

FARNBOROUGH  
AIRPORT

# FARNBOROUGH AIRPORT FASI-S AIRSPACE CHANGE PROPOSAL

**ACP-2022-038**



## **Annex 1**

### **Design Principle Evaluation**

**VERSION 1.0**

No	Design Principle	Detailed Criteria	Approach to Evaluation	Met	Partially Met	Not Met	
1	Must be as safe or safer than today for all stakeholders that are affected by the airspace change	N/A	A qualitative assessment undertaken by SME as to whether the option is expected to maintain or improve safety, whether further safety assurances will be required or whether there are issues identified which could be detrimental to safety. To support the assessment, FAL procured 6 months of Electronic Conspicuity (EC) data for the area around Farnborough Airport's airspace. The data includes signals received from Mode S, ADSB, FLARM and Pilot Aware but does not and can not take account of non-conspicuous aircraft. This analysis is presented in Appendix A.	Maintains existing level of safety, or improves on it inside and outside CAS	Expected to maintain existing level of safety, or improve on it for Farnborough's operations inside CAS. Small changes to CAS may be required and, whilst it may have an impact, it's not possible to ascertain at this time whether it would be detrimental to safety.	Issues identified which could be detrimental to safety	
2	Accord with: a) the CAA's published airspace modernisation strategy (CAP1711) and any current or future plans associated with it b) Air Navigation Guidance 2017 & other relevant policy and legislations	Safety	The outcome of DP1 will be used to evaluate this AMS objective	Evaluated in DP1 and met that design principle	Evaluated in DP1 and Partly Met that design principle	Evaluated in DP1 and did not meet that design principle	
		Integration of diverse users	The outcome of DP4C, DP4D and DP5 will be used to evaluate this AMS objective	Evaluated in DP4C, DP4D and DP5 and met all those design principles	Evaluated in DP4C, DP4D and DP5 and a mixture of Met, Partly Met and Not Met those design principles	Evaluated in DP4C, DP4D and DP5 and did not meet all those design principles	
		Simplification, reducing complexity and improving efficiency	The outcomes of DP4, DP5, DP7 and DP8 will be used to evaluate this AMS objective	Evaluated in DP4, DP5, DP7 and DP8 and met all those design principles	Evaluated in DP4, DP5, DP7 and DP8 and a mixture of Met, Partly Met and Not Met those design principles	Evaluated in DP4, DP5, DP7 and DP8 and did not meet all those design principles	
		Environmental sustainability	The outcomes of DP4 and DP6 will be used to evaluate this AMS objective.	Evaluated in DP4 and DP6 and met all those design principles	Evaluated in DP4 and DP6 and a mixture of Met, Partly Met and Not Met those design principles	Evaluated in DP4 and DP6 and did not meet all those design principles	
		<b>Overall AMS Evaluation</b>			All evaluations Met	All evaluations Partly Met or a Mixture of Met, Partly Met and Not Met.	All evaluations not met
		Minimise and where possible reduce the total adverse effects on health and quality of life from aircraft noise	ANG states that the Lowest Observed Adverse Effect Level (LOAEL) is regarded as the point at which adverse effects begin to be seen on a community basis. This qualitative assessment considers whether there are any aspects of each option which may affect the position and size of the LOAEL and if so, whether it could be expected to increase or decrease population numbers within it. This is performed using the extent of the forecast 2031 With Planning Consent LOAEL, that is within FAL's planning application to Rushmore Borough Council and which we featured within our Stage 2 engagement material along side a population density map.	Option could be expected to offer a reduction in the number of people within the LOAEL, subject to further modelling	Option could have minor effect or not expected to have any effect on the LOAEL	Option could be expected to generate an increase in the number of people within the LOAEL, subject to further modelling	
		Air Quality	A qualitative statement on whether the options could be expected to affect local air quality. ANG2017 states that due to the effects of mixing and dispersion, emissions from aircraft above 1000 feet are unlikely to have a significant impact on local air quality. If an option has a change to flightpaths below 1000ft it will be evaluated as 'Partially Met' however further analysis will be required to determine the scale of change to local air quality. If an option has no change to flightpaths below 1000ft it will be evaluated as 'Met'.	No change below 1000ft expected therefore option is unlikely to affect local air quality	Option has potential to affect local air quality below 1000ft	N/A - Not possible to ascertain without detailed modelling	
Tranquillity	A qualitative assessment which compares the overflight of Surrey Hills North Wessex Down AONBs and South Downs National Park of each option compared to Option 1 (Do Nothing)	Option can be seen to have a reduction in overflight	No Change or not possible to ascertain at this stage	Option clearly increases the area overflow			
Ecology and/or biodiversity	CAP1616 Ed4 (p.162 and p.173) says that most airspace change proposals are unlikely to have an effect upon biodiversity. Though there is limited research available on the effects of aircraft noise on wildlife, there is some evidence that disturbance effects associated with aircraft can occur during take-off and landing where aircraft are below around 500m (~1,640ft). Consideration will therefore be given to the effects on ecology and biodiversity where options overfly Special Protection Areas, Special Areas of Conservation, and Sites of Special Scientific Interest below 2000ft. For the purposes of our assessment ecology is equivalent to biodiversity as described in CAP1616. This is a qualitative assessment which considers whether the average overflight contours of each option have potential to affect any of these environmental sites below 2000ft.	No change to sites currently overflow	A change of overflight of existing sites could occur below 2000ft	N/A - Not possible to ascertain if there is a significant impact without extensive analysis			
CO2	See DP4b.						
<b>Overall DP 2 Evaluation</b>							
3	Shall not constrain the ability to meet forecast demand for Farnborough Airport	A qualitative SME assessment of whether the option has any characteristics which could constrain the ability to meet forecast demand for Farnborough Airport	Expected to meet forecast demand	N/A	Not expected to meet forecast demand		
4	Improve vertical profiles compared to the baseline published SID/STAR levels, to enable:	a) a reduction in population numbers affected by noise	A qualitative assessment of whether the option is expected to improve vertical profiles which would therefore lead to a reduction in population numbers affected by noise. This assessment assumes that changes to Heathrow and Gatwick does enable improved profiles for Farnborough for all options other than Option 1 (Do Nothing). Note this assessment as not been informed by noise analysis however the IOA will provide some quantitative assessment of potential noise impacts.	Expected to improve vertical profiles to/from Farnborough	No Change expected	Expected to degrade vertical profiles to/from Farnborough	
		b) a reduction in CO2 emissions per flight from Farnborough aircraft	A qualitative SME assessment of whether the option can be expected to reduce, increase or not change CO2 emissions compared to Option 1 (Do Nothing).	Option expected to reduce emissions	No Change	Option expected to increase emissions	
		c) a reduction in the volume and where possible, complexity of Farnborough Airport's CAS	A qualitative SME assessment of whether the option is expected to reduce, maintain or increase the volume and complexity of Controlled Airspace.	Has potential to reduce the total volume of CAS	No Change	Has potential to increase the total volume of CAS	
		d) a reduction in the reliance on tactical intervention	A qualitative SME assessment of whether the option is expected to reduce, maintain or increase the level of tactical intervention compared to Option 1 (Do Nothing)	Expected to decrease the level of tactical intervention	No Change	Expected to increase the level of tactical intervention	
<b>Overall DP4 Evaluation</b>							
5	Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users	A qualitative SME assessment of whether the option is expected to reduce, maintain or increase the level of dependencies with adjacent ATC units compared to Option 1 (Do Nothing)	Expected to reduce dependencies	No Change	Increases dependencies		
		A qualitative SME assessment of whether the option is expected to minimise the impact on other airspace users	Minimises impact	No Change	Expected to worsen the impact		
<b>Overall DP5 Evaluation</b>							
6	Where lateral changes to existing tracks are required to achieve improved environmental and operational performance, options should:	a) deliver an overall reduction in flight planable track miles	This is the same assessment as DP4b	Overall reduction in miles	No Change	Overall increase in miles	
		b) minimise population numbers newly overflow	A visual assessment of the scale of change between the Average Overflight Contours of the option and the existing area overflow (the full swathe) by Option 1 (Do Nothing)	Average overflight cones wholly contained within existing Do Nothing Swathe	Some excursion of the Average overflight cones from the Do Nothing Swathe	Significant change excursion of the Average overflight cones from the Do Nothing Swathe	
		c) avoid overflying the same communities with multiple routes to & from Farnborough Airport	Qualitative SME assessment of whether multiple routes to/from Farnborough would avoid, continue to overfly or not change overflight of the same communities compared to Option 1 (Do Nothing)	Option avoids overflight of the same communities with multiple routes to/from Farnborough	No Change	Option still overflies communities with multiple routes to/from Farnborough	
		d) avoid overflying the same communities with Farnborough's routes and those to & from other airports below 7000ft	Qualitative SME assessment of whether the average overflight cones would overfly the same communities below 7000ft by Farnborough and Heathrow, Gatwick, Biggin Hill or Southampton's routes. This assessment considers the interactions with the FASI airspace design shortlisted options of those airports compared to the overflight cones of each of Farnborough's options.	No overflight of same communities below 7000ft by both airports identified	N/A	Overflight of same communities below 7000ft by both airports has been identified	
				No overflight of same communities below 7000ft by both airports identified	N/A	Overflight of same communities below 7000ft by both airports has been identified	
		No overflight of same communities below 7000ft by both airports identified	N/A	Overflight of same communities below 7000ft by both airports has been identified			
		No overflight of same communities below 7000ft by both airports identified	N/A	Overflight of same communities below 7000ft by both airports has been identified			
<b>Overall DP6 Evaluation</b>							
7	Make best use of Farnborough's modern aircraft fleet capabilities	A qualitative SME assessment of whether the option makes use of the highest level PBN specification (RNP-AR) and also whether the option is expected to enable Continuous Climb Operations (CCO) on departure to a level higher than today or improved CDO from a higher level than today (3000ft)	Uses RNP-AR for arrivals and enables improved CCO/CDO	Uses either RNP-AR for arrivals OR enables improved CCO/CDO	Does not use RNP-AR for arrivals and does not enable improved improved CCO/CDO		
8	Ensure that Farnborough Clutch* airways traffic can still be accommodated, as a result of the changes (*Now known as Wessex Group)	A qualitative SME assessment of whether the option gives rise to any concern of being unable to handle airways traffic to/from the Wessex Group airports of Odiham, Lasham, Fairoaks, Blackbushe or Dunsfold.	Wessex Group airways joiners/leavers may continue to be accommodated	Some Wessex Group airways joiners/leavers may not be able to be accommodated	No Wessex group Wessex Group airways joiners/leavers can continue to be accommodated		

Option Name	Option Image Runway 06 Ops	Option Image Runway 24 Ops	Option Image Runway 24 & 06 Combined	1	2		3	4	5	6	7	8
				Must be as safe or safer than today for all stakeholders that are affected by the airspace change	Accord with: a) the CAA's published airspace modernisation strategy (CAP711) and any current or future plans associated with it b) Air Navigation Guidance 2017 & other relevant policy and legislations		Shall not constrain the ability to meet forecast demand for Farnborough Airport	Improve vertical profiles compared to the baseline published SID/STAR levels, to enable: a) a reduction in population numbers affected by noise b) a reduction in CO2 emissions per flight from Farnborough aircraft c) a reduction in the volume and where possible, complexity of Farnborough Airport's CAS d) a reduction in the reliance on tactical intervention	Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users	Where lateral changes to existing tracks are required to achieve improved environmental and operational performance, options should: a) deliver an overall reduction in flight planable track miles b) minimise population numbers newly overflowed c) avoid overflying the same communities with multiple routes to & from Farnborough Airport d) avoid overflying the same communities with Farnborough's routes and those to & from other airports below 7000ft	Make best use of Farnborough's modern aircraft fleet capabilities	Ensure that Farnborough "Clutch" airways traffic can still be accommodated, as a result of the changes ("Now known as Wessex Group)
				Overall AMS Objectives	Overall DP2							
Option 1 Baseline "Do Nothing"				MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	DOES NOT MEET	MEETS
Option 2A				MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS
Option 2B				PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS
Option 3A				MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	MEETS	MEETS
Option 3B				PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS
Option 4A				MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS	MEETS	PARTIALLY MEETS	MEETS	MEETS
Option 4B				PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS
Option 5A				MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS	MEETS	PARTIALLY MEETS	MEETS	MEETS
Option 5B				PARTIALLY MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS	PARTIALLY MEETS	PARTIALLY MEETS	MEETS	MEETS

