otherwise limiting how they might contribute to improvements in environmental performance. Procedures would remain for those aircraft with lower capabilities, but options would be prioritised that offered the potential to be more efficient and/or environmentally beneficial. In the definition below we consider 'environmental performance' to include the impact on communities.

In response to Qu 6 (DP0-2), this principle attracted the highest priority of the 6 non-core principles.

Proposal

Unchanged from **outline proposal (DPv0-2)** **High Level of Support**

The airspace design should enable aircraft operators to optimise the use of their fleet capabilities to improve operational efficiency and environmental performance

Section 3. Design Principle Development

Design Principle 7: Long Term Predictability & Adaptability

Basis for Inclusion

There can be significant variations in aircraft flight paths on departure (above 4000 feet) and during arrival management (until the final approach). These variations make it harder for communities and council planners to predict the nature and timing of noise impacts. The current arrangements can also make it harder to introduce adjustments that could reduce the noise impact on communities.

Original Suggestion (Introduced at DPv0-1)

'Airspace design should offer long term predictability of flight path routes and enable benefits from new air traffic management systems'

Selection of Stakeholder Feedback

- easyJet (17) stated that *'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.'*
- East Sussex County Council (49) indicated that they *'support these benefits, especially the reduced frequency of overflights. 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.'*
- Kent (50) and Surrey (51) County Councils offered similar views *'Whilst long-term predictability is important, for those living under flight paths it is essential that predictable respite is also provided. This is only possible by using multiple flight paths so that the burden of over-flight is shared more equitably between affected communities'* and *'Once established, new flight paths should provide for long-term predictability for those finding themselves overflown and include the provision of respite. Any system adaptations should not increase the noise impacts for local communities'*
- Wealden District Council (71) stated that *'It is agreed that airspace designs should withstand the demands of the next 30 years, but it is appreciated that predicting and resolving growth and development needs for this long time period will be a challenge. Prior to full implementation being achieved, the shorter-term plans and phases should be set out in a transparent way, including any potential impacts.'*

Section 3. Design Principle Development

- Plane Justice (79) 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'.*

Additional Perspectives

- ANSL (38) stated *'predictability is a strategy in the design that can/ could adopted as a principle. The adoption of predictability can sometimes remove ATS flexibility options and therefore would be (in some cases) less attractive.'*
- CAGNE (76) was opposed this principle stating, *'it would suggest flying over new people below 4,000ft', whilst GACC (85) was unclear who the beneficiaries were.*
- Mole Valley District Council (63) stated that '*MVDC does not support the concentration of flights using PBN under the justification that it provides flight path predictability.'*

Scope of Support – Original Definition (DPv0-1)

This principle was supported by participants of all stakeholder groups. Based on stakeholder concerns we offered a change as part of the 'Outline Design Principles'.

Design Principle Definition Changed in DPv0-2 (Outline Proposal) to:

'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'

Selection of Commentary on Outline Proposal

- IAG (15) *'IAG supports the adjustment to this principle'*
- Kent County Council (50) '*Whilst KCC supports the inclusion of greater predictability of respite for local communities, we are concerned about and the impact of additional aviation noise on our communities in west Kent.*
- West Sussex County Council (52) *'Yes – it is agreed that long-term predictability is important because it provides certainty about noise impacts (and respite) and the need for mitigation.'*

Section 3. Design Principle Development

- Surrey County Council (51) *'We welcome the added reference to respite from noise and we accept that circumstances may arise that require adaptations. However, we would want to ensure that the allowance for flexibility would not lead to an increase in noise impacts on communities'*
- Reigate & Banstead (64) '*The Council welcomes and supports the inclusion of reference to respite. Our position is that this should be genuine meaningful respite that is, as actually experienced by local communities and residents taking into consideration factors such as potential noise shadow. The Council however has some concern with the addition of the reference to the draft masterplan – we agree that when designing future airspace consideration needs to be given to the future potential expansion of the airport however we do not consider that it is appropriate to refer directly to the draft Masterplan in the design principles.'*
- Mole Valley District Council (63) *'Long-term predictability should include adaptation to growth scenarios outlined in GAL's draft Master Plan. However, the inclusion of 'respite' within the design principle is not accepted. As with MVDC's previous response, we do not feel comfortable commenting on the provision of managed respite and the restriction of route availability at certain times owing to the lack of detailed information of each, and the lack of engagement at this early stage with Parish Councils that represent areas to be most affected by such a design principle.'*

Opposing Views and Alternative Suggestions

- PAGNE (77) *We continue to believe that "predictability" is simply a pseudonym for concentration. Before there is any long-term commitment to such an approach, an in-depth analysis of the health and other effects is required to determine the consequences on impacted communities. Only when these impacts are established can suitable mitigation strategies, including operating constraints be appropriately determined and implemented such that any increase in noise for any community will be capped, mitigated and compensated for.'*
- Plane Justice (79) *'We see no justification in the feedback that has been quoted, to suddenly introduce the concept of respite. Indeed in our own response to Question 8 in the first round of engagement, we said that we saw managed respite as "a recipe for prolonged discord between communities, and for undue influence being wielded by those who 'umpire' the allocation of the respite". If Gatwick believe they have justification in the responses received to introduce respite into this design principle then they should produce the relevant quotes from respondents.'*

Section 3. Design Principle Development

Long Term Predictability & Adaptability

- GON (78) Plane Wrong (80) & APCAG (74) *'Gatwick's proposed change is inadequate because it focuses solely on respite as a tool to manage the impact of aircraft noise on communities. GAL should commission and publish authoritative research on the health and other consequences of concentrated flight paths to inform this debate. It should also propose arrangements through which any increase in noise for any community will be capped, mitigated and compensated for, including through operating restrictions.'*
- CAGNE (76) *'Adaption – this suggests flying outside of Noise Preferential Routes over new areas. There is a lack of any mention of safeguarding communities that have not been impacted by departing aircraft before. If this relates only to arrivals this might be acceptable as it would suggest respite/ rotation of arrivals routes within the current arrival swathe.'*

Gatwick's Summary

Gatwick expects that predictability, coupled with adaptability will assist councils, residents and airlines with their routine and strategic planning and this was echoed by some stakeholder comments and overall level of support. Improved predictability may also facilitate the introduction of more effective respite arrangements depending on the range of management techniques employed. We recognise that the application of enhanced navigation standards can lead to the narrowing of flight path swathes and highlighted some of the potential mitigation techniques in our 'Outline Design Principles' document. Reference to the draft Masterplan recognises these scenarios as possible development pathways, however, this airspace change is independent of those scenarios. We intend to work closely with ICCAN to incorporate their views on the effective application of respite. This principle scored the lowest level of support, still over 70%, and as a consequence, we have assigned it a lower relative priority.

Proposal

Unchanged from **outline proposal (DPv0-2)** **High Level of Support**

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

Section 3. Design Principle Development

Design Principle 8: Deconfliction by Design

Basis for Inclusion

The FASI-South Programme offers an opportunity to seek to deconflict neighbouring airports' airspace arrangements as part of the design. This would help to reduce the frequency with which communities are overflown below 7000 feet by traffic to/from different airports. This principle can also be applied to reduce the overflight of communities who may experience both arriving and departing aircraft regardless of the runway in use.

Original Suggestion (Introduced at DPv0-1)

'Wherever possible Gatwick should deconflict by design flight paths below 7000 feet to reduce the prevalence of overflight of a community by airport traffic on different routes and/or by neighbouring airport traffic'

Selection of Stakeholder Feedback

- Iberia (20) *'Only whenever possible, not affecting the distance or time of the flight (thus fuel and CO2 consumption).'*
- easyJet (17) *'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.'*
- East Sussex County Council (49) *'The County Council's preference is for a reduction in concentrated flight paths for aircraft flying below 7000 feet, and for there to be a dispersal of routes overflown to lessen the impact of intensification of aircraft noise on local communities. Therefore a design principle which would enable a more dispersed flight path system would be fully supported.'*
- Kent County Council (50) *'It is therefore essential that West Kent does not also experience overflight from neighbouring airports such as Heathrow.'*

Section 3. Design Principle Development

Deconfliction by Design

- Mole Valley District Council (63) *'MVDC believes that the airspace change process is the principle opportunity to deconflict flight paths across the wider region, with substantial benefits to communities currently impacted by aircraft noise. We therefore strongly support the adoption of a design principle that seeks to deconflict by design all Gatwick arrival and departure routes to reduce the prevalence of overflight of a community. We encourage GAL to work collaboratively with other airports such as Heathrow, to ensure that aircraft leaving Gatwick are not restricted in their rate of climb by other aircraft as is currently the case with Routes 3 and 4. MVDC strongly support aircraft climbing at the optimum rate to minimise noise impacts on communities close to the airport as well as those further away.'*
- PAGNE (77) *'Representing communities who are impacted by Departure Route 1 as well as Easterly arrival traffic, PAGNE are fully supportive of this design principle which would help communities that currently receive little or no respite.'*
- Salford & Sidlow (x3) *'Yes, providing this does not impact other communities to a greater degree than those currently overflown. There should be no newly overflown people.'*

Scope of Support – Original Definition (DPv0-1)

This principle was supported by participants of all stakeholder groups, however, the addition of a qualifying remark was considered appropriate.

Design Principle Definition Changed in DPv0-2 (Outline Proposal) to:

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 neighbouring airport traffic, **provided this does not significantly extend a departure route**.

Selection of Commentary on Outline Proposal

- IAG (15) *'…supports the adjustment to this principle however, this DP should recognise the potential adverse impact of significantly longer departure and arrival routes. As it stands, this principle only focuses on departure routes as currently stated.'*
- ANS (38) *'In principle ANSL agree however if this principle builds in additional complexity in attempting to reach its goal this will detract from the overall effectiveness.'*

Section 3. Design Principle Development

- Mole Valley District Council (63) *'Yes, it is agreed that departure routes should not be significantly extended for deconfliction purposes. However, the emphasis of this design principle should be on the opportunity to reduce noise impacts on local communities as stated in our previous response'*
- NATS (39) *'We have noted the NATS attributed comment associated with the Core Design Principle "Enhanced Navigation Standards" but believe that the content should actually be a part of this Design Principle (or a wholly separate one). We are fully supportive of the need to design with other airports in mind, but feel that there also needs to be an appreciation of the wider air traffic environment included. Therefore we would suggest adding sufficient wording to cover the following:*
    - *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. With the rationale: NATS will be responsible for the network design for arrivals and departures above 7000ft/FL70 with GAL responsible for the routes to/from the ground, including interactions with adjacent airports and appropriate community engagement. However network route positions will be influenced to a large degree by the airports' requirements (geographically distilled into the Letterbox positions for each proposed route). These letterboxes/route positions will also be influenced by the Transition Altitude and any interactions between the routes of other airports.'*
- Wealden (71) *'The Council support the amendment to recognise the potential adverse impacts of a significantly longer departure route, and an awareness of the proposed communities which are identified in Local authority Development Plans which will be affected'*
- GATCOM (48) *'Yes, but suggest that 'where possible' is included in the wording of the supporting text.'*

Opposing Views and Alternative Suggestions

- CAGNE (76) *'Deconfliction by design could benefit those impacted by multiple routes but not if it means flying over new communities with departing aircraft using CCO to allow growth of Gatwick as detailed in point.'*
- Plane Justice (79) *'We consider that deconfliction would inevitably lead to overflying new communities, or subject overflown communities to a step-change in frequency of overflight.'*

Section 3. Design Principle Development

Deconfliction by Design

- Plane Wrong (80) *'We do not agree with the final phrase "…provided this does not significantly extend a departure route" which should be deleted. The departure phase, whilst the aircraft is within an NPR, is a minimal percentage of the whole flight in terms of time, cost and emissions and during that phase the noise impact should have a much higher weighting than the cost to the airline or total emissions.'*
- GON (78) *'We do not agree with the final phrase "…provided this does not significantly extend a departure route" which should be deleted.'*

Gatwick's Summary

The outline proposal received high levels of support. A minor change 'where possible' was re-inserted, at the suggestion of GATCOM and in recognition that there is often a range on sometimes competing factors that need to be considered in the determination of a design. Whilst this principle has evolved to focus on departure routes, the principle also applies to arrivals. Lastly, we note NATS's comments but don't believe we need to adjust the principle.

Proposal

Minor change t**o outline proposal (DPv0-2)** **High Level of Support**

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

Section 3. Design Principle Development

Locally Tailored Designs

Design Principle 9: Locally Tailored Designs

Basis for Inclusion

In response to the areas of consideration we posed in the introductory booklet, there was a strong sentiment that multiple routes were preferable to single pathways. However, feedback about how the effects of noise should be managed and mitigated were far more varied. As this airspace change impacts on many routes in a wide geographic area we think it is important to actively factor in local circumstances.

Original Suggestion (Introduced at DPv0-2, following consideration of stakeholder views)

'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)'

Selection of Stakeholder Feedback

- IAG (15) *'agrees with the inclusion of a principle based on locally tailored designs, although a degree of balance is also required here in delivering an improved system for consumers in terms of minimising delays and maximising safety, operational efficiency and resilience on a sustainable basis. IAG carriers are prepared to operate airspace as informed by local circumstances, providing it does not limit or constrain throughput or compromise trajectories and entry/exit point links with upper airspace. In the interests of efficient operations, this should not result in unreasonably long flight tracks or steep turns and climb gradients, especially as this often has detrimental consequences for noise and emissions.'*
- easyJet (17) *'Where locally tailored is fully integrated with LHR but which also recognises the variation in types of flying between the 2 airports'*
- Virgin (29) *'Provided any designs do not negatively impact on the overall airspace efficiency of the S.E. UK and surrounding airports'*
- GATCOM (48) & County Council (50, 51, 52) all offered views in line with '*Locally Tailored Designs are important as designing options/solutions for one route may not provide an appropriate solution for other routes particularly when taking into consideration the number and location of densely populated areas around Gatwick and the potential constraints created by flight path designs from other airports e.g Heathrow and/or other competing interests and objectives.'*

Section 3. Design Principle Development

- ANS (38) *'Yes – again the principle is worthy but the practical delivery of these goals needs to be understood and the 'art of the possible' delivered is an ATC challenge.'*
- ESCCAN (73) *'But full consideration should be given to the length and time of exposure by those overflown. Noise shadow affects should maximise route spacing and must take the ground elevation into account.'*
- Mole Valley District Council (63) *'Locally tailored designs should be utilised to minimise local environmental impacts whilst also improving operational efficiency'*
- Horley Town Council (x7) *'We support this proposal; the best solution for one route e.g. 3 or 4 may not be appropriate for others when taking into consideration the number and location of densely populated areas and possible constraints created by flights from other airports.'*

Scope of Support – Original Definition (DPv0-2)

This principle was supported by participants of all stakeholder groups

Gatwick's Summary

The outline proposal received Very high levels of support. As expected the principle was well supported but feedback from many also recognised that local designs also needed to integrate effectively into the overall solution.

Proposal

Unchanged from **outline proposal (DPv0-2)** **Very High Level of Support**

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 Limit Adverse Noise Effects)

Section 4. Proposed Design Principles

4.1 This Section sets out the suite of proposed Design Principles that Gatwick believe will act as an effective qualitative framework to support the delivery of:

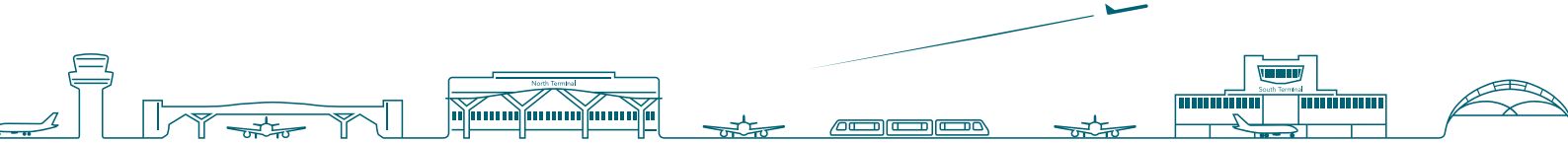
- Airspace Modernisation Lower and Terminal Airspace objectives
- Gatwick's three desired outcomes from this airspace change

The prioritised suite of design principles, and levels of stakeholder support[8], are set out in Figure 6.

Design Principle Proposition	Definition	Level of Support
Safety by Design – Core	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	High
Enhanced Navigation Standards – Core	Airspace design should adopt the most beneficial form of enhanced navigation standards for arrival and departure routes	Very High
Limit Adverse Noise Effects – Core	The airspace design shall aim to limit and where possible reduce the adverse impacts of aircraft noise	High
Time Based Arrival Operations	Route design below 7000 feet should be compatible with the adoption of time based arrival operations	Very High
Resilience Built In	The airspace design should be materially unaffected by most disruptions, including poor weather and technical failures, through the provision of adequate contingencies, provided this does not have a disproportionately detrimental impact on other benefits	Very High
Optimise Use of Aircraft Capabilities	The airspace design should enable aircraft operators to optimise the use of their fleet capabilities to improve operational efficiency and environmental performance	High
Long Term Predictability & Adaptability	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	High
Deconfliction by Design	The airspace design should seek, where possible, to deconflict routes by design below 7000ft, and the prevalence of overflight of a community by flights on different routes and/or by neighbouring airport traffic, provided this does not significantly extend a departure or arrival route	High
Locally Tailored Designs	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 Limit Adverse Noise Effects)	Very High

Figure 6 Gatwick's Proposed Airspace Modernisation Design Principles

[8]Levels of support are based on the number of positive agreements compared to the overall number of stakeholders who expressed a definitive view of the adoption of the principle outlined in DPv0-2. Gatwick has used the following support definitions: Moderate 50-69%, High 70-89%, Very High 90% and above



Section 4. Proposed Design Principles

4.2 The options analysis in Stage 2 may require Gatwick to consider the relative merits of one option verses another. Using the design principles as a qualitive framework will assist in this analysis, and giving a relative priority to each design principle is likely to be beneficial. Gatwick has clustered the design principles into two groups, core and non-core, and prioritise principles within each group. This relative prioritisation, within each group is based on the extent to which they are likely to align with and support the Airspace Modernisation Programme and Gatwick's related objectives; Figure 7 depicts the alignment.

Section 4. Proposed Design Principles

Airspace Component	Airspace Modernisation Strategy – Change Objectives	Safer by Design	Enhanced Nav Stds	Limit Adverse Noise Effects	Time Based Operations	Resilience Built in	Optimise use of Aircraft Capabilities	Long Term Predictability & Adaptability	Deconfliction by Design	Locally Tailored Designs
	Priority	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Lower	**Safety:** precision routes, separated by design	■	■		■	■	■	■	■	
Lower	**Efficiency:** greater runway throughput by …(1) … more efficient use of airspace and strengthened resilience		■		■	■	■			
Lower & Terminal	**Environment:** reduced track miles and continuous climbs / descents to reduce emissions per flight		■	■			■	■		
Lower & Terminal	**Environment:** opportunities to better manage noise impacts		■	■	■	■	■	■		■
Terminal	**Safety:** capacity gains achieved while removing unnecessary interactions	■	■		■	■	■	■	■	
Terminal	**Efficiency:** expeditious flow of traffic		■	■	■	■	■	■		
	Gatwick FASI-South – Desired Outcomes									
	Implement systemised departure and arrival procedures	■	■		■	■	■	■	■	
	that improve safety	■	■		■	■	■	■	■	
	and resilience	■	■		■	■	■	■	■	
	and increase capacity		■		■	■	■			
	and offer improved operational agility		■		■	■	■		■	
	Efficiently integrate with LAMP airspace design		■		■		■			
	and make best use of enhanced network system capabilities.		■		■		■			
	Limit, and seek to reduce environmental impacts on Communities		■	■	■	■	■	■		■
	Provide predictability for local communities		■	■	■	■	■	■	■	■

Figure 7 Matrix showing the alignment of Gatwick airspace modernisation design principles with the Airspace Modernisation Strategy objectives and Airport's FASI-South desired outcomes.

Note (1) efficiency: greater runway throughput by deploying dedicated routes for each airport to secure more efficient use of airspace and strengthened resilience

Section 5. Next Steps

5.1 Over the Summer of 2019 we will be contacting local planning teams at County and Borough/District level for information on strategic planning policy 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 options 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.

5.2 By September, we plan to be in a position to run a series of workshops that will aim to further explain some of the issues and complexities of airspace design and start to discuss with stakeholders our option analysis and where we think this may lead. We expect to notify stakeholders of these events before the end of July. Until then the following indicative programme of events was disseminated as part of our second engagement document:

Stage 2 Activity June-December 2019	
June & July	Planning & Other Data Requests Focus group discussions Bilateral discussions Airports & NATS
August	Data Analysis, Workshop preparations
September - November	Technical briefings Options focus groups & workshops
December	Design options analysis Design options evaluations

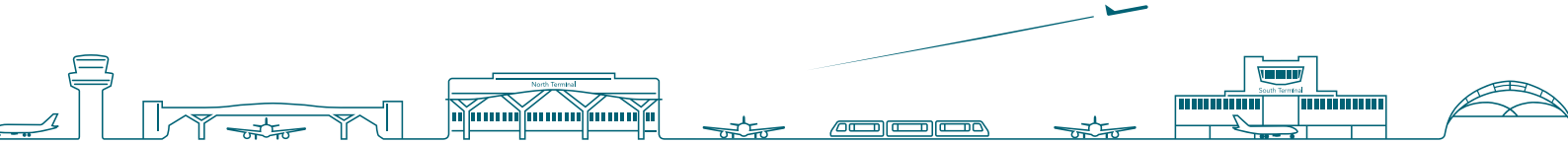
Figure 8 Indicative programme of Stage 2A activity

Annexes

Annex A	Glossary
Annex B	Stakeholder Participation & List of Informed Parties
Annex C	Stakeholder Suggested Design Principles
Annex D	Bibliography

Appendices

Appendix 1	1-1 to 1-4 Consolidated Stakeholder Feedback on DPv0-1
Appendix 2	2-1 to 2-4 Consolidated Stakeholder Feedback on DPv0-2
Appendix 3	Introduction to Design Principle Development (DPv0-1)
Appendix 4	Outline Design Principle Development (DPv0-2)



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:

ACP	Airspace Change Process. A 7-stage process explained in the CAA's document CAP 1616 Airspace Design Guidance
APCH	Approach – Sub-set of a navigation standards – See RNP
ATC	Air Traffic Control – Responsible for the safe separation of traffic in controlled airspace
CAA	Civil Aviation Authority – Independent aviation regulator and responsible for the adjudication of airspace change proposals
DfT	Department for Transport. Co-sponsors with the CAA of the Airspace Modernisation Strategy
DP	Design Principle – Developed as part of Stage 1 of the airspace change process
FASI	Future Airspace Strategy Implementation. An integrated programme of change sponsored by the DfT and CAA and coordinated by NATS
GPS	Global Positioning System – Aircraft navigation systems interrogate constellation of navigation satellites to determine their location
GNSS	Global Navigation Satellite System – Term used for all satellite based systems; GPS, Galileo and GLONASS are in use examples
ICCAN	Independent Commission on Civil Aviation Noise – Established by the Government in 2018
LAMP	London Airspace Modernisation Project – redesign of airspace above 7000 feet
NATS	Formerly known as 'National Air Traffic Services' – Provide air traffic services across the UK
NPR	Noise Preferential Route – Established in law to constrain the routing of departing aircraft until they reach a set altitude, often 4000 feet
PBN	Performance Based Navigation – Concept developed to utilise GPS/GNSS and improve navigation accuracy and performance
RNAV	Area Navigation – A method of space based navigation which permits aircraft operations on a desired flight path
RNP	Required Navigation Performance – Type of performance based navigation. Different standards of navigation accuracy can apply

Annex

B1. Stakeholder Participation

GAL Ref	Stakeholder Group	Confirmed Participation / Level of Contact	Introductory Brief Attended	DP1 Received	DP2 Received
1	Kenley Aerodrome (Glider)	Yes			28-Apr
2	Redhill Aerodrome (GA)	Yes	Yes	05-Apr	
3	Chichester (GA) – Goodwood Flying School	Yes	Yes		
4	Dunsfold (GA-Bus))	No Contact			
5	Fairoaks (GA-Bus)	Yes	Yes		
6	Farnborough (GA-Bus)	Yes	Yes		16-May
7	Lashenden (Para)	No Contact			
8	Rochester Aerodrome (GA)	Yes		04-Apr	28-Apr
9	Shoreham (GA) – Brighton City Airport	Contact Established			
10	Aer Lingus >4k	Yes		05-Apr	17-May
11	Air Baltic	Reminded by LGW AOC			
12	Air Europa	Reminded by LGW AOC			
13	Air Transat	Contact Established			
14	Aurigny >4k	Reminded by LGW AOC			
15	BA (IAG) >4k	Yes	Yes	05-Apr	17-May
16	Cathay Pacific	Reminded by LGW AOC			
17	easyJet >4k	Yes		28-Mar	14-May
18	Emirates	Yes		04-Apr	14-May
19	Flybe	Reminded by LGW AOC			
20	Iberia	Yes		05-May	17-May
21	Norwegian >4k	Yes	Yes	04-Apr	03-May
22	Qatar	Reminded by LGW AOC			
23	Ryanair >4k	Reminded by LGW AOC			
24	TAP Air Portugal	Reminded by LGW AOC			
25	Thomas Cook >4k	Yes		04-Apr	16-May
26	TUI >4k	Yes	Yes		14-May

Annex

B1. Stakeholder Participation

GAL Ref	Stakeholder Group	Confirmed Participation / Level of Contact	Introductory Brief Attended	DP1 Received	DP2 Received
27	Turkish Airlines	Reminded by LGW AOC			
28	Ukraine International	Contact Established			
29	Virgin >4k	Yes	Yes	05-Apr	17-May
30	Vueling >4k	Yes		05-Apr	17-May
31	Westjet	Contact Established			
33	Biggin Hill Airport	Yes		08-Apr	09-May
34	City Airport	Contact Established			
35	Heathrow Airport	Yes	Yes	03-Apr	16-May
36	Southampton Airport	Yes	Yes		
37	Bournmouth Airport	Contact Established			
38	Air Navigation Services	Yes		05-Apr	17-May
39	NATS En-Route Ltd	Yes	Yes	05-Apr	17-May
40	KSS Air Ambulance	Yes			
41	Sussex Police Helicopter – NPAS – Redhill	No Contact			
42	British Helicopter Association (Fairoaks)	Yes	Yes		29-Apr
43	General Aviation Alliance	Yes		05-Apr	
44	Gatwick Airline Operators Committee	Contact Established			
45	MoD - DAATM	Yes	Yes	01-Apr	16-May
46	AOA	Contact Established			
47	Airlines UK - Association of UK Airlines	Contact Established			
48	GATCOM	Yes	Yes	05-Apr	17-May
49	East Sussex County Council	Yes	Yes	05-Apr	
50	Kent County Council	Yes	Yes	05-Apr	17-May
51	Surrey County Council	Yes	Yes	05-Apr	17-May
52	West Sussex County Council	Yes	Yes		17-May

Annex

B1. Stakeholder Participation

GAL Ref	Stakeholder Group	Confirmed Participation / Level of Contact	Introductory Brief Attended	DP1 Received	DP2 Received
53	Adur & Worthing District Council	Contact Established			
54	Arun District Council	Yes			
55	Brighton & Hove City Council	Contact Established			
56	Crawley Borough Council	Yes	Yes	05-Apr	
57	Lewes District & Eastbourne Borough Council	Yes		Deferred	09-May
58	Guildford Borough Council	Yes		09-Apr	17-May
59	Hastings District Council	Contact Established			
60	Horsham District Council	Yes		Deferred	14-May
61	Maidstone District Council	Yes			Declined
62	Mid-Sussex District Council	Yes	Yes		
63	Mole Valley District Council	Yes	Yes	02-Apr	16-May
64	Reigate & Banstead Borough Council	Yes	Yes	06-Apr	18-May
65	Rother District Council	Messages Left			
66	Sevenoaks District Council	Yes			
67	Tandridge District Council	Yes	Yes	01-Apr	17-May
68	Tonbridge & Malling District Council	Yes	Yes	05-Apr	17-May
69	Tunbridge Wells District Council	Yes			
70	Waverly District Council	Yes			14-May
71	Wealden District Council	Yes	Yes	05-Apr	17-May
72	TWAANG	Yes	Yes	04-Apr	17-May
73	ESCCAN	Yes	Yes	04-Apr	14-May
74	APCAG	Yes		04-Apr	12-May
75	HWCAAG	Contact Established			
76	CAGNE	Yes	Yes	01-Apr	10-May
77	PAGNE	Yes	Yes	05-Apr	14-May

Annex

B1. Stakeholder Participation

GAL Ref	Stakeholder Group	Confirmed Participation / Level of Contact	Introductory Brief Attended	DP1 Received	DP2 Received
78	GON	Yes	Yes	05-Apr	11-May
79	Plane Justice	Yes	Yes	05-Apr	17-May
80	Plane Wrong	Yes	Yes	05-Apr	17-May
82	High Weald AONB	Yes		26-Mar	
83	Surrey Hills AONB	Yes		04-Apr	
84	South Downs National Park	Messages Left			
85	GACC	Yes	Yes	05-Apr	17-May
	Confirmed Participation	56	Responses	39	42
			Percentage of Confirmed Participants	70%	75%

Annex

B1. Stakeholder Participation

GAL Ref	Other Stakeholders that offered Feedback	DP1 Received	DP2 Received
	MP – TT – Tonbridge & Malling	26-Mar	10-May
	MP – CB – Reigate	02-Apr	
	MP – JQ – Horsham	05-Apr	
	MP – AM – Guildford	05-Apr	
	MP – GC – Tunbridge Wells		17-May
x1	Slinfold Parish	03-Apr	13-May
x2	Campaign to Protect Rural England	03-Apr	
x3	Salfords & Sidlow Parish	04-Apr	17-May
x4	Cranleigh Parish	05-Apr	
x5	Warnham Parish	05-Apr	
x6	Charlwood Parish	07-Apr	
x7	Horley Town Council		14-May
z1	Southdown Gliding Club – Storrington	05-May	
z2	Public – Reigate	05-May	
z3	Public – Location Unknown	05-May	15-May
z4	Public – Location Unknown	07-May	
z5	Public – Sidlow		27-Apr
	Responses	14	7

Annex

B2. List of Informed Parties

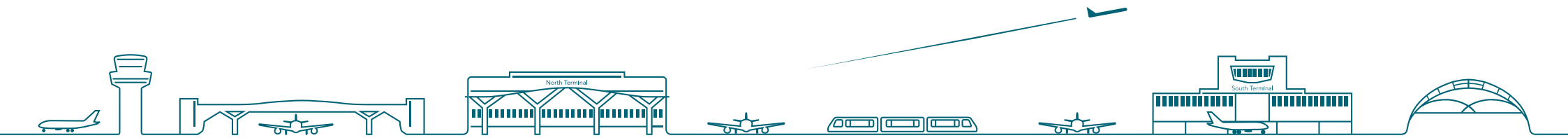
Elected Officials Informed		
MP Aldershot	MP Wealden	Leader Guildford District Council
MP Arundel & South Downs	MP Woking	Leader Hastings District Council
MP Bexhill & Battle	MP Bognor Regis & Littlehampton	Leader Horsham District Council
MP Chatham & Aylesford	MP Brighton, Kemptown	Leader Lewes District Council
MP Chichester	MP Brighton, Pavilion	Leader Maidstone District Council
MP Crawley	MP East Worthing & Shoreham	Leader Mid-Sussex District Council
MP Dartford	MP Eastbourne	Leader Mole Valley District Council
MP East Hampshire	MP Hove	Leader Reigate & Banstead Borough Council
MP East Surrey	MP Worthing West	Leader Rother District Council
MP Gravesham	Leader East Sussex County Council	Leader Sevenoaks District Council
MP Guildford	Leader Kent County Council	Leader Tandridge District Council
MP Horsham	Leader Surrey County Council	Leader Tonbridge & Malling District Council
MP Lewes	Leader West Sussex County Council	Leader Tunbridge Wells District Council
MP Maidstone & Weald	Leader Adur & Worthing District Council	Leader Waverly District Council
MP Mid Sussex	Leader Arun District Council	Leader Wealden District Council
MP Mole Valley	Leader Brighton & Hove City Council	Leader Worthing Borough Council
MP Reigate	Leader Crawley Borough Council	East Grinstead Town Council via clerk
MP Sevenoaks	Leader Chichester District Council	Horley Town Council via clerk
MP South West Surrey	Leader Eastbourne District Council	Edenbridge Town Council via clerk
MP Tonbridge & Malling	Leader East Hampshire District Council	Crowborough Town Council via clerk
MP Tunbridge Wells	Leader Gravesham District Council	

Annex

C. Stakeholder Suggested Design Principles

The table below lists suggested design principles and other ideas organisations wanted Gatwick to consider in response to Qu 14 of our 'Introduction to Design Principle Development' and embedded elsewhere in stakeholder feedback. We have offered comments on the suitability of these suggestions, and explained, where relevant, how they have been incorporated into Gatwick's proposed design principles.

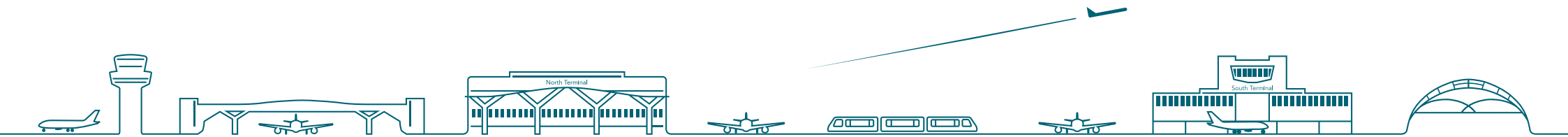
Organisation	Organisation Design Principle Suggestion	Gatwick's Comment
High Weald AONB	A design principle that seeks to conserve and enhance the natural beauty of the High Weald AONB through its airspace design by reducing the impact of aircraft flightpaths on the tranquillity, habitats and wildlife of the AONB and reducing harmful emissions and noise of aircraft.	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 the potential impact as part of our options development. Given the proximity of the High Weald and South Downs AONBs to Gatwick, it is not feasible from an operational perspective to avoid overflying these areas completely. We believe the use of new, more accurately defined arrival routes, based on enhanced navigation standards (known as PBN or performance-based navigation), will enable the design of new routes that keep aircraft at higher altitudes for longer. **We have suggested a Design Principle that specifically recognises the ambition to aim to limit, and where possible reduce, the adverse impacts of noise.**
Surrey Hills AONB	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

C. Stakeholder Suggested Design Principles

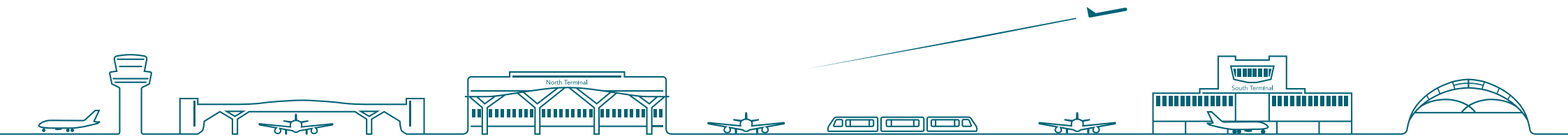
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Rochester Aerodrome	Consider minimising the impact on the GA community. The GA airspace is very restricted in the South East of England and keeps getting smaller. This would also reduce the possibility of infringements.	Systemisation 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 as part of the broader airspace modernisation initiative should make the airspace structure simpler and flight paths more predictable. We hope that this will offer enhancements to the way that airspace structures are managed and integrated.
BA (IAG)	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**. 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**.	The Government has articulated its policy on noise in the Air Navigation Guidance (2017). CAP 1616 sets a requirement that all airspace changes are compliant with the policy. We have proposed a new core principle to **'Limit Adverse Noise Effects'** that recognises this. We have also proposed a design principle that recognises the need to **'optimise the utilisation of aircraft capabilities'** to help improve fuel efficiency at low altitudes. This principle would in turn seek to mitigate the impact of aircraft emissions on local air quality and climate change. 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, including that 'airspace capacity is not a constraint on growth' and specifically the priorities of local communities and airspace users.
easyJet	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

C. Stakeholder Suggested Design Principles

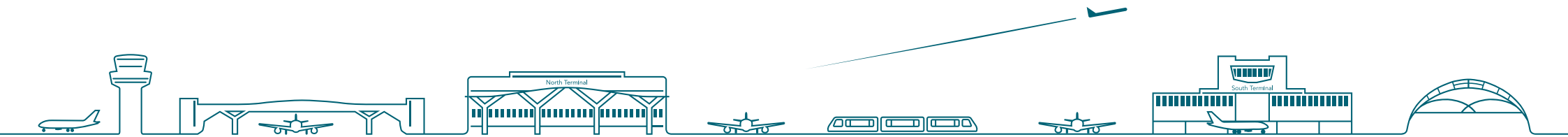
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Norwegian	The design principles should provide sufficient future airspace capacity allowing for continued growth in Commercial Air Traffic and proposed increases in future airport capacity. For Gatwick, this should include future proofing 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 alongside the other main drivers for airspace modernisation. We believe our proposed design principles will enable us to support airspace modernisation objectives, including that 'airspace capacity is not a constraint on growth' and specifically the priorities of local communities and airspace users.
ANS	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.
NATS	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.
GATCOM	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 our outline design principle booklet we proposed design principles that recognise the importance of tranquillity in AONBs and in other potentially noise sensitive locations at different times of the day. We will be collecting data ahead of the options appraisal to be conducted during stage 2 of the CAP1616 process, regarding existing and planned buildings that may warrant additional consideration because of their specific sensitivity to aviation noise.



Annex

C. Stakeholder Suggested Design Principles

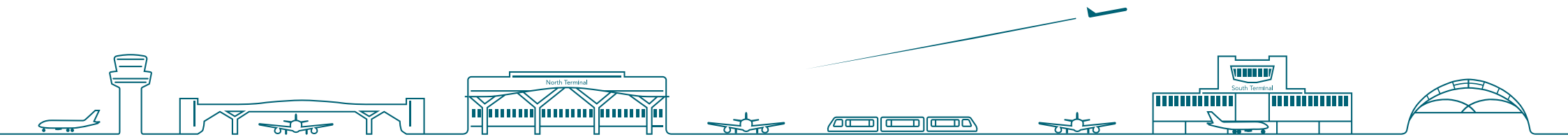
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Kent County Council	KCC has continually recommended the use of Nx contours (rather than the usually-used Leq contours) when showing the noise impact of overflight because they better represent the number of noise events an overflown 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 impacts in a consistent way using a variety of measures. The Nx contours will form part of this presentation. Our analysis may also consider alternative forms of assessing the impacts and benefits of different options from an environmental performance perspective. Gatwick is working separately on a suite of additional noise metrics to help communities better understand noise impacts.
Surrey County Council	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 **tailor designs** around local issues 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.
Crawley Borough Council	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 near future to support our options appraisal for the ACP.



Annex

C. Stakeholder Suggested Design Principles

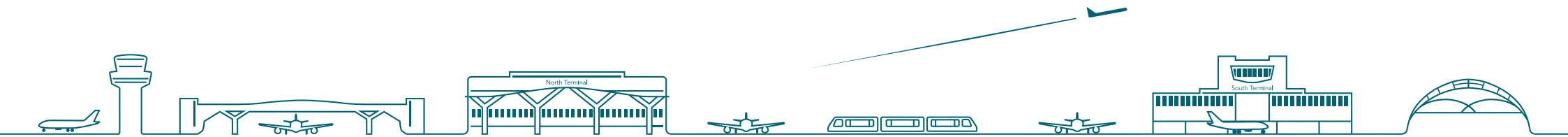
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Reigate & Banstead Borough Council	We consider the other core principles should be: **Not increasing – and where possible reducing – noise disturbance to communities and residents** (note that this is not the same as 'limiting and where possible reducing'); and **Minimising newly overflown people and minimising the total population overflown** 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.	In seeking to create a new airspace design that balances the impacts and benefits across all stakeholder groups, it is possible that some options will result in people becoming newly affected by aircraft noise. We have suggested an additional core principle that specifically sets out the ambition to **limit, and where possible reduce adverse noise effects**. The CAA requires us to demonstrate due consideration of all airspace design options that address the issues and objectives for the ACP as described in the Statement of Need. It is our hope that we can minimise the areas that experience an increase in aircraft noise and deploy effective mechanisms that offer predictable relief. However, a principle to not increase noise disturbance is considered too constraining at this stage in the ACP process.
TWAANG (NMB Group)	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. 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.	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 **Limit Adverse Noise Effects** and will encompass minimising, where possible, the number of people affected.



Annex

C. Stakeholder Suggested Design Principles

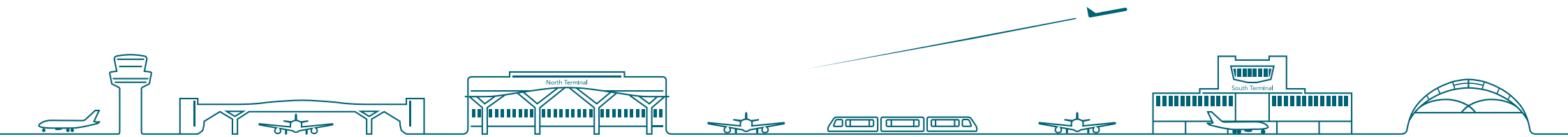
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
ESCCAN (NMB Group)	Aircraft should spend the minimum time overland. Aircraft from a northerly direction should go straight to the ILS, not circumnavigate the south east. Aircraft from the east /south east should use the existing M20 noise corridor when on westerly approaches. Offshore holds only and consider steeper approaches (>3 degrees). Alternative routes /respite to be on a daily frequency and not hourly except at night.	We agree that there are a range of potential benefits to be secured from minimising the tracks over land for both departing and arriving aircraft. We have proposed a range of design principles that recognise the importance of generating improvements in environmental performance from the ACP. But we also recognise that there are other factors to consider. The options ESCCAN refer to will all be considered fully during stage 2 of the CAP1616 process.
APCAG (NMB Group)	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.	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.
PAGNE & GON (NMB Group)	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.	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 and will be further examined as airspace design options during stage 2 of the CAP1616 process.



Annex

C. Stakeholder Suggested Design Principles

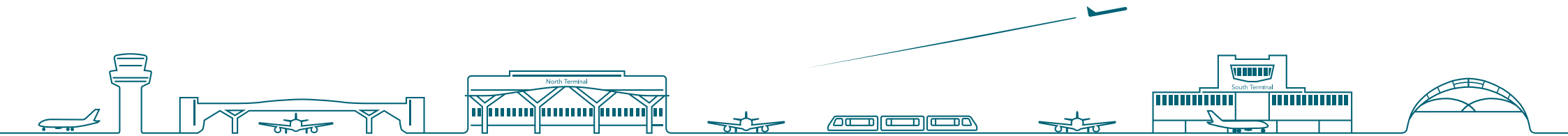
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Plane Justice (NMB Group)	Plane Justice provided a separate paper entitled 'Ethical Principles for Airspace Design' in which they offer a range of perspectives; a summary of the key points is detailed below: **1.** In modernising airspace routes in and out of Gatwick below 7,000 feet, airspace planners and decision makers should take where the aircraft were actually flying in 2012 as their baseline starting point for any design. **2.** RNAV1 technology should be used in all cases rather than RNP, because the latter tends to concentrate flight paths more than RNAV1. **3.** Some emulation of the dispersion experienced when flying RNAV1 coded overlays should be designed-in. This can be accomplished by taking each RNAV1 route design and developing two or three marginally different route designs around its nominal track, which could be designated to be flown by different aircraft types or airlines through agreement between stakeholders. (To be clear, we are here not talking about what are often described as 'multiple routes or multiple pathways'. What we envisage would be for example Route 1A, 1B & 1C where the lateral distance between the nominal tracks of each sub-route design would be something like 0.3 kilometres.) **4.** We see FASI as providing a unique opportunity to dispense with NPRs and maintain the focus where it ethically should be – on where the aircraft are actually flying. **5.** Departures should rapidly climb to between 7,000 & 10,000 feet after take-off & arrivals remain in the 7,000 -10,000 ft altitude zone for longer until they were closer to the airport.	Gatwick's responses to Plane Justice's suggestions are as follows: **1.** The baseline for evaluating design options considered as part of this ACP must be the procedures as they are currently published in the UK AIP (Aeronautical Information Publication). However, the airspace design process will take into account additional changes that are underway but not yet been implemented. **2.** Gatwick is required to deploy arrival and departure procedures designed to a RNP1 standard by 2024 as part of a package of European legislation known as the SESAR Pilot Common Project Implementing Rule (PCP-IR). The main different between the RNP1 and RNAV1 standards is that the former requires on-board conformance monitoring of the aircrafts' track keeping (within a 1 mile swathe of the nominal track) and automatic alerts for flight crew if there is a deviation. Traffic concentration can occur when RNAV1 procedures are replaced with RNP1 if the later includes a radius to fix turn, which is flown more accurately than a typical RNAV1 turn. Gatwick expects to incorporate radius to fix turns where they are expected to generate clearly identifiable noise benefits or for flight safety reasons. **3.** We are committed to examining methods to achieve forms of dispersion around a nominal route centreline using PBN procedures and will assess the operational feasibility and safety implications of designing several marginally different tracks that can be flown by different aircraft in some pre-agreed configuration. This assessment will require engagement with the Instrument Flight Procedure (IFP) design team at the CAA to consider the implications of deviating from a standard, compliant IFP design. We will also need to work closely with NATS to understand how different methods to emulating dispersion can be managed at scale. For example, how the interactions between many departure and arrival routes to/from multiple airports, each with several marginally different procedures designed around a nominal track can be managed at a network level.



Annex

C. Stakeholder Suggested Design Principles

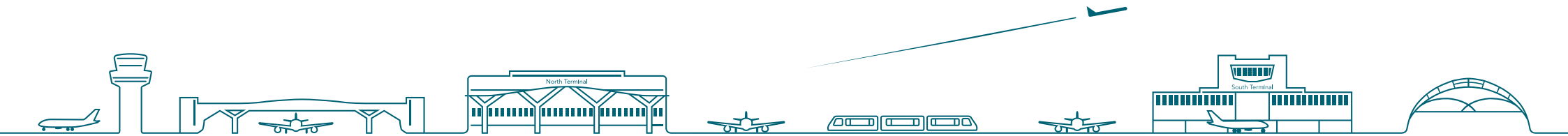
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Plane Justice (NMB Group) (cont)		**4.** The ACP will be based on comprehensive list of airspace design options with the potential to achieve the objectives set out in the Airspace Modernisation Strategy and Gatwick's Statement of Need. The development of these options will not be constrained by the locations of the existing NPRs and their associated swathes. As a matter of process, NPRs are established by legislation and the ability to amend or remove them sits with the Secretary of State for Transport. We understand that the Department for Transport are aware that they may need to re-evaluate the role, definition and location of NPRs as part of the Airspace Modernisation Strategy, FAS Implementation South Programme and this ACP (as a component part of each). **5.** One of the main opportunities associated with airspace modernisation (and specifically the implementation of PBN arrival and departure procedures considered in this ACP) is the ability to enable outbound aircraft to climb higher sooner and for inbound traffic to stay higher for longer on arrival. This is achieved by deploying new PBN procedures that are designed to maximise the performance of modern airframes and avionics. We will consider, as options, the different rates of climb that may be possible. Rapid rates of climb can increase the noise effects experienced and this will be taken into consideration. We will also work closely with neighbouring airports in the London area and Southern England to minimise (and ideally remove) the interactions between Gatwick's arrival and departure procedures and other routes as part of the ACP. The management of interactions between routes in the terminal airspace (by NATS Terminal Control) is often the cause of aircraft flying sub-optimal climb and descent profiles and stay lower for longer.
Plane Wrong	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.	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.



Annex

C. Stakeholder Suggested Design Principles

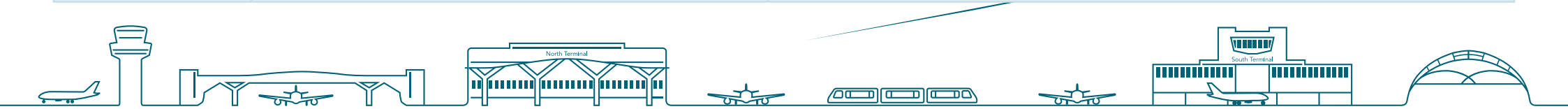
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Plane Wrong	All existing NPRs should be retained. In addition, a design principle for NPRs should be that 100% of aircraft remain within the NPR and that individual aircraft are spread within the NPR. The Navigational Data Base and Flight Management System manufacturers should be consulted on how best to achieve these aims.	The proposal for a principle to retain all existing Noise Preferential Routes (NPR) was rejected because it would constrain the sponsors ability to create a comprehensive list of airspace design options with the potential to achieve the objectives set out in the Airspace Modernisation Strategy and Gatwick's Statement of Need. However, should Gatwick wish to make a change to an NPR it would have to make an application to the Secretary of State.
Slinfold & member of general public (z3)	**1.** People's mental health is more important than CO2 burn efficiency to 10,000ft **2.** Find the route of least exposure to the whole of the population in a departure swathe **3.** More than 1 route per SID will allow equitable noise sharing through a form of dispersion by using 3 routes. **4.** Use of three routes could provide for operational flexibility To achieve this use lateral distance / height and noise calculations? **1.** Map population centres (e.g. >500) within 25 miles of runway **2.** Create zones (bubbles) of relative peace around these centres. Zone radius will vary according to typical altitude of planes at that population centre location. **3.** Attempt to find at least 3 routes through avoiding zones (within swathe of population previously flown over during pre P-RNAV) **4.** Approach could be computerised with the help of GIS software, customised to filter population centres and to allow experimentation of radius of zones. **5.** Relative peace has been assumed to be 58dB dBLmax for the calculation of zone/bubble radii (could be less could be more)	To assist the CAA and sponsors, the government laid out altitude-based priorities which should be taken into account when considering the potential environmental impact of airspace changes. In the airspace from the ground to below 7,000 feet the government's environmental priority is to limit and, where possible, reduce the total adverse effects on people. In the airspace at or above 7,000 feet, the CAA should prioritise the reduction of aircraft CO2 emissions and the minimizing of noise is no longer the priority. Concentrating traffic along the route of overall least exposure to the whole population may be the preferred options for some departure routes. However, those that are still impacted along the least exposure route may experience a disproportionate frequency, concentration and level of aircraft noise that requires options for dispersion and respite are considered. The inclusion of three procedures for each departure route is a potential form of respite that would be considered. It is important to understand the lateral spacing required between each procedure in order to generate perceptible relief from noise when aircraft are moved between them. Technical issues associated with the size of the database in some aircrafts' flight management computer (FMC) and the ability to hold three procedures for all SIDs simultaneously need to be resolved. Safety nets that protect against aircraft flying the wrong procedure as they are routinely switched for each departure route also require consideration.



Annex

C. Stakeholder Suggested Design Principles

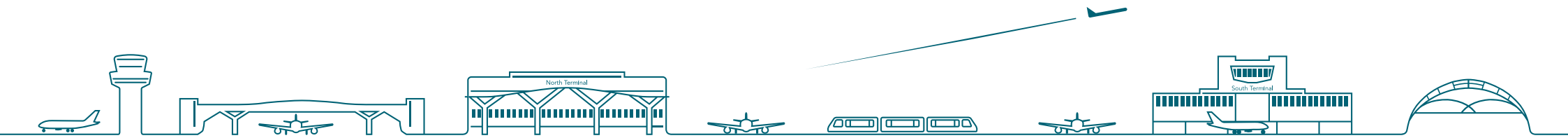
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Salford & Sidlow	If NPR's are to remain then airspace design must factor in the opportunity for vectoring in order to alleviate the impact on over flown communities, particularly in the climate of PR-NAV, which places intolerable burden on those communities, and particularly in rural surrounds. Rural areas feel the impact of aircraft noise more the urban environments. Noise metrics in use do not reflect the actual experience of over flown communities, particularly those living under re-constructed PR-NAV flightpaths. Any new noise metrics must truly describe the noise experienced by people on the ground. It should also consider that repetitive nature of overlying on a PR-NAV concentrated based route. The increase in day time flights from Gatwick should be balanced by a reduction in night time flights, ultimately leading to no night time flights. Individual runway use should have a cap on the number of permitted movements to aid respite. The airport should dictate what routes are used by airlines. A better (community) understanding of what constitutes a noise nuisance in terms of being over-flown verses what constitutes being over-flown. Departures should be encouraged to fly high as quickly as possible without dispersal and vectoring off before 7000 feet, where possible. See 7a comments on future aviation numbers and the possibility of more people need to share together with the introduction of caps on number of flights and routes. Arrivals should be kept high for as long as possible before descending into Gatwick using Continuous Descent Operations.	As part of the airspace change process, the ACP will consider all options including those that may lead to alterations to existing NPR swathes. Retaining conventional procedures and air traffic control vectoring on departure is not sustainable in the long term. There are international mandates for the widespread adoption of satellite-based navigation routes (RNAV1/RNP) that in time will systemise the approach to air traffic management, reducing the extent that vectoring by air traffic control is routinely used. As part of the ACP departures will be encouraged to fly higher sooner and will not vector before 7000ft. Similarly arrivals will be kept higher for as long as possible and descend continuously.



Annex

C. Stakeholder Suggested Design Principles

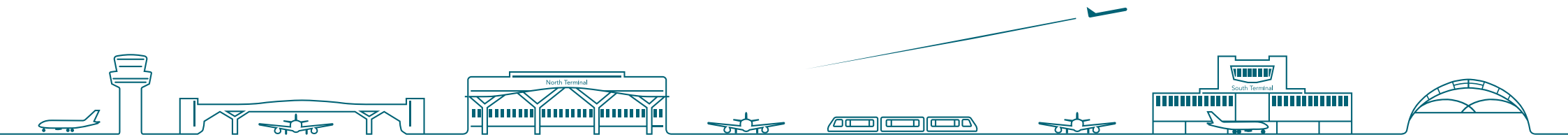
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Salford & Sidlow (cont)	Multiple departure routes should be included in design principles as an aid for disbursing aircraft noise and providing respite but to be operating over 7000 feet so as to avoid impacting new areas, where possible. Realistic compensation must be considered, not just offering double glazing for houses, for the areas that are most directly impacted and for any new areas that may be directly overflown. Any expansion of new routes should only be considered if it is a necessity to ensure that there is not constant overflying in existing areas. This is not necessarily talking about impact in 2019/20 but in future decades when there will be more aircraft utilizing airspace and the possibility for areas to 'share' the impact.	In seeking to support the airspace modernisation objectives we are committed to seeking solutions that will improve access to airspace by enabling a greater integration of operations for different airspace users including General Aviation.



Annex

C. Stakeholder Suggested Design Principles

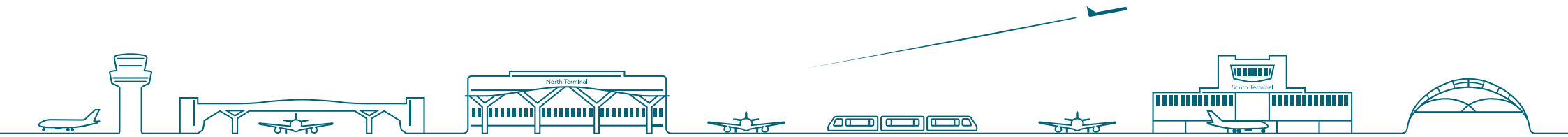
Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Southdown Gliding Club	Gatwick's Desired Outcomes make no mention of impact on Aviation Stakeholders outside of controlled airspace. Notwithstanding the outcomes for those users of Gatwick and the impact on the local communities, we would submit that as a consequence of Gatwick's airspace modernisation there could be an indirect consequence on Aviation Stakeholders operating outside of controlled airspace. Similarly, changes in controlled airspace design might have similar implications on uncontrolled airspace with similar consequences. We would like to see a commitment from Gatwick to seek (through your design principles) to allow recreational aviation, such as gliding to continue unaffected. We would also like to see Gatwick sign-up to the vision for Class G, as negotiated by General. Aviation groups, NATS and CAA. Specifically, our concerns are consequential impact of Gatwick's modernisation plans in terms of both the volume and structure of controlled airspace and the location with respect to adjacent airspace developments e.g., Southampton, and the potential creation of either Class G corridors or pinch points. Any airspace design should also have principles which minimise the risk of inadvertent airspace infringement.	In seeking to support the airspace modernisation objectives we are committed to seeking solutions that will improve access to airspace by enabling a greater integration of operations for different airspace users including General Aviation.



Annex

C. Stakeholder Suggested Design Principles

Organisation	Organisation Design Principle Suggestion	Gatwick Comment
Horsham DC	We recommend that the number of people newly overflown is minimised and this should form a core design principle.	Our proposed principle is to examine the trade-offs between the impacts on those newly overflown and changes to the impact on those currently overflown, in order to minimise the total adverse impact on all people. In some scenarios this will be achieved by minimising the number of people newly overflown. There may be situations when multiple routes could expose more people overall to noise (and perhaps some people newly overflown) but to a lesser extent; this may offer a better overall outcome from a noise perspective. Taking account of consultation and the objectives of the ACP, with regard to assessing and comparing environmental impacts of a proposed change, preferred options should normally be based on those which result in fewer total adverse effects on people.

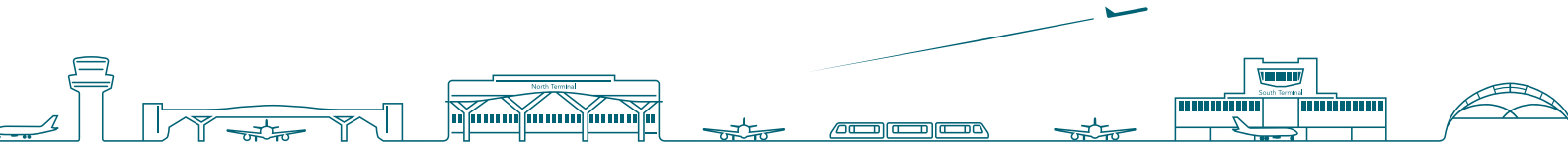


Annex

D. Bibliography

Airspace Change Process v2	CAP 1616, CAA, 2018
Airspace Modernisation Strategy	CAP1711, CAA, 2018
Air Navigation Guidance 2017	DfT, 2017
Policy for Application of Performance Based Navigation UK Airspace	CAA, 2011
Statement of Need, Airspace Modernisation – Gatwick Airport	Gatwick Airport, 2018
Upgrading UK Airspace, Strategic Rationale	DfT, 2017

This page is intentionally blank



YOUR LONDON AIRPORT
Gatwick