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Airspace Modernisation

Design Principles Workshop

Introduction

- The Government has identified the need to modernise existing airspace to improve capacity, operational efficiency and environmental performance.

- **"Our Future Skies"** (the Government's airspace modernisation programme) has been launched, forecast to be complete by 2025.

- NATS are developing an ACP to modernise the airspace structure and route network above 7,000 ft.

- Airports in the south-east have been requested to develop complimentary ACPs to ensure future arrival and departure routes link with these high-level changes and to maximise the benefits.

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Benefits

- Maximise efficiency
- Maintain and improve safety
- Improve resilience
- Accommodate future demand
- Reduce delays
- Aim to improve climb and descent profiles
- Aim to reduce carbon emissions through reduced fuel burn
- Aim to reduce noise impacts

Who's involved?

CAA

Initiator, regulator,

Defines process publishes guidance

Airports

Change Sponsor for departure and arrival routes up to 7,000 ft

Stakeholders

Provide feedback through engagement and consultation

NATS

Change sponsor for en-route network changes (above 7,000 ft)

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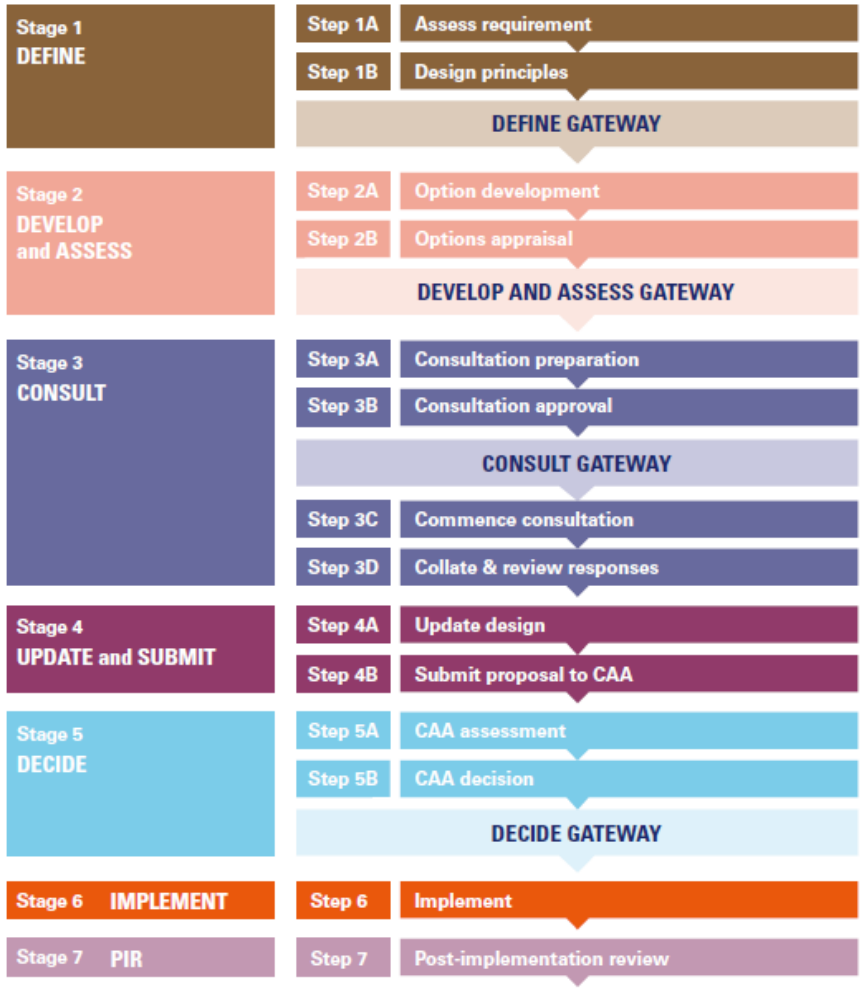
Process

The airspace change process (permanent changes to the notified airspace design)

Figure 1: Overview of the airspace change process



Timeline

CAP1616 Gateways – Completion dates	Indicative Timeline
Assessment meeting	Complete
Stage 1A – Define (Statement of need)	Complete
Stage 1B – Design Principles	
Develop with LCACC sub-group	May 2019
Full engagement	June – August 2019
Submission to CAA	September 2019
Gateway meeting with CAA	October 2019
Stage 2 – Develop and assess design options	Q2 2020
Stage 3 - Consult	Q2 2021
Stage 4 – Update and Submit	Q1 2022
Stage 5 - Decide	Q3 2022
Stage 6 - Implement	2024/25

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Design Principles

- Design principles encompass the safety, environmental and operational criteria and strategic policy objectives that the change sponsor aims for in developing the airspace change proposals.

- The design principles form a framework against which airspace change design options will be developed and evaluated in the future stages.

- They can be contradictory. Principles are therefore typically given a priority rating.

Design Principles – Wider Engagement

- Two months (June-August)
- Two workshops held during that period to provide face-to-face engagement
- Letters sent and information published on website
- Key stakeholders including:
  - Local MPs
  - Local Councils (overflown up to 7,000 ft)
  - GLA
  - LCACC
  - Airlines
  - NATMAC (National Air Traffic Management Advisory Committee)
  - Community Groups
  - ICCAN

	Heathrow's Airspace Design Principles for Expansion
1.	Must be safe
2.	Must meet Airports NPS requirements[5], including capacity
3.	Must meet 3 Airports NPS noise policy tests[6]
4.	Must meet local air quality requirements
5.	Must meet commitments to the UK's Future Airspace Strategy
6.	Should limit, and where possible reduce, local noise effects from flights by:
	a. Using more noise efficient operational practices
	b. Minimising number of people newly overflown
	c. Maximising sharing through predictable respite
	d. Avoiding overflying communities with multiple routes
	e. Maximising sharing through managed dispersal
	f. Minimising total population overflown
	g. Designing flight paths over commercial and industrial areas
	h. Where appropriate, prioritising routing flight paths over parks and open spaces (rather than over residential areas), but avoiding overflight of Areas of Outstanding Natural Beauty (AONB))
7.	Minimise fuel/CO2/greenhouse gases per flight
8.	Ensure operational efficiency and resilience to maximise benefits to all stakeholders
9.	Base our airspace design on the latest navigation technology widely available
10.	Minimise impact on other airspace users

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Gatwick

Gatwick's Design Principles (for engagement)	Priority rating
Safer by design	Core Principle
Enhanced navigation standards	Core Principle
Adaptable and predictable routes	Potential principle
Deconfliction by design	Potential principle
Time based arrival operations	Potential principle
Promotes enhanced aircraft capabilities	Potential principle
Number of routes	Area of consideration
How to manage impact of overflight	Area of consideration
Operational efficiency v impact	Area of consideration
Extent of operational resilience	Area of consideration

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Luton Airport's Design Principles

Design Principle	Priority
Designs must meet the acceptable levels of flight safety	1
The design must be technically flyable and maintain existing operational performance and capacity.	1
Minimise the impact of noise to 7000ft	2
Enable more continuous climb (climb higher sooner)	4
Do not overfly communities with departures that are already overflown by arrivals	4.7
Avoid exposing new communities to aircraft noise	4.8
Beyond 7000ft priority is on the efficiency of airspace and the most expeditious routing	5.7
Minimise the need for vectoring to ensure predictability of aircraft tracks	6.2
Develop alternative routes within one NPR for concentrated dispersal	6.8
Work within existing airspace boundaries	6.8
Avoid noise sensitive buildings e.g. schools, hospitals	7.8
Develop alternative routes to be used to offer respite	8
Minimise NOx emissions below 1,000ft	9.2

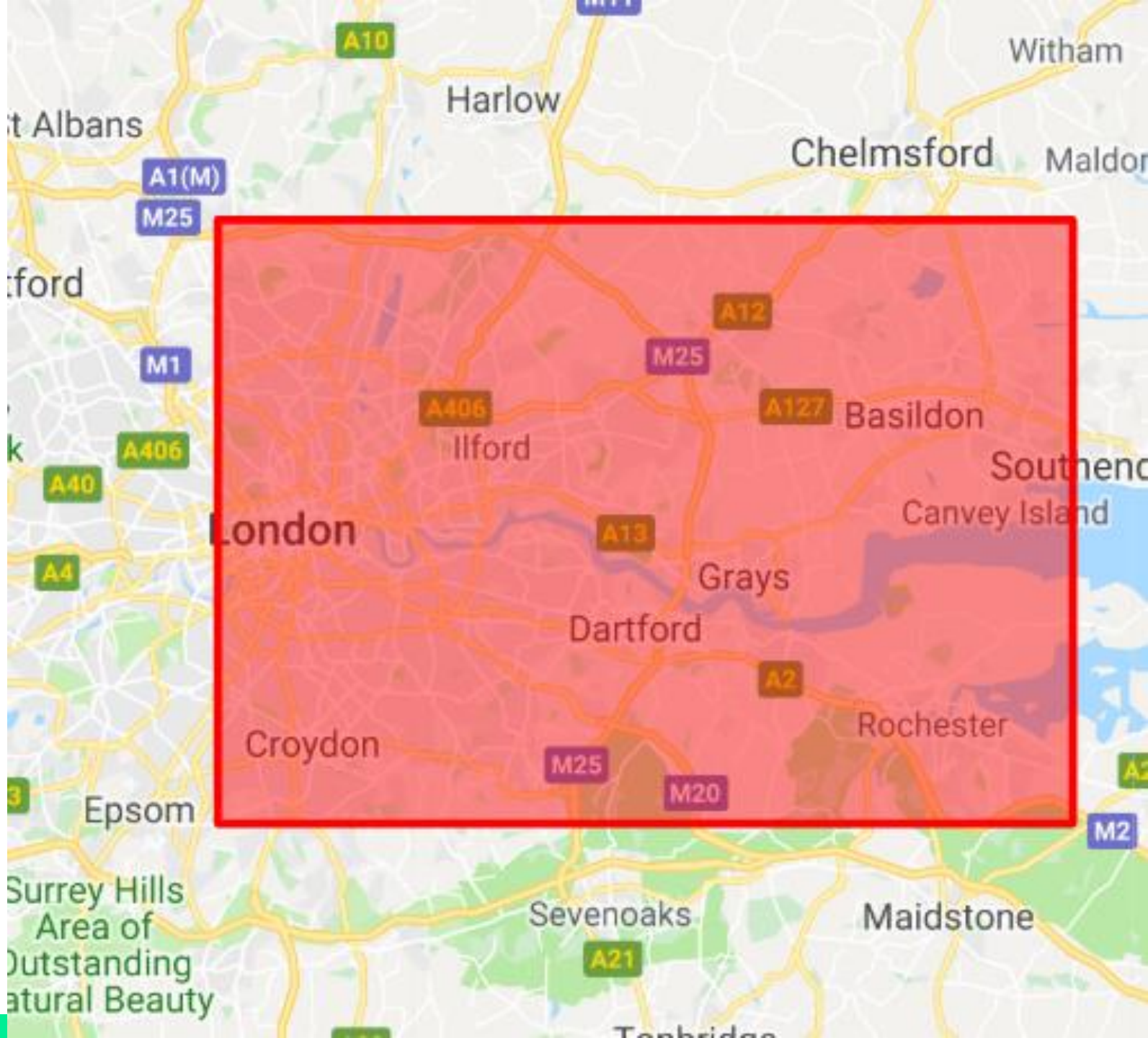
Northolt

Proposed Design Principle	Reasoning
Must be safe	Provide a safely designed airspace structure and routes, to ensure the safe operation of aircraft
Must ensure continuation of military and governmental operational activity	RAF Northolt must be able to operate to its current commitments and future Defence requirements
General design of the ACP	Reasoning
Should minimise impact on other airspace users	Minimise dependencies on other airspace users, including neighbouring airports, and consider opportunities to give away airspace that is not required for future operations
Should facilitate design using modern navigational technology	Airspace and routes designed favouring the latest navigational technology
Should facilitate operational efficiencies to maximise benefits to all stakeholders	Flight paths that minimise the workload of pilots and air traffic control, as well as design more efficient routes
Should minimise fuel and greenhouse gases (for civil operations)	Seek to minimise the amount of fuel and CO2 emissions produced. Consideration of short, direct flight paths
Should minimise the impact of aircraft noise	Comply with government regulation and policy on noise impact. Aim to reduce effects on health and quality of life by considering local circumstances
Minimising the impact of aircraft noise	Reasoning
Minimise the number of people newly overflown	Limit designing new routes over those people who are not currently overflown by keeping routes as close to today's flight paths as possible
Minimise the total number of people affected by noise	Reduce the number of people overflown by aircraft. This would lead to aircraft concentrated over a smaller number of routes
Consider fewer people affected, but more noise	A steeper climb gradient would result in a potential increase in noise, but over a smaller area

Draft LCY Design Principles – For discussion

Tier 1 (MUST)
Must maintain (and ideally enhance) current safety standards
Must be in compliance with all laws and regulations
Must enhance navigation standards by utilising modern navigation technology
Must provide sufficient capacity to support future demand
Must minimise the amount of fuel used and the CO_2 subsequently emitted
Tier 2 (SHOULD)
Should minimise air pollution in the local area
Should limit and where possible reduce aircraft noise
Should improve resilience during abnormal operating conditions
Noise Mitigation
Use noise efficient operational practices
Minimise the number of people newly overflown
Maximise sharing through predictable respite routes
Avoid overflying communities with multiple routes, including from other airports
Maximise sharing through managed dispersal
Minimise the total population overflown
Avoid overflying noise sensitive areas e.g. schools, hospitals, care homes.

Potential areas that will be affected (up to 7,000 ft)

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