Our Future Skies
London City Airport

Airspace Modernisation - Design Principles Development

June 2019

Content

1 Executive Summary

The UK's airspace is an essential part of our national transport infrastructure, however it is currently outdated and struggling to keep pace with growing demand; resulting in delays, unnecessary carbon emissions and flight paths that are not optimised to minimise noise. The Government has therefore committed to airspace modernisation, with the objective to deliver quicker, quieter and cleaner journeys with more capacity for the benefit of both passengers and communities. London City Airport is one of 15 airports that are part the airspace modernisation programme called 'Our Future Skies'.

The UK must make these changes by 2025 to maximise efficiency, minimise environmental impacts and bring us in line with global airspace changes, mandated by the International Civil Aviation Organisation (ICAO).

This is a government-led initiative, with the Civil Aviation Authority (CAA) as the regulator and primary decision-maker, responsible for administering the airspace change process and defining the requirements and timescales for delivery. NATS (the provider of air traffic control services for the whole of the UK airspace) have responsibility for redesigning airspace above 7,000ft, and airports will be redesigning departure and arrival routes below 7,000 ft. London City Airport has been requested to participate in this programme to ensure that arrival and departure routes at the airport are integrated with the wider network changes, and to ensure that benefits can be maximised across the UK.

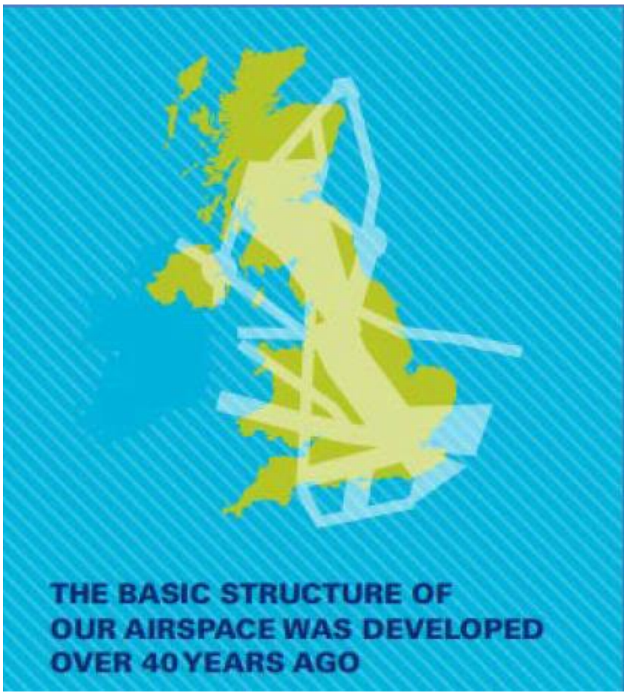
London City Airport is engaging with key stakeholders as part of the first stage of a broader airspace change process as defined by the CAA in a document entitled "CAP1616: Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements". The success of the programme will stem from early engagement with stakeholders alongside; maintaining transparency and keeping stakeholders informed throughout the process. We therefore invite organisations and groups with an interest in airspace around London City Airport to contribute to the development of our design principles. These design principles will form the high-level objectives for the programme, and provide a framework against which design options will be developed.

The purpose of this document is therefore to explain the context and benefits of airspace modernisation in more detail, describe the process through which this will be achieved, present our draft design principles, and explain how to feedback your views.

2 Context

2.1 Why modernise airspace?

Airspace in the south-east of England is some of the busiest in the world with five major airports in close proximity: Heathrow, Gatwick, Stansted, London City and Luton. In 1973 UK airports handled 720,000 flights but by 2017 they were handling 2.2 million flights in the same basic airspace structure.



The UK's airspace is an essential part of our national transport infrastructure. The network of routes keeps all aircraft flying safely and efficiently. However, designed in the 1950s, it is becoming outdated and struggling to keep pace with growing demand. It also fails to make use of the full capabilities of today's modern aircraft.

Applying the outdated design to current and anticipated demand has adverse environmental and operational implications, resulting in delays, unnecessary carbon emissions and flight paths that are not optimised to minimise noise.

Increases in demand and new routes over the past decades have led to an interwoven network of routes which makes singular improvements challenging.

The Department for Transport (DfT) anticipates sustained and significant increase in air traffic movements at all Southern England airports, which is driven by future passenger demand. This additional traffic will place further pressures on existing airspace capacity. Without a complete redesign of the airspace above London and Southern England we will face significant passenger disruption, personal and commercial costs and unnecessary environmental impacts.

The UK must therefore make changes by 2025 to meet projected growth, maximise efficiency, minimise environmental impacts and bring us in line with global airspace changes, mandated by the International Civil Aviation Organisation (ICAO), a part of the United Nations.

2.2 What are the benefits?

Early analysis suggests airspace modernisation across the UK could deliver up to 20% of annual savings in fuel burn and CO_2 emissions, and facilitate quicker climbs and later descents to help reduce noise on the ground. Forecasts indicate that by 2030 there will be demand for 30% more flights per year. We therefore need to modernise to improve safety and prevent future delays. New technology, such as satellite-based navigation, will also allow the industry to make best use of the capability of modern aircraft. However, this cannot happen without updating the existing airspace.

It is too early to say what benefits can be realised through this programme specifically for London City Airport flight paths, however the airport is supporting the programme to ensure the following benefits can be realised across the UK.

2.2.1 For the environment

Airspace modernisation will make it easier for airports to manage how noise impacts local communities. It will also make it easier for today's modern aircraft to fly to their full capability with quicker climbs and later descents to help reduce noise on the ground.

The 'stacking' of planes as we currently know it will end, where aircraft queue in a circular pattern waiting to land.

Early analysis by NATS suggests airspace modernisation could deliver up to 20% of annual savings in fuel burn and CO2 emissions, thereby reducing the impact of climate change.

2.2.2 For passengers

When we fly, we want to be confident we will arrive in our destination on time and make the most of our trip. Modernising our airspace will improve the resilience of our flights, so we can all avoid delays on our holidays and business trips.

It's not just our personal travel these changes will help protect, but time-critical medicines and other perishables imported from markets around the world which rely on having flights arriving on time.

2.2.3 For businesses

The UK's aviation network is the largest in Europe and the third largest in the world. The sector contributes £50 billion into our economy each year and supports 960,000 jobs, whilst facilitating growth in numerous other industries.

Businesses rely on aviation, from just-in-time deliveries, to global export opportunities and international business meetings. More frequent flights and fewer delays can allow businesses to grow by making aviation cheaper and more reliable. Airspace modernisation across Europe will provide capacity for the aviation industry to deliver £29 billion to UK GDP and create a further 116,000 jobs by 2035.

2.3 What isn't affected by this programme?

It is important to note that airspace modernisation relates only to the design of the airspace and not the use of the airspace. This programme does not therefore affect or have any influence over the number or type of aircraft currently operating at London City Airport, or the times at which the airport is operating. Airspace modernisation is not related to the development or growth of the airport in any way.

2.4 LAMP 1A

In February 2015, NATS submitted an Airspace Change Proposal (ACP) titled the London Airspace Management Programme (LAMP) Phase 1A to the CAA. LAMP Phase 1A was a major airspace change initiated by the CAA, designed to deliver modifications to airspace arrangements, affecting a broad swathe of south-east England, from Stansted to the Isle of Wight, in order to provide capacity, efficiency and environmental benefits. This proposed changes to airspace in the south-east of England including proposals to change a number of arrival and departure procedures at several aerodromes. There were five individual elements of the LAMP Phase 1A proposal, one of which was supported by London City Airport. This replicated existing departure and arrival routes whilst introducing a variation of modern performance-based navigation technology known as RNAV-1 (area navigation).

These changes were approved by the CAA in November 2015 and implemented by London City Airport in 2016, resulting in over 1.2 million people no longer being overflown up to 7,000 ft. The more accurate navigation system also allowed aircraft to climb higher and faster, further reducing the noise impacts for residents and businesses.

'Our Future Skies' will not be reversing the changes made under LAMP 1A, but allows the airspace arrangements to be further reviewed to determine if additional benefits can be realised.

3 The process

3.1 Who's involved

Government

The DfT is responsible for all aviation policy in the UK, including airspace. The CAA is the organisation responsible for its regulation and for the Airspace Change Process which all airports must follow. This is a government-led initiative, and as the aviation regulator, the CAA is the primary decision-maker, responsible for administering the airspace change process and defining the requirements and timescales for delivery.

Airports and NATS

Any proposed airspace change must have a designated change sponsor. This is usually an airport or a provider of air navigation services (including air traffic control) such as NATS. The CAA requires the change sponsor to follow a set process when implementing a permanent change to the published airspace. Airports are responsible for their arrival and departure routes up to 7000ft. These will then link into the changes which NATS are sponsoring. NATS are responsible for en-route airspace encompassing anything above 7000ft in altitude.

Stakeholders

Stakeholder representatives must be engaged at key stages in the airspace change process; these stakeholder representatives include: Local councils, MPs, community & business groups, airlines and other affected stakeholders who may be impacted by airspace change. The key engagement stages in the airspace change process are;

i. **Design principles**: key stakeholders are engaged on the design principles which will be used to form a framework against which airspace design options will be developed and evaluated.
ii. **Design options**: key stakeholders are engaged regarding design options throughout their development

iii. **Formal consultation**: all stakeholders including members of the public and local buisnesses will be consulted on the options for change.

London City Airport will also engage with neighbouring airports, aerodromes and other airspace users on the deconfliction of airport route options, to ensure that if routes overlap, that these are adequately separated by altitude to maintain safety.

The airspace change governance structure is detailed in annex 'b' of CAP 1711.

3.2 The airspace change process

The process that must be followed to deliver airspace change is defined by the CAA in a document entitled "CAP1616: Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements".

The stages of the process are laid out in figure 1 below. London City Airport has completed the initial step 1A and this document represents part of step 1B, engaging with key stakeholders in the development of design principles. A "Gateway" indicates the need for a sign-off from the CAA to progress to the next stage.

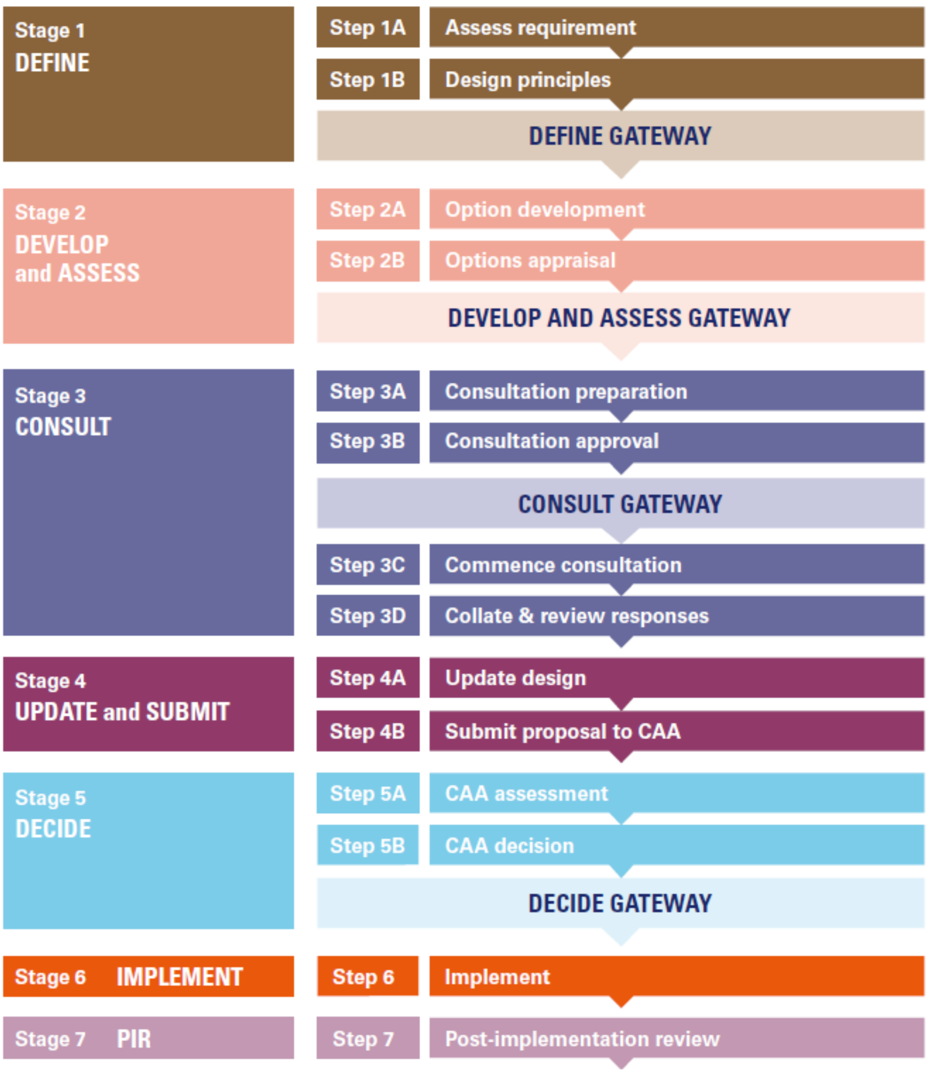


Figure 1. CAP1616 Process for Airspace Change

Further detail on the remaining stages is as follows:

- **Stage 2**: the change sponsor develops options for the airspace change. In Step 2B the airport carries out an appraisal of the environmental and operational impacts of the different options.
- **Stage 3**: the airport prepares its consultation strategy. The CAA approves the strategy following which the consultation is launched, and responses collated and reviewed.
- **Stage 4** : the airport considers the need to update the design of the airspace change in the light of stage 3. The airport then makes the formal submission of the airspace change proposal to the CAA (Step 4B).
- **Stage 5**: the CAA assesses the airspace change proposal and reaches an evidence-based conclusion in line with their statutory duties.
- **Stage 6**: the airport implements the approved change, working with air navigation service providers and other industry stakeholders as necessary.
- **Stage 7**: the CAA conducts a post-implementation review, usually 12 months after implementation.

3.3 Timeframe

Our Future Skies is a nation-wide programme to modernise airspace, and therefore any changes made at London City Airport will need to be integrated into the wider programme, collaborating with NATS and other airports to ensure the benefits from the programme as a whole are maximised. Following stage 2, it is intended that all airports participating will progress through the remaining stages together in order to facilitate this.

Due to the complexity of the process, the entire programme is not due to be completed before 2025. It is however critical that London City Airport progresses in line with other airports to ensure that local considerations are taken into account.

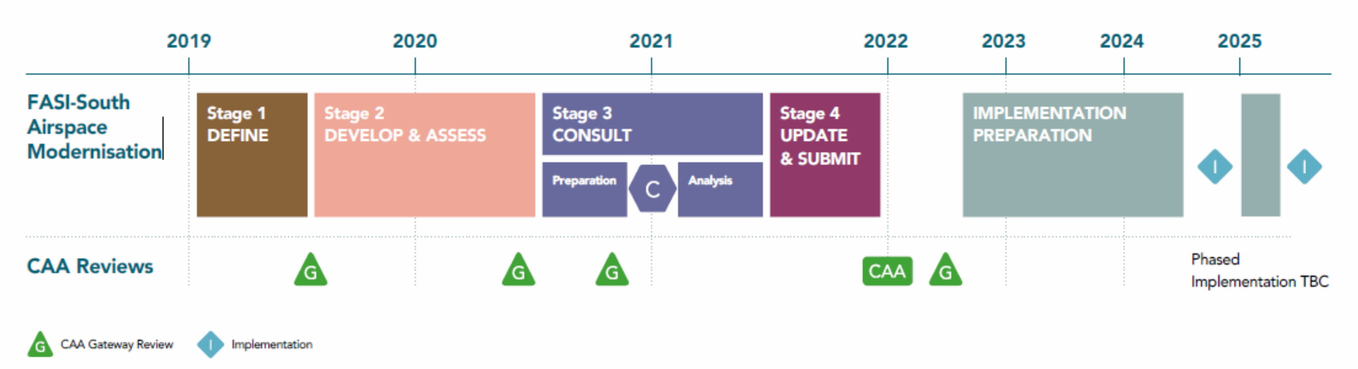


Figure 2. Programme for delivery of airspace modernisation

4 Design principles

4.1 What are design principles?

Design principles form a qualitative framework against which airspace change design options will be developed and evaluated in the future stages of the CAP1616 process. They encompass safety, regulatory, environmental and operational criteria and strategic policy objectives. Step 1B of the CAP1616 process requires London City Airport to develop a set of design principles.

4.2 London City Airport's draft design principles

The following draft design principles have been developed with initial input from some of our closest stakeholders. Following engagement and consideration of the feedback, the principles will be finalised to detail which ***must*** be achieved through the airspace design, and which ***should*** be achieved. For those that ***should*** be achieved, a priority rating will be developed based on feedback.

The design principle regarding aircraft noise has been further broken down to consider different options for achieving this objective; following further engagement and review of the feedback, these requirements will also be prioritised. It is therefore not unusual at this stage that some principles might contradict each other.

Tier 1 (MUST) design principles	Rationale
Must maintain (and ideally enhance) current safety standards	Safety is at the forefront of everything London City Airport does. It is crucial that a new airspace design maintains and where possible exceeds current safety standards.
Must be in compliance with all laws and regulations	To maintain safety and ensure effective integration with the wider airspace.
Must enhance navigation standards by utilising modern navigation technology	Aircraft capabilities have dramatically increased in the last few decades. In order to release these capabilities and maximise the benefits these bring, arrival and departure routes must be designed to make full use of modern navigation technology.
Must provide sufficient capacity to support future demand	If the capacity is not increased, passengers will face increased delays or restrictions in flying as demand is anticipated to rise.

Tier 2 (SHOULD) design principles	Rationale
Should minimise the amount of fuel used and the CO_2 subsequently emitted	Minimising fuel use (typically by flying a more direct route) lowers carbon emissions and thereby helps to mitigate the impacts of climate change.
Should limit and where possible reduce aircraft noise	Aircraft noise should be limited and reduced where possible to reduce the impact on local communities.
Should minimise air pollution in the local area from aircraft	To maintain a healthy environment for local communities.
Should improve resilience during abnormal operating conditions	Maintaining operations in abnormal scenarios is vital to prevent delays and disruption. If one departure route was not operational for a short time (e.g. due to localised extreme weather events) then another may be used temporarily to enable the aircraft to depart. Its course will then be amended towards its final destination further down-route.

	Noise Mitigation	Description
A	Use noise efficient operational practices	To operate in a way that minimises the noise impact e.g. maximising altitude wherever possible.
B	Minimise the number of people newly overflown	To avoid exposing areas to aircraft noise who are currently not exposed.
C	Maximise sharing through predictable respite routes	Operate multiple arrival and departure routes, and alternate between these routes at different times of the day or days of the week. This would allow communities to have predictable periods of respite.
D	Avoid overflying communities with multiple routes, including from other airports	We realise this is occasionally an issue at present and we will take this opportunity to work with other airports to find a solution for this.
E	Maximise sharing through managed dispersal	Operate multiple arrival and departure routes, and direct aircraft along these different routes throughout the day. This would spread the noise across a wider area, exposing more people to noise, but reducing the noise impact that any one area experiences.
F	Minimise the total population overflown	Concentrating aircraft along defined routes to minimise the total number of people exposed to aircraft noise.
G	Avoid overflying noise sensitive areas e.g. schools, hospitals, care homes.	To minimise the exposure to aircraft noise for people in our community who are most sensitive.

5 How to share your views

A key element in the development of these design principles is stakeholder engagement. London City Airport believes the success of the programme will stem from early engagement with stakeholders; maintaining transparency and keeping stakeholders informed throughout the process. We will therefore be contacting key stakeholders directly and welcome your views on these design principles.

Please share your response using the response form below, and send it by email to ourfutureskies@londoncityairport.com by 25th August 2019, or alternatively by letter to:

Our Future Skies
London City Airport
Royal Docks
London
E16 2PB

Alternatively you can reply by clicking on this link and completing the form.

If you are a member of the public or another stakeholder who has not been directly approached and wish to comment on these design principles please email the above address with your comments, who you are, and why the London City Airport airspace modernisation is relevant to you. London City Airport may not be able to provide a personalised response to your comment but will consider all the points raised. All stakeholders including members of the public will be afforded the opportunity to respond in the statutory consultation stage later in the CAP1616 process, when detailed route design options will be considered.

We hope that this document provides all the information you need to respond but should any aspect require further clarification please email us using the email address above and we'll endeavour to respond.

We will also be holding workshops during the engagement period that a representative from your organisation is welcome to attend if they wish to discuss this face-to-face. These will be held on:

- 15:30-17:00, Monday 22nd July
- 09:00-10:30, Wednesday 24th July

If you would like to attend one of these workshops, please email ourfutureskies@londoncityairport.com stating your preferred date by 5th July. The workshop attendance will be handled on a first come, first served basis and event details will be confirmed 5 working days in advance.

6 Response form

Name:

Company/Organisation (where applicable):

Date:

Q1	**Tier 1 Design Principles**		
Q1a	**Do you agree that the following design principles *must* be achieved?**		**Yes/No**
	A	Must maintain (and ideally enhance) current safety standards	
	B	Must be in compliance with all laws and regulations	
	C	Must enhance navigation standards by utilising modern navigation technology	
	D	Must provide sufficient capacity to support future demand	
Q1b	**Are there other design principles that *must* be achieved?**		

Q2	**Tier 2 Design Principles**	
Q2a	**In what order would you prioritise the following design principles?**	
	Design principle	Priority rating (1-4 where 1 is high and 4 is low)
	Should minimise the amount of fuel used and the CO_2 subsequently emitted	
	Should limit and where possible reduce aircraft noise	
	Should minimise air pollution in the local area from aircraft	
	Should improve resilience during abnormal operating conditions	
Q2b	**Are there other design principles that *should* be achieved?**	

Q2c	**Are there any design principles that should be removed from the list in Q2a?**
Q3	**Noise Mitigation**
Q3a	**In what order would you prioritise these noise mitigation options?**

	Design principle	Priority rating (1-7 where 1 is high and 7 is low)
A	Use noise efficient operational practices	
B	Minimise the number of people newly overflown	
C	Maximise sharing through predictable respite routes	
D	Avoid overflying communities with multiple routes, including from other airports	
E	Maximise sharing through managed dispersal	
F	Minimise the total population overflown	
G	Avoid overflying noise sensitive areas e.g. schools, hospitals, care homes.	

Q3b	**Are there other noise mitigation options we should consider and how would you prioritise them relative to your response in Q3a?**
Q4	**Do you have any further comments?**

7 Further Information

CAP1711: Airspace Modernisation Strategy
CAP1711b: Governance Annex to CAP1711
CAP1616: Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements

Our future Skies – FAQs: https://www.ourfutureskies.uk/media
Government guidance: https://www.gov.uk/guidance/airspace-modernisation

8 Glossary

ACP	Airspace Change Proposal
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CO_2	Carbon Dioxide
DfT	Department for Transport
GDP	Gross Domestic Product
LAMP	London Airspace Management Programme
RNAV	Area Navigation