

ROYAL AIR FORCE NORTHOLT DESIGN PRINCIPLES

1. This table lists the design principles RAF Northolt will submit to the CAA. Design Principles 1 and 2 are prioritised above all others. There is no priority accorded to the remaining design principles.

	Design Principle	Rationale
1.	Must be safe	Provide a safely designed airspace structure and routes, to ensure the safe operation of aircraft. A priority requirement ¹
2.	Must ensure continuation of military and governmental operational activity	RAF Northolt must be able to operate to its current commitments and future Defence requirements. A priority requirement ²
3.	Should minimise impact on other airspace users	Minimise dependencies on other airspace users, including neighbouring airports, and consider opportunities to reduce controlled airspace
4.	Should facilitate design using modern navigational technology	Airspace and routes designed favouring the latest navigational technology
5.	Should facilitate operational efficiencies to maximise benefits to as many stakeholders as possible	Flight paths that minimise the workload of pilots and air traffic control, as well as design more efficient routes
6.	Should minimise fuel and greenhouse gases	Seek to minimise the amount of fuel and CO2 emissions produced
7.	Should minimise the impact of aircraft noise by:	Comply with government regulation and policy on noise impact. Aim to reduce effects on health and quality of life by considering local circumstances
	a. Minimising 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
	b. Minimising 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
	c. Where possible minimise overflight of communities with multiple routes	Some communities could be affected by flight paths from different airports

¹ In accordance with the Transport Act of 2000, Section 70, where the CAA 'secures the most efficient use of airspace consistent with the safe operation of aircraft'.

² In accordance with the Transport Act of 2000, Section 70, where the CAA 'takes account of the interests of national security'.

2. This table outlines what changes have been made to the design principles and explains the reasoning behind the changes.

	Proposed Design Principle	Rationale	Stakeholder Feedback	RAF Northolt Comment
1	Must be safe	Provide a safely designed airspace structure and routes, to ensure the safe operation of aircraft	Expected safety should be a priority	Covered by this design principle
2	Must ensure continuation of military and governmental operational activity	RAF Northolt must be able to operate to its current commitments and future Defence requirements	Operational output is the priority	Covered by this design principle
3	Should minimise impact on other airspace users	Minimise dependencies on other airspace users, including neighbouring airports, and consider opportunities to reduce controlled airspace give away airspace that is not required for future operations	Concern there would be an increase in commercial traffic at RAF Northolt Prefer to see a reduction in controlled airspace Concern this would involve airspace being handed over to other airports, increasing noise and flight paths over communities	RAF Northolt commercial flights are capped at 12000 movements a year CAP 1711 aims to achieve the most efficient use of airspace (Chapter 1 para 11). The wording of the rationale has been changed to reflect what RAF Northolt aims to achieve with this ACP in line with CAP 1711 – Airspace Modernisation Strategy We cannot be responsible for the use of airspace beyond what RAF Northolt requires. Any change to airspace usage is through the approval of the CAA under the CAP 1616 process
4	Should facilitate design using modern navigational technology	Airspace and routes designed favouring the latest navigational technology	Articulate a minimum navigational standard, eg RNAV1 Concern for legacy systems not equipped with Performance-Based Navigation ³ Provide respite	RAF Northolt cannot commit to a minimum navigational standard due to military aircraft requirements Noted There is a defined flying window for commercial air movements ⁴ . As flights are unscheduled, this makes planning

³ For an explanation of Performance-Based Navigation see <https://www.caa.co.uk/Performance-based-navigation/>

⁴ Mon-Fri 0800-2000. Sat 0800-1500. Sun and bank holidays 1200-1900. Military aircraft attempt to adhere to these timings but may fly as required to meet operational requirements.

	Proposed Design Principle	Rationale	Stakeholder Feedback	RAF Northolt Comment
				for respite difficult to achieve, beyond defined flying windows. Notwithstanding this, due to the number of commercial moves involved, periods of respite naturally occur during the flying window ⁵ . Respite has therefore not been taken forward as a design principle for this ACP
5	Should facilitate operational efficiencies to maximise benefits to all stakeholders as many stakeholders as possible	Flight paths that minimise the workload of pilots and air traffic control, as well as design more efficient routes	Question raised as to whether all stakeholders could benefit at the same time from operational efficiencies	Wording amended
6	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	Concern raised that short, direct flight paths might not be environmentally efficient	Relevant section has been removed No need to highlight civil operations
7	Should minimise the impact of aircraft noise by:	Comply with government regulation and policy on noise impact. Aim to reduce effects on health and quality of life by considering local circumstances	Provide respite/consider more routes to vary impact of those frequently overflown	There is a defined flying window for commercial air movements ⁶ . As flights are unscheduled, this makes planning for respite difficult to achieve, beyond defined flying windows. Notwithstanding this, due to the number of commercial moves involved, periods of respite naturally occur during the flying window ⁷ . Respite has therefore not been taken forward as a design principle for this ACP
	a. Minimising 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	Supported by stakeholders	No change to design principle
	b. Minimising 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	Supported by stakeholders	No change to design principle

⁵ Commercial aircraft moves are capped at 12000 per annum.

⁶ Mon-Fri 0800-2000. Sat 0800-1500. Sun and bank holidays 1200-1900. Military aircraft attempt to adhere to these timings but may fly as required to meet operational requirements.

⁷ Commercial aircraft moves are capped at 12000 per annum.

	Proposed Design Principle	Rationale	Stakeholder Feedback	RAF Northolt Comment
	e. Considering fewer people affected, but more noise	A steeper climb gradient would result in a potential increase in noise, but over a smaller area	<p>Feedback inconclusive. People stated that without details about planned flightpaths, they were unable to comment about where noise impact should lie</p> <p>Concern raised that work being undertaken by other airports needed to be considered, which was an issue that stakeholders would take up with the Department for Transport and CAA</p>	Design principle removed as no way forward could be identified from the stakeholder feedback. The remaining noise design principles still provide sufficient assessment of the impact of noise
	d. Considering more people affected, but less noise	A shallower climb gradient would result in potential reduction in noise, but over a larger area	<p>Feedback inconclusive. People stated that without details about planned flightpaths, they were unable to comment about where noise impact should lie</p> <p>Concern raised that work being undertaken by other airports needed to be considered. Stakeholders would take up with the Department for Transport and CAA</p>	Design principle removed as no way forward could be identified from the stakeholder feedback. The remaining noise design principles still provide sufficient assessment of the impact of noise
	e. Prioritising flight paths over rural areas rather than urban areas	Favour routes over rural areas, rather than residential areas in towns and cities	<p>Areas of Outstanding Natural Beauty should not be overflown</p> <p>Residential areas should not be overflown</p>	Design principle removed as no way forward could be identified from the stakeholder feedback. The remaining noise design principles still provide sufficient assessment of the impact of noise

3. This table lists design principles suggested by our stakeholders and explains RAF Northolt's response.

	Proposed Design Principle	Rationale	RAF Northolt Comment
8	Avoid overflight of communities with multiple routes from different airports	Some communities could be affected by the flight paths from different airports	Suggestion accepted with some changes to the wording, added as noise design principle
9	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	A design principle is required that takes into account the Transition Altitude and the interaction with other airport routes	This suggestion is too technical to be included as a design principle. It affects all airports involved in the redesign of UK airspace and not just RAF Northolt. The issue should be addressed jointly by the London Airspace Management Project, as the organisation responsible for implementing airspace changes across the UK above 7000 feet and the Future Airspace Strategy Implementation (South) Working Group