

Swanwick Airspace Improvement Programme  
Airspace Development 5  
LAC West – ATS Route Connectivity Improvements

SAIP AD5 LAC West Connectivity

Gateway documentation:  
Stage 1 Define

Step 1B Design Principles  
and  
Stakeholder Engagement



**NATS**

## Roles

Action	Role	Date
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## Drafting and Publication History

Issue	Month/Year	Changes this issue
1	Aug 2018	Written following the first round of engagement, meetings and phone calls, incorporating initial stakeholder feedback
2	Sep 2018	An update to the previous issue, written following the second round of engagement with any final feedback
3	Sep 2018	This document – minor changes to DPs 0 and 3 following initial feedback from the CAA.

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## Introduction

This document forms part of the document requirements for CAP1616 airspace change process: Stage 1 Define Gateway, Step 1B Design Principles.

In July and August 2018, NATS engaged a representative group of aviation industry stakeholders and provided a list of example design principles, along with some context as to how design principles are relevant to the UK's airspace change process CAP1616.

We made it clear that these were proposed examples for discussion, and that each stakeholder should discuss them internally, provide feedback, perhaps add their own examples, and consider any relative priorities.

We received feedback from a range of aviation industry stakeholders. In August 2018, we analysed that feedback and used it to update the list of design principles.

We then sent this revised list of design principles out for a further round of engagement, seeking additional final feedback. In September we analysed that feedback and made further, final, updates.

This document describes how your feedback has influenced our design principles – thank you for your participation.

We will now submit this design principles document to the CAA, to complete the Stage 1 Define Gateway under the UK's airspace change process known as "CAP1616". Subject to approval of Stage 1, we will formally adopt them for SAIP AD5.

Engagement on specific design concepts will happen later, in Stage 2, and formal consultation in Stage 3, but the design concepts will be evaluated against the final Stage 1 design principles.

## How this document is laid out

The Executive Summary lists the Design Principles (DPs), amended due to stakeholder feedback.

The next sections discuss each DP in the manner "we asked, you said, we did":

We asked	The original discussion text of a potential DP (we sent this out and/or held a meeting, stakeholders provided feedback)
You said	A summary of stakeholder feedback (from the first round and the second round of engagement)
We did	How the feedback (from both rounds of engagement) influenced this DP A proposed DP, perhaps different from the original DP text, possibly leading to an extra DP

This is repeated for each principle.

The priority levels are described alphabetically where A is the highest priority – see section 7 for information on how we set those relative priorities.

Section 8 summarises evidence that stakeholders were appropriately engaged and feedback acquired.

This feedback has been considered in the context of the original draft DP text and, where appropriate, influenced the text of the DP itself, or resulted in changes to the associated amplifying narrative.

## Executive Summary – List of Design Principles (DP) and relative priority

The following list of seven principles summarises the results of the both rounds of engagement. Each of these principles evolved from the original example DP and incorporates feedback. The evolution is described in detail in the next sections of the document. Their relative priority is clearly identified alphabetically – note the DPs are not listed in priority order.

<p><b>DP0 Safety</b></p> <p>Safety is the highest priority</p> <ul style="list-style-type: none"> <li>• Apply proportionality in safety related airspace design decisions</li> </ul>	<p><b>Priority A</b></p>
<p><b>DP1 Operational</b></p> <p>Increase in predictable flight planning options gives more choice for operators &amp; ATC flexibility to better manage busy flows</p>	<p><b>Priority C</b></p>
<p><b>DP2 Operational</b></p> <p>Operational – Minimise the resources needed to progress the proposal</p> <ul style="list-style-type: none"> <li>• The scope of the proposal must be achievable by December 2019</li> </ul>	<p><b>Priority C</b></p>
<p><b>DP3 Environmental</b></p> <p>Avoid low-level changes over land where possible</p> <ul style="list-style-type: none"> <li>• Reduce CO<sub>2</sub> emissions where possible</li> </ul>	<p><b>Priority B</b></p>
<p><b>DP4 Economic</b></p> <p>Reduce flight plan mileage and associated fuel uplift/burn where appropriate</p>	<p><b>Priority C</b></p>
<p><b>DP5 Technical</b></p> <p>Minimise negative impact on other airspace users (GA, MoD)</p> <ul style="list-style-type: none"> <li>• Recognise where impacts might be greatest by considering known VFR significant areas and Military-use areas against the placement of airspace structures</li> <li>• Mitigate those impacts in discussion with relevant organisations</li> </ul>	<p><b>Priority C</b></p>
<p><b>DP6 Operational</b></p> <p>ANSP agreement</p> <ul style="list-style-type: none"> <li>• There must be agreement between stakeholder ANSPs that the design concept being progressed suits all operations.</li> </ul>	<p><b>Priority B</b></p>

## 0. DPO Safety

### 0.1 Original discussion text

Safety is always the highest priority

- Improve safety by reducing the time/distance Birmingham traffic flies outside controlled airspace (CAS) via waypoint MOSUN

### 0.2 Summary of feedback received on this DP

Feedback from representatives of the GA community was that a safety statement cannot trump every other requirement or principle, moreover safety as a concept should be borne in mind where decisions on other requirements or principles are made, and the amount of influence should have some proportionality.

They also noted by GA representatives that the amplifying bullet point is there to benefit commercial air traffic and ATC, where logically those stakeholders see commercial aircraft inside CAS as “safer” than outside CAS in an unknown environment. NATS and the airlines agreed that this was indeed their point of view due to their business.

The GA representatives made the point that flights from Birmingham Airport Ltd (BAL) to the west & southwest can remain inside CAS at all times simply by following a longer route, and that the development of the existing shortcut is mainly driven by reducing costs/delays.

The GA representatives and the MoD both noted that changing CAS arrangements to improve the safety of commercial aircraft operations may change the perceived safety of other airspace users operating outside CAS (associated with DP5 discussions and feedback).

NATS added a comment from its ANSP point of view that a reduction in late-notice stack-swaps (to be addressed by this proposal) would also reduce controller and pilot workload in busy airspace volumes, contributing to a reduction in complexity hence improvement in safety. The proposal must be at least as safe as today’s operation, preferably safer.

All agreed that this DP should have the highest priority, with GA representatives highlighting proportionality.

### 0.3 How has feedback influenced this DP?

The original wording of the DP was general in scope. Safety of all – airspace users, and those on the ground – is implicit in this DP. It also included an amplifying bullet point regarding the current system of some Birmingham departures and arrivals flying across a c.30-40nm region of uncontrolled airspace, due to the location of Birmingham Airport and its relationship with the air route network in the region. This bullet point has been removed as it is too leading and design specific; rather than just informing what a design should achieve.

As part of the first round of engagement:

- The original amplifying bullet point can be removed as it implies a specific solution. This does not detract from safety being a fundamental and mandatory design requirement.
- NATS recognises the relationship between safety and proportionality – following the engagement meeting with the GA representatives we amended the DP wording and added an amplifying bullet point in Issue 1 of this document.

As part of the second round of engagement:

- The Irish Aviation Authority (IAA) stated they have an interest in this DP but make no particular comment on its wording.
- The GA Alliance requested enhanced wording of the proportionality statement, from “consider proportionality” to “apply proportionality”. This is reflected in the final text below.

### 0.4 Proposed text and priority

Safety is the highest priority

- Apply proportionality in safety related airspace design decisions

Priority A

## 1. DP1 Operational

### 1.1 Original discussion text

Operational – Increase in flight planning options gives more choice for operators & ATC flexibility to balance busy flows

### 1.2 Summary of feedback received on this DP

Feedback from representatives of the GA community was that airline priorities are often cost-based, with fuel vs delay avoidance vs route charge distances in different states all coming to bear. The cost-optimising systems used by airlines drive flightplanning behaviours which seem counterintuitive – regularly, routes are flightplanned to be far longer if they are on balance slightly cheaper due to these factors. The ability to influence those behaviours at a high level is outside the scope and remit of this particular proposal.

Feedback from airline representatives was that the predictable flightplanning availability of a route was very important. For a tactically managed route (non-flightplannable) there would be advantages but they would not be predictable advantages. Other airline representatives stated that flightplanning (hence fuel carriage and timing) predictability, albeit of a slightly longer route, can be a higher priority than actually getting shorter routes on a tactical basis.

Airline representatives also provided feedback regarding the potential scope of the proposal (see DP2) the impacts of weather systems vs airspace structures on lower altitude traffic patterns (see DP3) and the influence of flightplanning/fuel planning (see DP4).

### 1.3 How has feedback influenced this DP?

The original scope of this DP was to provide additional route options should one region or sector group get busy. We would try to provide operators with that additional choice at an early enough stage of flight so that the overall impact on a region or sector group would be minimised, at the same time the impact on any particular flight would also be minimised.

As part of the first round of engagement:

- The MoD stated this DP was not a priority for them.
- GA representatives suggested that the word “balance” should be replaced by “better managed”.
- Airline representatives would like the word “predictable” included.

As part of the second round of engagement:

- The Irish Aviation Authority (IAA) stated they have an interest in this DP but make no particular comment on its wording.

### 1.4 Proposed text and priority

Operational – Increase in predictable flight planning options gives more choice for operators & ATC flexibility to better manage busy flows

Priority C

## 2. DP2 Operational

### 2.1 Original discussion text

Operational – Minimise impact on NERL training

- Scope - fewer air traffic controllers to be trained means easier, quicker implementation
- Balance to be struck – bigger change means more controllers need training, potentially increased benefits, but increased project complexity

## 2.2 Summary of feedback received on this DP

NATS engaged with stakeholders on the “achievability” of this proposal with regard to scope and benefits.

GA representatives indicated this was not a priority for their community and had no particular feedback to give.

Airline representatives were keen that this proposal went as far as was achievable within the project timescales, acquiring as much benefit as possible, while recognising the fact that the wider the scope the more complex the proposal becomes, with consequences to timescale and costs. Airline representatives also were keen to ensure that this proposal does not close the door on potential future benefits in the region. There was also a NATS-airline discussion on whether the “removal” of some traffic from the spine of the Midlands’ ATS route structure would noticeably free up capacity.

NATS commented that the scope, budget and time constraints for major airspace changes is run past airline customers at high level investment forums.

BAL stated that the wording of the DP was very NERL-specific and should be more inclusive.

## 2.3 How has feedback influenced this DP?

The original wording of this DP was to consider the importance of limiting the training of controllers to a manageable number, minimising demand on the limited air traffic controller resource pool, vs widening the scope which may release additional benefits but would increase the demand on that same controller resource pool.

As part of the first round of engagement:

- NATS acknowledged that the wording is specifically about NERL and also specifically about training.
- The former could be more generalised by the addition of a new DP concerning other ANSPs – in this proposal’s case, primarily BAL and the Irish Aviation Authority (IAA) with some input from Heathrow Airport Ltd (HAL).
- The latter (controller training) could be more generalised.
- NATS records that “achievability” is one of our priorities. Other stakeholders had no particular priority for this DP. NATS also wished to add an amplifying bullet point highlighting the time constraints due to the way we are funded, via “Reference Periods”. We are currently in Reference Period 2 (RP2) the budget of which ends in December 2019. The lead time for airspace change proposals is such that, presuming regulatory approval to our planned timescale, the scope must be achieved by the end of RP2.

There were no comments following the second round of engagement.

## 2.4 Proposed text and priority

Operational – Minimise the resources needed to progress the proposal

- The scope of the proposal must be achievable by December 2019

Priority C

Introduce a new DP, DP6, concerning other ANSPs (please see DP6 on page 10).

## 3. DP3 Environmental

### 3.1 Original discussion text

Environmental – No change to traffic patterns below 7,000ft

- Meets CAP 1616 Level 2 requirements

### 3.2 Summary of feedback received on this DP

GA representatives indicated this was not a priority for their community and had no particular feedback to give, beyond the fact that the lower the altitude of changes, the greater the potential impact on their operations (and conversely the higher, the lesser).

Airline representatives and NATS discussed the difference between events such as weather systems (e.g. “northabout/southabout” jet stream influencing Atlantic track flows), airport city pairs changing over time due to waxing or waning popularity, ANSP route charges etc. – all of which can and do cause a large change to arrival route flows into UK airports from the west, and thus to their low altitude arrival flightpaths. We discussed this vs the installation of new higher-level ATS routes which may have some influence over low altitude flightpaths, but less than those other events, yet new routes are subject to CAP1616 where those other events may significantly change the intensity of low altitude overflight but are not subject to that process. This discussion did not yield any specific feedback on the DP as written.

Airline, BAL and NATS representatives also discussed whether potential future developments are discounted, and NATS stated it would depend very much on the appetite any given airport may have for making changes to low altitude flightpaths as a consequence of changes at higher levels – this may include BAL SID truncation. Discussions on this topic also took in the scope of DPs 1, 2 and 4. BAL also were clear that they were responsible for community relations in respect of any increases in traffic on their parts of the ATS route structure as it develops. This DP is about the “achievability” of the proposal.

### 3.3 How has feedback influenced this DP?

As part of the first round of engagement:

- NATS considers that the amplifying bullet point could be removed without losing the intent of the DP.

There were no comments following the second round of engagement.

After further consideration and feedback from the CAA, this Design Principle has been made more generic by removing any reference to altitude. In order to emphasise that designs should offer environmental benefits where possible, an amplifying bullet point has also been added to this effect.

### 3.4 Proposed text and priority

Environmental – Avoid low-level changes over land where possible

- Reduce CO<sub>2</sub> emissions where possible

Priority B

## 4. DP4 Economic

### 4.1 Original discussion text

Environmental – Reduce flight plan mileage and associated fuel uplift/burn where appropriate

- Some EGLL, EGCC, EGNM, EGCN and overflying traffic would benefit
- Some EGBB MOSUN traffic may slightly benefit, but the traffic flow already exists ATSOCAS (mostly “no change”)

### 4.2 Summary of feedback received on this DP

As part of the first round of engagement:

- There was no particular opinion from the GA representatives on this topic, however they noted that their feedback on DP1 was very relevant under this DP viz. flightplanning system behaviours driven by cost.
- Some airline representatives made the point that an ATSOCAS service is generally less attractive to an operator, especially if those services themselves are harder to acquire due to changes in service provision. This led to a reduction in the use of the MOSUN route, and consequently should there be a predictable availability of such a route then its popularity would increase.
- “Predictability” was a key point in DP1, and discussions/feedback between NATS and airline representatives, and is covered in more detail under that DP.

There were no comments following the second round of engagement.



#### 4.3 How has feedback influenced this DP?

As part of the first round of engagement:

- Feedback on this DP treated the flight plan mileage reductions and fuel burn/uplift in relation to operating costs. Even though the reduction in fuel burn would have a positive impact on greenhouse gas emissions, it seems appropriate to consider this DP as Economic in nature.
- There was no specific feedback on the amplifying bullet points – they could be removed without changing the intent of the DP.

There were no comments following the second round of engagement.

#### 4.4 Proposed text and priority

Economic – Reduce flight plan mileage and associated fuel uplift/burn where appropriate

Priority C

### 5. DP5 Technical

#### 5.1 Original discussion text

Technical – Minimise negative impact on other airspace users (GA, MoD)

- Recognise that there would be impacts
- Employ new CAS where particularly useful, consider application of PBN to minimise need

#### 5.2 Summary of feedback received on this DP

The MoD stated this was a high priority for their operation, as it was in a region used in particular by RAF Brize Norton and other units as well as the military en route operation based at Swanwick.

There was no particular opinion or priority from airline representatives on this topic.

Discussions with GA representatives surrounded the impacts of airspace changes on their operation, involving a variety of topics including FUA, airspace dimensions and classifications, gliding wave areas, the timing and use of military training areas, PBN research of RNAV1 track keeping, and the locations of places significant to the GA community via the FASVIG VFR Significant Areas (VSA) public document<sup>1</sup>. Consideration of the FASVIG VSA document was useful as NATS could see where, and to a certain extent how high, GA operate given the existing airspace structures – and also which types of GA user are most likely to be interested in this proposal.

Feedback from Gloucestershire Airport Staverton, primarily a GA airport, was that this technical aspect of the DP engagement encompassed everything they would consider at this stage of CAP1616.

NATS discussed the use of CAP1385 (guidance on spacing of PBN routes) with GA and airline representatives. It was used as an example of how efforts are being made to not only make route spacing more efficient but also reduce the size of any additional CAS volumes should they be needed.

#### 5.3 How has feedback influenced this DP?

As part of the first round of engagement:

- The wording of the DP itself is reasonable and broad, in NATS' opinion.
- Amending the amplifying bullet points would make clearer the context and intent of the DP.

There were no comments following the second round of engagement.

#### 5.4 Proposed text and priority

Technical – Minimise negative impact on other airspace users (GA, MoD)

- Recognise where impacts might be greatest by considering known VFR significant areas and Military-use areas against the placement of airspace structures

<sup>1</sup> Link: <http://fasvig.org/vsa-v2> (not a NATS-controlled website, please click responsibly) or search online for phrase "fasvig vfr significant areas". Please note that the organisation "FASVIG" became "Airspace4all.org" as of 1<sup>st</sup> September 2018, the link above was correct at time of writing.

- Mitigate those impacts in discussion with relevant organisations

Priority C

## 6. DP6 Operational

This new DP relating to the “achievability” of the proposal arose from the first round of feedback via discussion around DP2, please see page 7 for more details.

Operational – ANSP agreement

- There must be agreement between stakeholder ANSPs that the design concept being progressed suits all operations

Priority B

As part of the second round of engagement:

- The Irish Aviation Authority (IAA) stated they have an interest in this DP but make no particular comment on its wording.

## 7. How did we set the relative priorities?

The relative priorities have been set here by NATS acting as the sponsor, following feedback from stakeholders.

Stakeholders have different perspectives on, and requirements for, airspace changes.

- The DP considering safety was set as the highest priority A
- DPs considering the procedural achievability of the proposal were set as the next highest priority B
- DPs reflecting the requirements of stakeholders were set as priority C, making the airline requirements and GA requirements match.
- The resourcing and scope DP was also set at C.

## 8. Engagement Evidence Summary

- 8.1 **NATS-BAL Meeting held at Birmingham Airport 11<sup>th</sup> July 2018 titled "CAP1616 Stage 1 Engagement"**  
3x NATS staff, 2x BAL airport and 3x BAL ATC staff attended and discussed design principles along with potential design concepts. DP feedback was acquired.
- 8.2 **NATS-MoD Meeting held at NATS Swanwick Centre 27<sup>th</sup> July 2018 titled "CAP1616 Stage 1 Engagement"**  
5x NATS staff, 2x RAF Swanwick Military controllers, 1x RAF Brize Norton controller, 1x DAATM representing the entire MoD attended and discussed design principles along with potential design concepts. DP feedback was acquired.
- 8.3 **NATS presented at Heathrow Airport Ltd Airspace Governance Group meeting 14<sup>th</sup> August**  
Presentation titled "SAIP Airspace Deployment 5". Briefing to HAL AGG seeking endorsement of design principles and general overview of the proposal. General endorsement was acquired, with no particular feedback.
- 8.4 **NATS-GA Meeting held at NATS Swanwick Centre 15<sup>th</sup> August 2018 titled "AD5 GA Briefing"**  
4x NATS staff, 3x FASVIG representatives, 2x British Gliding Association (BGA) representatives attended and discussed design principles. DP feedback was acquired on behalf of the GA Alliance.
- 8.5 **NATS-Airline-BAL Meeting held at NATS Swanwick Centre 21<sup>st</sup> August 2018 titled "AD5 Airline Operator Briefing"**  
4x NATS staff, 1x Stobart Air staff, 1x Flybe staff attended in the room  
Simultaneously online and by phone, 1x Jet2 staff, 1x Thomas Cook staff, 3x British Airways staff, 1x International Airlines Group staff, 4x BAL staff – all participated and discussed design principles.  
DP feedback was acquired.
- 8.6 **NATS-TUI phone calls and email exchange**  
TUI agrees with basic principles as listed. Additional feedback is to ensure that the trade-off between training and/or local engagement isn't automatically rejected without consultation as the benefits may be more to an Airline than first perceived.
- 8.7 **NATS-Gloucestershire Airport Staverton phone calls and email exchange**  
Gloucestershire Airport agrees with the basic principles as listed. Additional feedback is that the DPs mentioned in the email engagement encompass everything they would be considering at this stage, certainly the Technical aspects (DP5).
- 8.8 **NATS-Cotswold Airport Kemble phone calls and email exchange**  
Cotswold Airport has no comment on the principles as listed and does not need to be involved in the development stage of this proposal.
- 8.9 **NATS-Delta Airlines email exchange**  
Delta agrees with basic principles as listed, there was no particular feedback and no further comment.
- 8.10 **NATS-IAA email exchange**  
Email engagement between NATS and the IAA. The IAA stated they had an interest in DP0, DP1 and DP6. Further engagement will be progressed under Stage 2.
- 8.11 **The UK Civil Aviation Authority**  
The CAA is our Regulator and not a stakeholder *per se*.  
They did, however, provide process guidance on CAP1616 Stage 1 and how it applies to this proposal.
- 8.12 **No response**  
There were no responses from four Heathrow operators, nor from one Birmingham operator.

## 9. Conclusion and Next Steps

For this two-way engagement exercise we identified appropriate aviation stakeholders and supplied them with some example draft design principles, to provoke discussion.

We attended or convened meetings both in person and via online/telephone, encouraging discussion of the example DPs.

We received feedback on those example DPs and amended some of them, added another, and provided an explanation including relative priorities. We compiled Issue 1 of the DP document.

We sent Issue 1 of the DP document to all stakeholders who responded to the initial engagement, seeking further comments (or endorsement of it as written).

The two-way engagement and evolution resulted in this amended Issue 2 document, listing the design principles and relative priorities, finalised for this project.

We will now submit this document to the CAA as evidence to support Step 1b of the CAP1616 airspace change process.

In turn, this will complete the documentary evidence for the Stage 1 Assessment Gateway (document deadline 14<sup>th</sup> September 2018, for the CAA's Assessment Gateway scheduled for 28<sup>th</sup> September).

At time of writing we are setting up more stakeholder engagement meetings where the topic will be Design Concept Options, i.e. discussions about more specific placement of routes, CAS volume dimensions and operational procedures. This is a major part of CAP1616 Stage 2 Develop and Assess.

The proposed CAP1616 timeline remains as per the CAA-agreed Stage 1 Assessment Meeting Minutes:

CAP1616 Item	Proposed Date
Stage 1 Define	28/09/18, document deadline 14/09/19
Stage 2 Develop & Assess	30/11/18, document deadline 16/11/19
Stage 3 Consult	25/01/19, document deadline 11/01/19
Stage 4 Update & Submit ACP	Mid May 2019
Stage 5 Decide	Late July 2019
Stage 6 Implement	AIRAC12/2019, deployment 07/11/19, AIS data deadline 09/08/19

End of document