FARNBOROUGH AIRPORT FASI-S AIRSPACE CHANGE PROPOSAL

ACP-2022-038

Stage 2

Stage 2A Submission Document – Options Development

Version 2.0

Version	Date	
1.0	July 2024	Original
2.0	November 2024	Following feedback from the Stage 2 Gateway: update to Figure 3 & footnote (4) added to clarify source of data for Figures 7 & 8

Table of Contents

Annex 1 – Design Principle Evaluation
Appendix A – Stakeholder Engagement Material
Appendix B – Stakeholder Feedback
Appendix C – Stakeholder Log & Correspondence
Appendix D – Frequently Asked Questions

1. INTRODUCTION

1.1 The UK's Airspace Modernisation Strategy

1.1.1 In 2017 the Secretary of State tasked the Civil Aviation Authority (CAA) with preparing and maintaining a coordinated strategy and plan for the use of UK airspace up to 2040.

1.1.2 The first Airspace Modernisation Strategy (AMS) was published in 2018 and set out the 'ends, ways, and means', of modernising airspace through a series of 'delivery elements' that will modernise the design, technology, and operations of the airspace.

1.1.3 The AMS was updated in 2023 and is split into 3 parts, published separately. Part 1 (Strategic objectives and enablers) explains the strategy's objectives, a high-level overview of what will enable those objectives to be fulfilled, and governance for overseeing delivery. Part 2 (Delivery elements) and Part 3 (Deployment) describe the short-term ambition and explain how the strategy is being delivered.

1.1.4 The AMS vision is to deliver quicker, quieter, and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. The AMS does not propose specific airspace changes, but a key deliverable is a masterplan of airspace changes that will be necessary for modernisation.

1.2 Airspace Change Organising Group & the Masterplan

1.2.1 Following the publication of the AMS, the aviation industry is working together to deliver airspace modernisation through a coordinated programme. More than 20 UK airports and NATS are involved in the delivery of this national programme of airspace change, which is being coordinated by the Airspace Change Organising Group (ACOG).

1.2.2 Airports are responsible for designing the arrival and departure routes that support their operations from the ground to approximately 7000ft. They also take responsibility for the way the airspace is used and developed in this lower portion of airspace.

1.2.3 NATS is responsible for re-designing the airspace above 7000ft. They take responsibility for the route network, and for the way the airspace is used and developed above 7000ft.

1.2.4 ACOG are responsible for developing the Masterplan, a single coordinated implementation plan for airspace changes in the UK up to 2040. The Masterplan is being produced by ACOG in stages, with more detail added with each iteration. Across all iterations, the masterplan will:

- Identify where and when airspace change proposals are needed, with proposed timelines for implementation,
- Describe how these proposals relate to each other, and highlight potential conflicts between their designs,
- Explain how trade-off decisions to resolve these conflicts have been made,
- Demonstrate the anticipated cumulative impact of all the airspace change proposals.

1.2.5 Iteration 1 was published in 2020 and Iteration 2[1] was published in January 2022, with an Addendum in October 2022, which advised that Farnborough Airport had joined the programme and would be integrated into all future iterations of the Masterplan.

1.2.6 From Iteration 3 onwards the Masterplan is being developed separately for each region. This will allow designs brought forward by each cluster, once approved, to be deployed and the benefits realised, without waiting for all the ACPs to complete the airspace change process.

1.2.7 Farnborough Airport is now part of the LTMA (London Terminal Manoeuvring Area) cluster which includes, Heathrow, Gatwick, Southampton, London City, Biggin Hill, Bournemouth, Luton, Stansted, RAF Northolt, Southend, and Manston.

Farnborough Airport's Potential Interdependencies

1.2.8 Following the inclusion of Farnborough Airport into the Masterplan in October 2022, ACOG published an addendum, CAP2312A[2] identifying the potential interdependencies between Farnborough Airport and other airports in the LTMA cluster.

1.2.9 The analysis undertaken by ACOG in the LTMA airspace below 7000ft identifies potential interdependencies with 6 other airspace change proposals, Heathrow, Gatwick, London City, Southampton, RAF Northolt and Biggin Hill. In addition, Farnborough Airport will need to ensure ongoing co-ordination with the NATS NERL ACP regarding the airspace above 7000ft.

1.3 The Airspace Change Process

1.3.1 In December 2017, the CAA reformed the airspace change process and introduced CAP1616, guidance on the regulatory process for changing notified airspace design and planned and permanent redistribution of air traffic.

1.3.2 CAP1616 lays out the regulatory process for changing flight paths, including the community engagement requirements. Proposals for changes to flight paths are submitted to, assessed, and approved by the CAA following the guidance set out in CAP1616.

1.3.3 There are seven-stages which provide a framework for changing airspace and CAP1616 places significant importance on engaging a wide range of stakeholders, including potentially affected communities.

1.3.4 In early 2023 the CAA conducted a consultation on proposed changes to the CAP1616 process and in October 2023 published Edition 5 of the document. Following discussion with the CAA it was agreed that as Stage 2 work had already commenced, Farnborough Airport would continue Stage 2 in accordance with Edition 4 (March 2021) of CAP1616.

[1] ACOG Masterplan Iteration 2
[2] CAP2312A Addendum

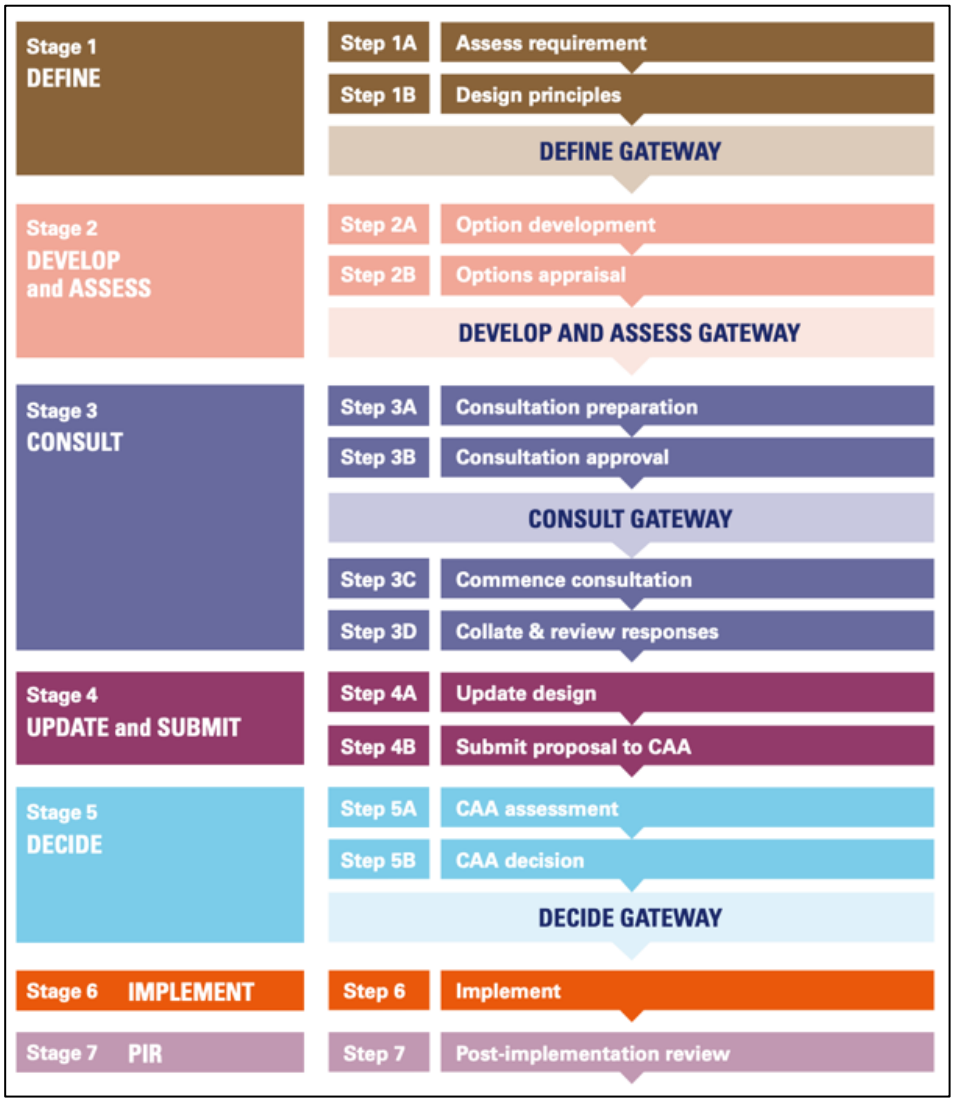


Figure 1: CAP1616 (Edition 4) 7-Stages

1.4 Airspace Modernisation at Farnborough Airport

1.4.1 Table 1 below summarises the CAP1616 stages already undertaken for this ACP, providing links to submission documents for those previous stages. All information submitted to the CAA for this ACP is available on the CAA's Airspace Change Portal.

Airspace Change Stage	Summary	Link to Documents
Stage 1 **Step 1A**	In June 2022, Farnborough Airport submitted a Statement of Need (SoN) to the CAA.	Statement of Need
	In November 2022, Farnborough Airport had an assessment meeting with the CAA, as part of Step 1A of the CAP1616 process. The purpose of the assessment meeting is for the change sponsor to present and discuss its SoN and to enable to the CAA to consider whether the proposal falls within the scope of the formal airspace change process.	Assessment Meeting Presentation Assessment Meeting Minutes
Stage 1 **Step 1B**	At Step 1B, Farnborough Airport carried out engagement with stakeholder representatives to develop a set of Design Principles for this airspace change. The aim of the Design Principles is to provide the objectives that the change sponsor seeks to achieve through the airspace change and help the airspace change designers to create and compare different flight paths and design options. The CAA carried out the regulatory assessment to ensure that the Stage 1 requirements were followed, and Farnborough Airport passed the Stage 1 Gateway in June 2023.	Design Principle Submission Document
Stage 2 **Step 2A**	At Step 2A, Farnborough Airport developed options for the airspace change proposal, and evaluated how those options responded to the Design Principles created in Stage 1. These options were shared with the stakeholder representatives who were previously engaged with at Stage 1. Feedback from this engagement was then used to generate further information on existing options to aid engagement. The final part of Step 2A was to qualitatively, and where possible, quantitively assess the options against the Design Principles to produce a Design Principle Evaluation.	This document

Table 1: Summary of CAP1616 work to date

1.5 Design Principles

1.5.1 The Design Principles were set following engagement with stakeholders which took place between December 2022 and February 2023. More information can be found in our Stage 1 Submission Document, linked in Table 1.

1.5.2 Farnborough Airport's prioritised Design Principles are shown in Table 2.

	Final Design Principles
1	Must be as safe or safer than today for all stakeholders that are affected by the airspace change* *(*We will set out our methodology for assessing this in Stage 2 with a view to using data e.g., flight density plots outside CAS/volume nm^3 of CAS, to support other qualitative assessments.)*
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
3	Shall not constrain the ability to meet forecast demand for Farnborough Airport
4	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 CO_2 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
5	Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users
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 plannable track miles, b. minimise population numbers newly overflown, 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 routes to & from other airports below 7000ft
7	Make best use of Farnborough's modern aircraft fleet capabilities
8	Ensure that Farnborough Clutch airways traffic can still be accommodated, as a result of the changes

Table 2: Final Prioritised Design Principles

1.6 CAP1616 Step 2A Requirements

1.6.1 Stage 2 of the CAP1616 (Edition 4) process is split into two Steps, Step 2A – Options Development and Step 2B – Options Appraisal. This document describes the work undertaken at Step 2A.

1.6.2 Paragraph 125 of CAP1616 sets out that in Step 2A the change sponsor is required to "develop a comprehensive list of options – to the extent that a list is possible - that address the Statement of Need and that align with the design principles from Stage 1"[3].

1.6.3 This list should be preliminarily tested with the same stakeholders it engaged with in Step 1B, to ensure they are satisfied that the design options are aligned with the design principles and that the change sponsor has properly understood and accounted for stakeholder concerns, specifically related to the design options.

[3] CAP1616 Edition 4, Page 39, Paragraph 125

1.6.4 The change sponsor then produces a design principle evaluation that sets out how its design options have responded to the design principles.

2. EXISTING AIRSPACE ARRANGEMENTS (BASELINE)

2.1 Runways and Local Geography

2.1.1 Farnborough Airport is a business/executive general aviation airport, situated in Farnborough, (Borough of Rushmoor) and is home to several of the UK's largest business jet companies.

2.1.2 The airspace surrounding Farnborough Airport is constrained by the operations from Heathrow, Gatwick, and to a lesser extent, Southampton Airports. There are also General Aviation (GA) aerodromes in proximity; Fairoaks is home to two resident flight training schools and has commercial operations of mid-sized turboprops and small jets. Blackbushe is home to two resident flight training schools and several corporate jets, a helicopter training facility, as well as Aerobility, a flying charity. Further to the south are Goodwood and Lee-on-Solent airfields.

2.1.3 To the west of the airport there is the busy helicopter airfield of RAF Odiham, home of the Royal Air Force's Chinook helicopters and home to the headquarters of the Joint Special Forces Aviation Wing (JSFAW), and Danger Areas D132, and D133A/B are situated at to the east.

2.1.4 Farnborough Airport also has Lasham to the west which is home of the largest British gliding club. Up to 100 gliders can be in the vicinity at once, with winch cables up to 3,000 ft (910 m) above the ground. It is also, home to a company that maintains jet aircraft for various airlines. Parham to the south which is home to Southdown Gliding Club is home to over forty privately owned gliders.

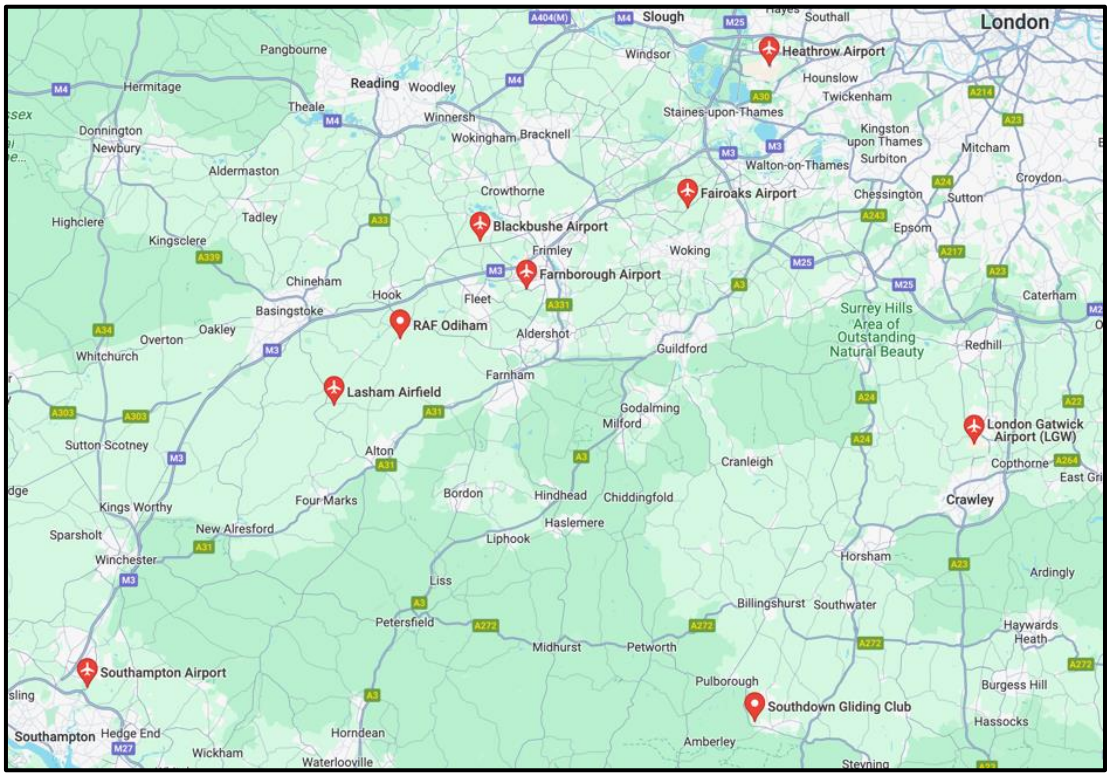


Figure 2: Local Geography

2.1.5 Farnborough Airport is immediately surrounded by several areas of dense population; Farnborough, Frimley, Camberley, Fleet, Aldershot and Farnham. Slightly further afield are Hook, Crowthorne, Woking, Guildford, Godalming and Alton.

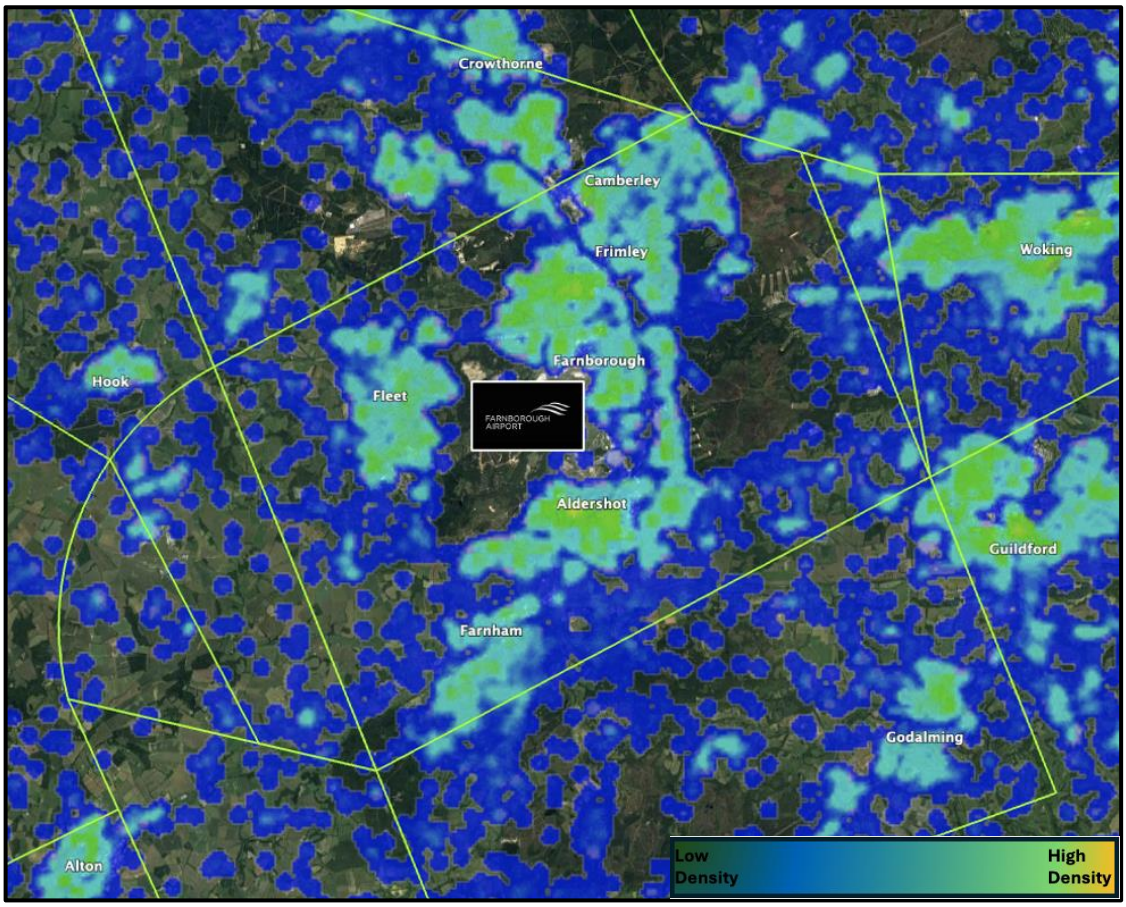


Figure 3: Local Population Density (Census 2021). Controlled Airspace boundaries in green

2.1.6 To the south of Farnborough Airport is the Surrey Hills AONB and South Downs National Park. Further to the northwest is the North Wessex Downs AONB. These are illustrated in Figure 4, though worthy of note is potential changes to the boundaries of the Surrey Hills AONB which have not been determined at the time of writing.

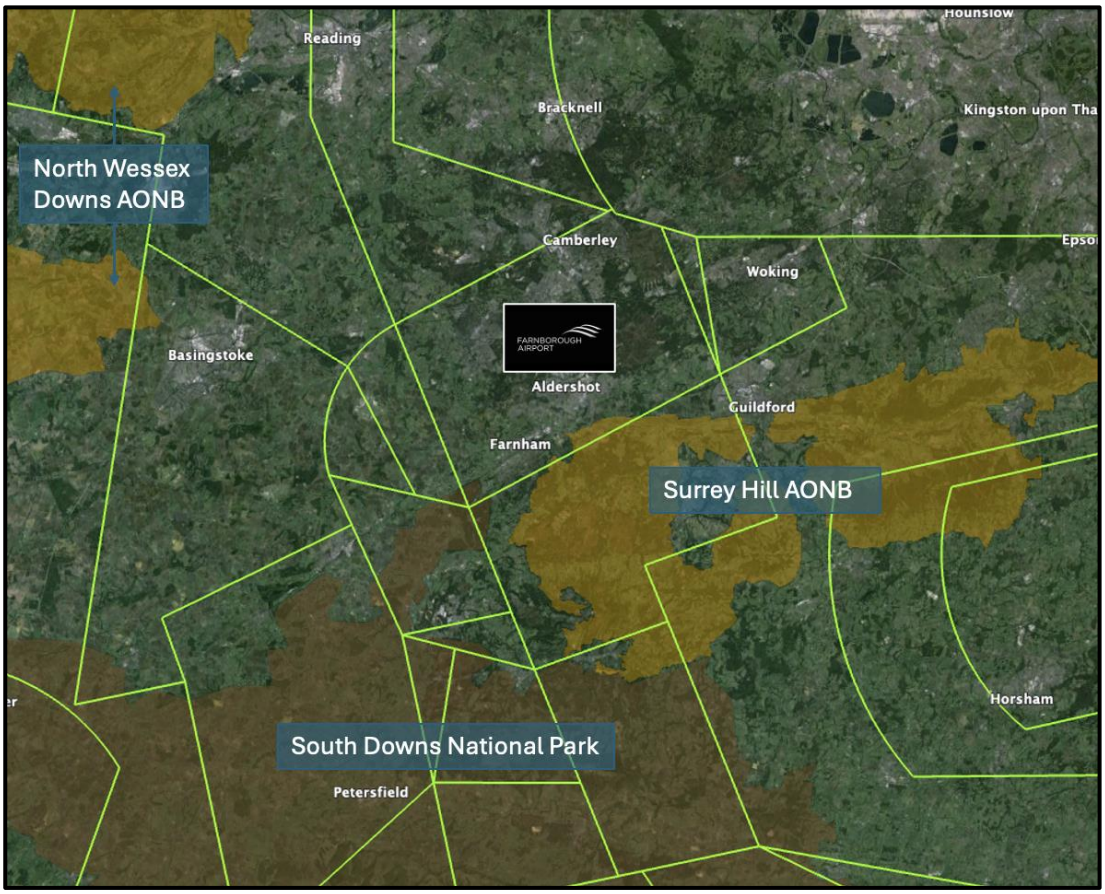


Figure 4: AONBs and National Parks. Controlled Airspace boundaries in green

2.1.7 Farnborough Airport has a single runway. Runways are given a numerical designation based on their compass bearing. The position of the runways at Farnborough Airport means that when the airport is on westerly operations, aircraft use Runway 24 and when the airport is on easterly operations, the aircraft use Runway 06.

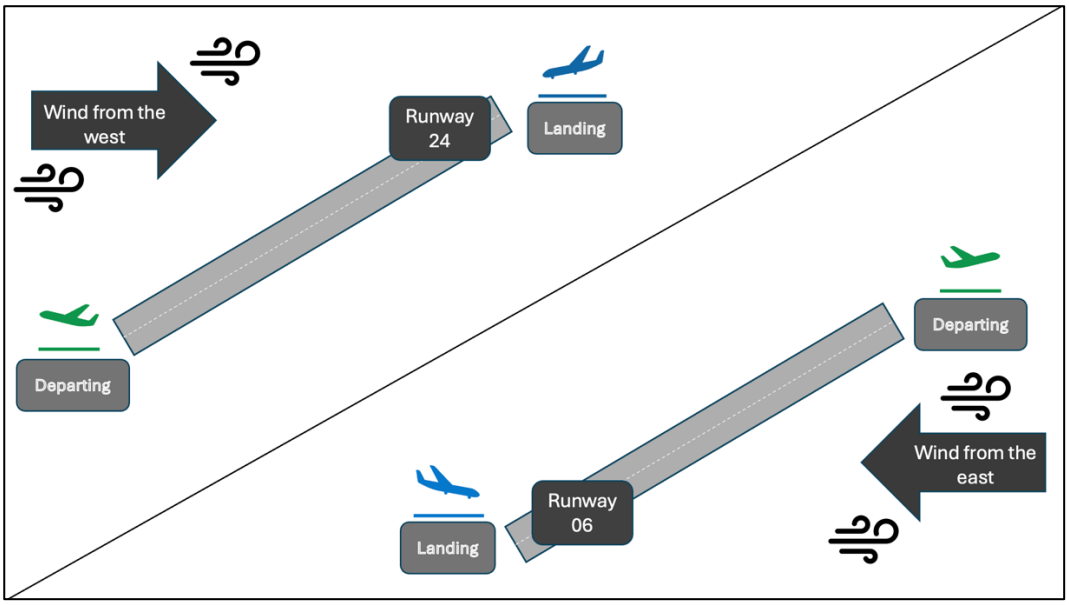


Figure 5: Westerly & Easterly runway diagrams

2.1.8 The direction aircraft arrive and depart depends on the direction of the wind. For safety and performance reasons, aircraft typically take off and land into the wind. The UK's prevailing

wind is from a south westerly direction meaning that Farnborough Airport is on the westerly runway (Runway 24) for most of the time. The average modal split between the two runways over the last 20 years, is that Runway 24 is in use 75% of the time and Runway 06 25% of the time.

2.2 Controlled Airspace

2.2.1 As highlighted in section 2.1, Farnborough Airport is surrounded by other airports and airfields. The airport is situated inside Controlled Airspace (CAS) whose structures were put in place on 27th February 2020 following an earlier Airspace Change Proposal, as shown in Figure 6.

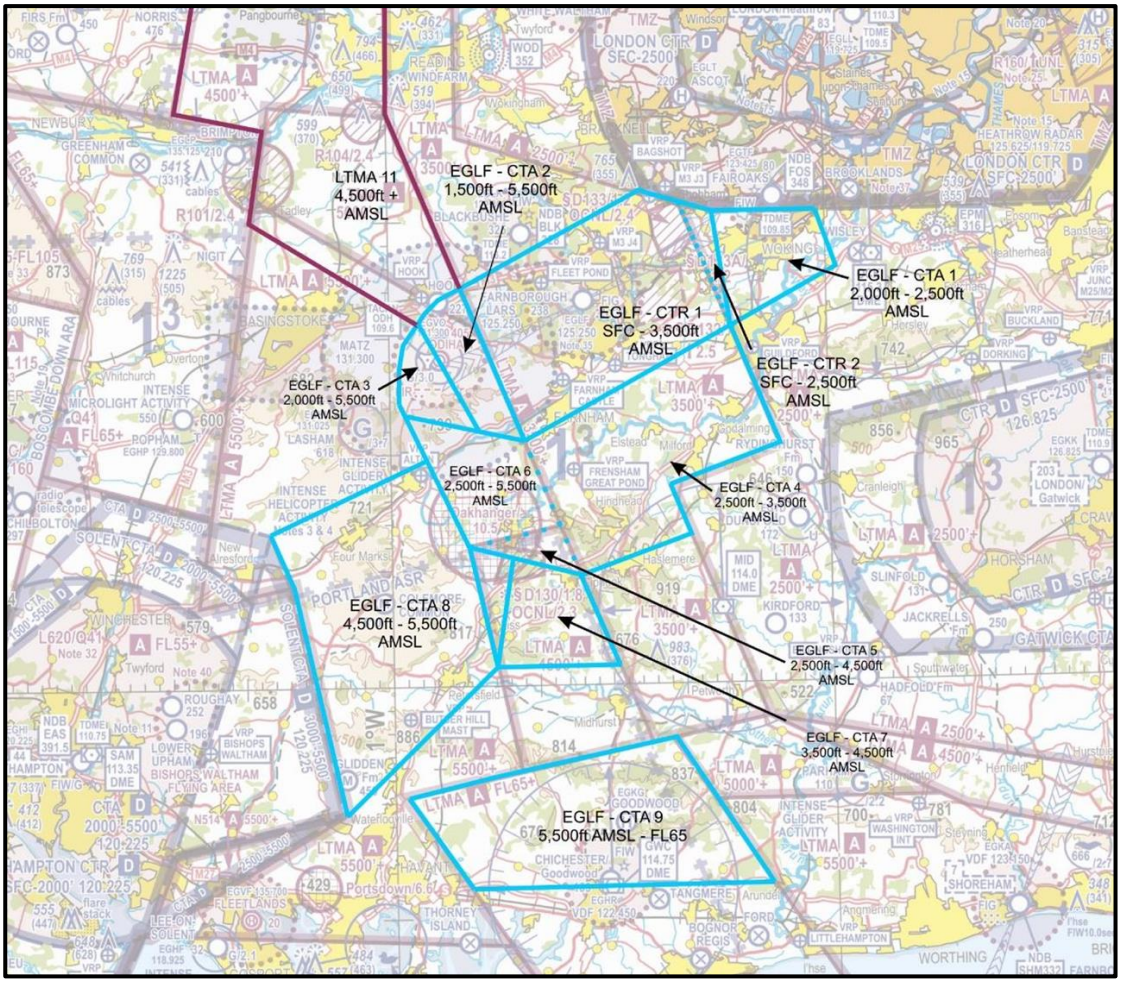


Figure 6: FAL's existing CAS and surrounding airspace structures

2.2.2 In support of Design Principle 1, Farnborough Airport committed to using data to produce flight density plots outside CAS, to support the qualitative DPE assessments. To achieve this, Farnborough Airport procured 6 months of historical (1st April – 30th September 2023) Electronic Conspicuity (EC) data. This is data broadcast from airspace users to provide information on their position[4]. Airspace users that were not broadcasting information on their presence has not and cannot form part of this assessment. Even if Primary radar data was utilised, the height of the aircraft cannot be ascertained.

[4] This data was provided by Planefinder and included Mode S returns which were multi-laterated, ADS-B, FLARM and Pilot Aware returns

2.2.3 The EC returns were used to produce the heat maps shown in Figure 7 and Figure 8. All EC returns above the bases of CAS have been filtered out to illustrate typical traffic patterns and density outside Controlled Airspace (Class G). Comparison of the two images helps to articulate the competing demands for airspace in the area and how the lower the base of CAS, the more restrictive it is for Class G airspace users. The ability to raise any bases and limit any lowering can have extremely positive benefits for Class G operations, potentially reducing the funnelling/density of GA operations in those regions.

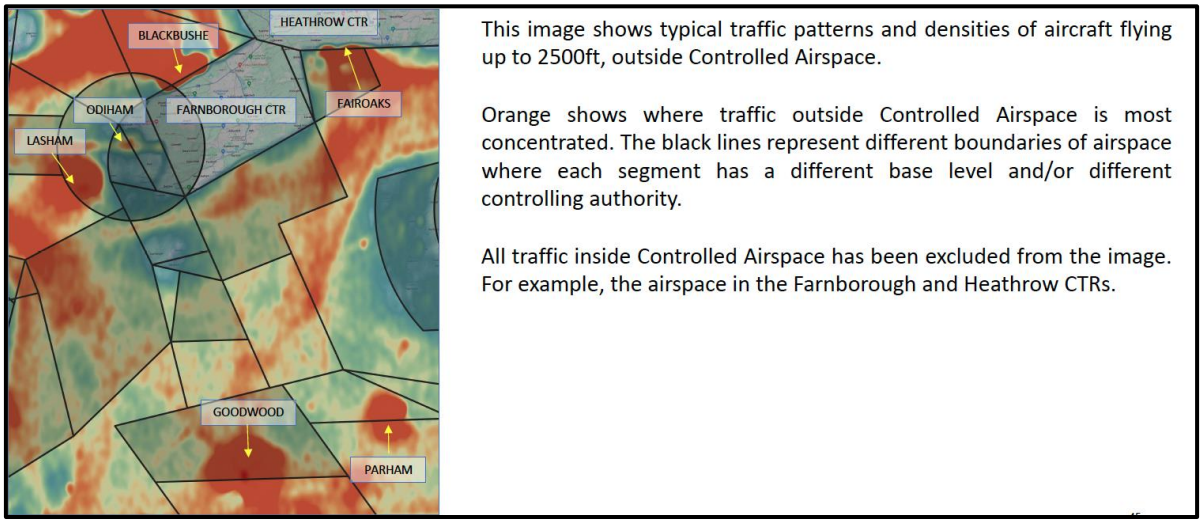


Figure 7: Traffic patterns and density outside Controlled Airspace 0-2500ft

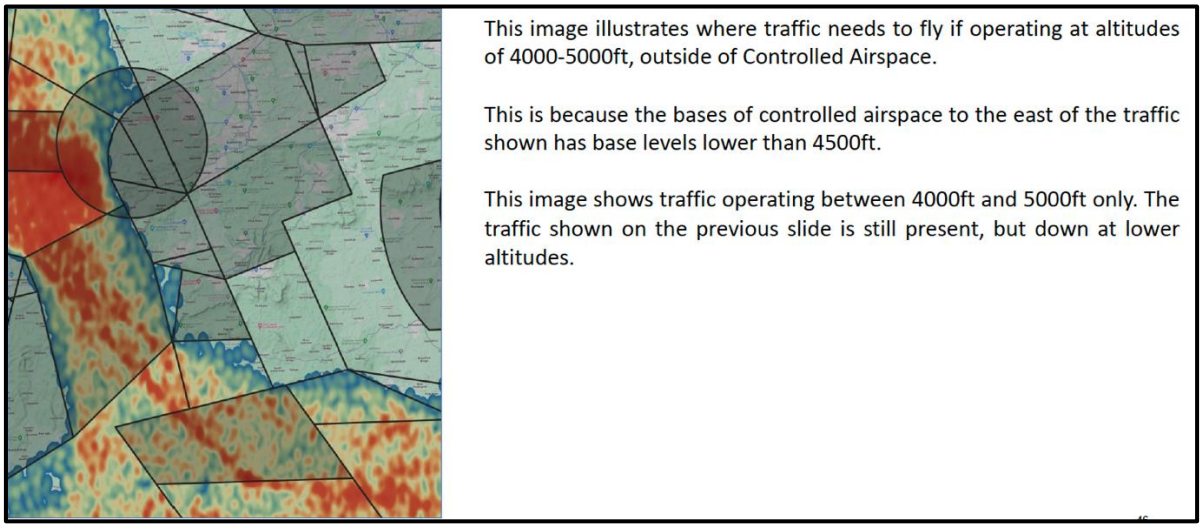


Figure 8: Traffic patterns and density outside Controlled Airspace 4000-5000ft

2.3 Published Arrival and Departure Flight Paths and Noise Abatement

2.3.1 Alongside Farnborough's CAS, a suite of Standard Instrument Departures (SIDs) and Standard Arrival Routes (STARs) were implemented as shown in Figure 9. Of note is that whilst the SIDs starts from the end of the runway, the STARs terminate some distance before the runway. There are no usable arrival paths from the end of the STARs to the runway, the airspace design relies on vectoring of arrivals from the STAR to the final approach. .

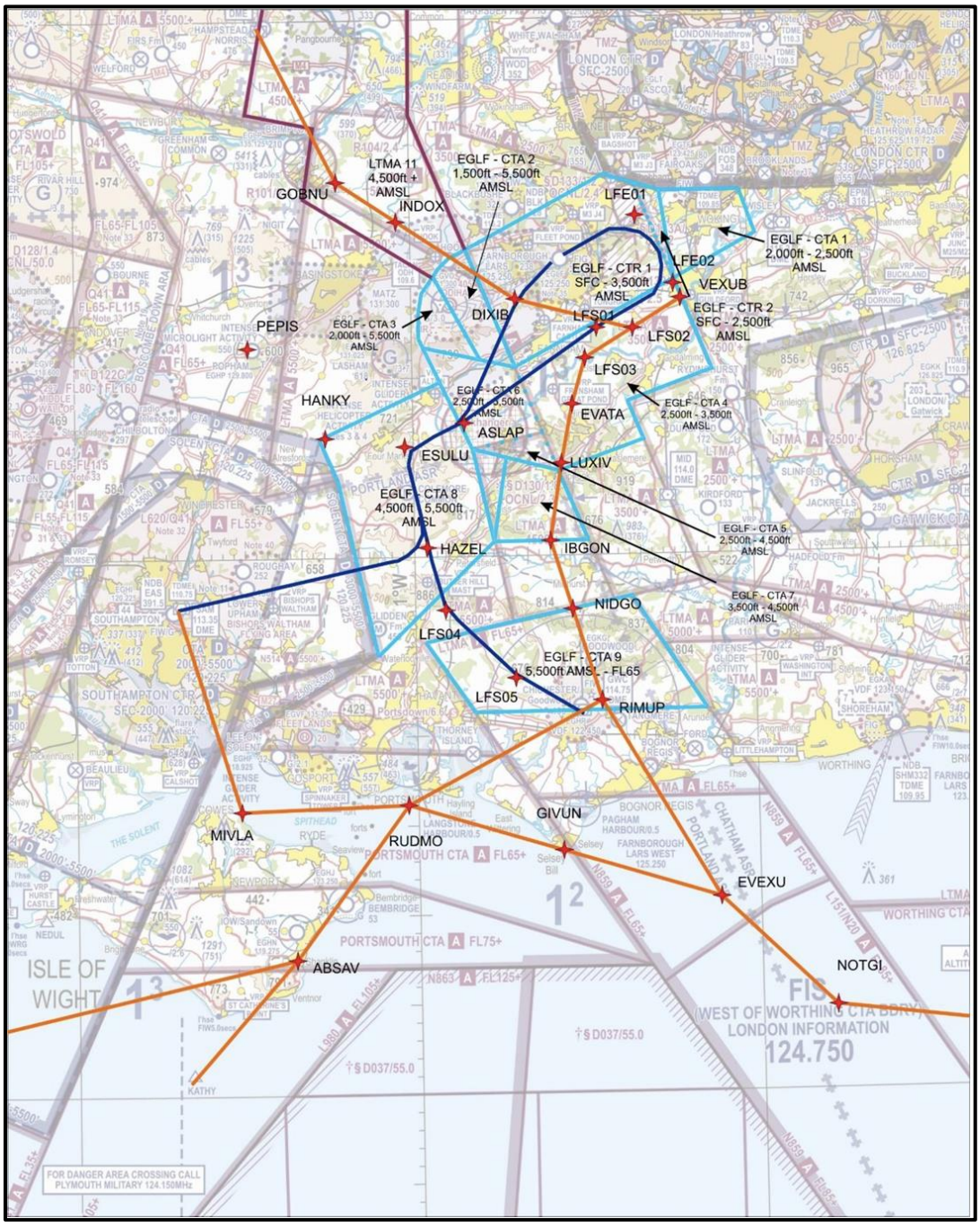


Figure 9: FAL's existing SIDs and STARs

2.3.2 Aircraft departing via a SID are considered to comply with Farnborough's noise preferential routings. Any jet/turboprop aircraft and all other aircraft of more than 2730 KG Maximum Take Off Weight (MTOW) not departing on a SID are to adhere to the following noise preferential routings:

Noise Preferential Routings (NPRs) – Runway 06.

- (All directions) Climb straight ahead to 2.4 DME, then turn on track or as instructed by ATC.

Noise Preferential Routings (NPRs) – Runway 24

- North - Climb straight ahead to 3.4 DME, then turn on track or as instructed by ATC.

- South - Climb straight ahead; after passing 1200 FT QNH fly ATC issued Radar heading. In the event an aircraft is departing without an ATC issued Radar heading (for example during Radar being unavailable) this is amended to climb straight ahead; at 2.4 DME or 1200 FT AMSL (whichever is sooner) turn left onto track 220° M or as directed by ATC. This is referred to by ATC as 'Noise Preferential Route South'. Crews should note that a prompt turn at 1200 FT QNH is essential in order to remain outside the Odiham ATZ and areas of gliding activity.

2.3.3 ILS approaches are mandatory for arrivals except when a non-precision or visual approach is provided or authorised by ATC. The use of the ILS glidepath, if radiating, is recommended for all approaches.

2.3.4 All aircraft approaching to land or go-around from a visual or non-precision approach shall establish on final approach not below 1250 FT QNH (1000 FT AAL) and at not less than 3 NM from touchdown; thereafter aircraft shall follow a descent path which will not result in the aircraft being at any time lower than a 3.5° glidepath as indicated by the PAPIs or ILS unless authorised by Farnborough ATC.

2.3.5 If, after further work, an option we decide to progress would mean changes to the noise abatement procedures these would be conducted in accordance with our Section 106 agreement with Rushmoor Borough Council.

2.4 Existing Traffic Patterns

2.4.1 Whilst there is a clear concentration of traffic on the SID and STAR centrelines, owing to the many variables ATC face, arrivals and departures are frequently vectored off their routes. This means areas not directly under the published flight paths also experience overflight from Farnborough's arriving and departing traffic.

2.4.2 This is best illustrated by Figure 10 below. It presents a busy easterly and a busy westerly day of operations combined, showing how traffic is concentrated along centrelines, but the swathes show where traffic is routinely vectored by ATC. The vertical profile, as displayed in the legend, is based on average vertical profiles for each traffic flow within the option. For this baseline (the 'Do Nothing' scenario), it takes all the actual vertical profiles from a busy day and creates an average vertical profile for each traffic flow. More information on this is available in Section 4.

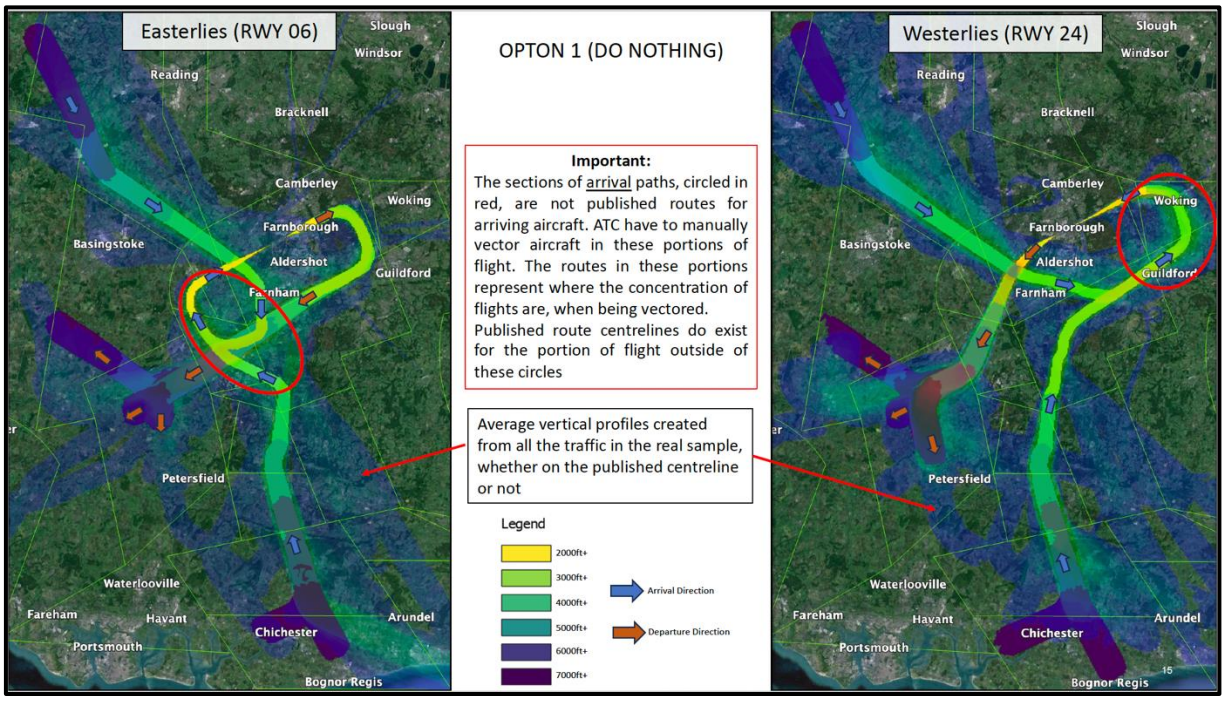


Figure 10: FAL's typical traffic patterns

2.5 Farnborough's Post Implementation Review

2.5.1 Farnborough Airport successfully implemented its previous ACP in February 2020. As with any ACP there can be unforeseen consequences that appear once a change has actually been implemented which could typically be safety, operational, technical, or environmental related. As such, a condition of any ACP is a requirement to carry out a Post Implementation Review (PIR) which would normally commence 12 months after the change has been implemented.

2.5.2 A PIR is a rigorous independent assessment carried out by the CAA which looks at the anticipated impacts and benefits set out in the original ACP proposal and decision to ascertain if these were delivered, and if not, to then determine the most appropriate course of action. The review may also identify any subsequent requirements that could be considered to further modify flight procedures and/or the airspace structure, the need for which can only be determined after a period of operational experience post ACP implementation. The PIR does not set out to re-run the original decision associated with the airspace change.

2.5.3 Due to the impacts of covid-19 on air operations around the globe including in the UK, the CAA took the decision to suspend the planned PIR data collection in August 2020 which was followed by a further deferral in Feb 2021. Following a further review in October 2021 the CAA took the decision to delay the PIR process until 2022.

2.5.4 In April 2022 Farnborough Airport commenced a twelve-month data capture process in line with the CAA's pre-requested data requirements, the results of which were sent to the CAA in April 2023.

2.5.5 CAA's PIR assessment is still ongoing at the time of writing. In the meantime, the CAA have confirmed that the do-nothing situation can only be based on the current scenario and this ACP should be progressed on the current position known at the time.

2.5.6 Therefore, at Stage 2, our baseline incorporates the existing published airspace arrangement and assumes no changes to that arrangement are required. We can update our baseline position in Stage 3 if required.

2.6 Wessex Group (Farnborough Clutch) Airfields

2.6.1 In addition to serving aircraft arriving and departing Farnborough Airport, Farnborough ATC also handle traffic into and out of a number of adjacent airfields which is joining or leaving the en-route airway system. Previously known as the Farnborough Clutch airfields, the Wessex Group comprise Odiham, Lasham, Fairoaks, Blackbushe and Dunsfold airways movements. Flights to these airports from the airways system will flight plan and fly the STARs until ATC are able to route them direct to their destination. Departures will not, however, fly Farnborough's SIDs. Note that the movement figures presented within this document do not include movements for Wessex Group airfields.

2.7 Air Traffic Movements, Caps and ongoing Planning Application

2.7.1 Existing planning permission for the Airport includes a condition imposing a movement cap of 50,000 movements per year, with 8900 of these being for non-weekdays (i.e. weekends & bank holidays). The airport has submitted a Planning Application to Rushmoor Borough Council to increase this movement cap to 70,000 movements per year, with 18,900 of these being for non-weekdays.

2.7.2 There are no dependencies between the Planning Application and this ACP or vice-versa. However, our baseline must take 'due consideration of known or anticipated factors that might affect them' and therefore this section includes information for both the event of a successful and unsuccessful planning application.

2.7.3 Our baseline for Full Options Appraisal (FOA, Stage 3) should be generated for Year of implementation and 10 years hence. The year of implementation for this ACP is currently unknown however, the information generated for the planning application included forecasts for 2031 and 2040 which we currently consider a comparable timeframe for this ACP. For this reason, the figures in this section contain actual and forecasts movement figures for up to and including 2045 for scenarios 'With' and 'Without' a successful planning application.

Aircraft Type	Aircraft Movements						
	2022	2031 Without	2040 Without	2045 Without	2031 With	2040 With	2045 With
Helicopters	806	1,458	1,528	1,446	1,804	2,230	2,021
Turboprop	1,790	1,772	360	630	2,565	2,293	1,904
Business Jets	26,803	32,603	37,205	34,561	40,109	52,409	46,952
Large Business Jets	315	834	1,139	1,067	834	1,142	1,088
Zero Emission Aircraft	0	208	3,163	7,500	272	5,375	11,512
Total	**29,714**	**36,875**	**43,395**	**45,203**	**45,584**	**63,449**	**63,477**

Table 3: FAL Annual Daytime Aircraft Movements (07:00 to 18:59)

Aircraft Type	Aircraft Movements						
	2022	2031 Without	2040 Without	2045 Without	2031 With	2040 With	2045 With
Helicopters	69	152	162	154	186	230	209
Turboprop	59	198	40	70	265	237	196
Business Jets	2,700	3,407	3,935	3,659	4,141	5,411	4,848
Large Business Jets	56	86	121	113	86	118	112
Zero Emission Aircraft	0	22	337	800	28	555	1,188
Total	**2,884**	**3,865**	**4,595**	**4,797**	**4,706**	**6,551**	**6,553**

Table 4: FAL Annual Evening Aircraft Movements (19:00 to 22:59). Note Farnborough Airport is open until 22:00, but for data purposes evening is defined until 22:59

Period	Average Daily Movements
Annual	93
Summer	101

Table 5: FAL Average Daily Movements (2022)

Peak movements in a Day	189
Average movements per hour	6-7
Peak movements in an Hour	26

Table 6: FAL ATM Stats Apr 2022 – Mar 2023

2.7.4 Should Farnborough planning application be successful, we would expect to gradually see increases in the average daily and hourly movements, i.e. more frequent peak hours. It is these peak hourly movements that the airspace design needs to be able to handle in the most operationally and environmentally efficient manner.

2.7.5 More in-depth information on these forecast movements including information on fleet-mix changes for the with and without planning approval please see the following documents on the Rushmoor Borough Council website[5]:

Appendix 8.2 air noise part 1 of 4

Appendix 2.3 fleet mix

[5] Rushmoor Borough Council Farnborough Airport Planning Application

2.8 Existing Noise Contours

2.8.1 There are a range of metrics which are used to describe aircraft noise and to inform policy. The most common international measure of noise is the L_{Aeq} which means 'equivalent continuous noise level.'

2.8.2 In the UK, daytime aircraft noise is typically measured by calculating this average noise level in decibels (dB) over 16 hours (0700-2300) during the daytime summer period and over 8 hours (2300-0700) during the nighttime summer period. The summer period is 16 June to 15 September inclusive. Noise primary impacts are defined by these L_{Aeq} contours, above 51dB L_{Aeq} for day and 45dB L_{Aeq} for night. These are known as the Lowest Observed Adverse Effect Level or LOAEL.

2.8.3 The LOAEL is defined as the point at which adverse effects of noise begin to be seen on a community basis. i.e those communities within the LOAEL are considered to be those who are most adversely affected by aircraft noise. Figure 11 shows Farnborough's forecast 51dB LOAEL Daytime weekday (07:00 – 22:59) contours for 2031 and 2040 with and without planning approval scenarios. There are no night (23:00-06:59) movements at Farnborough. These figures can be seen with greater granularity in our engagement material referred to in Section 4.

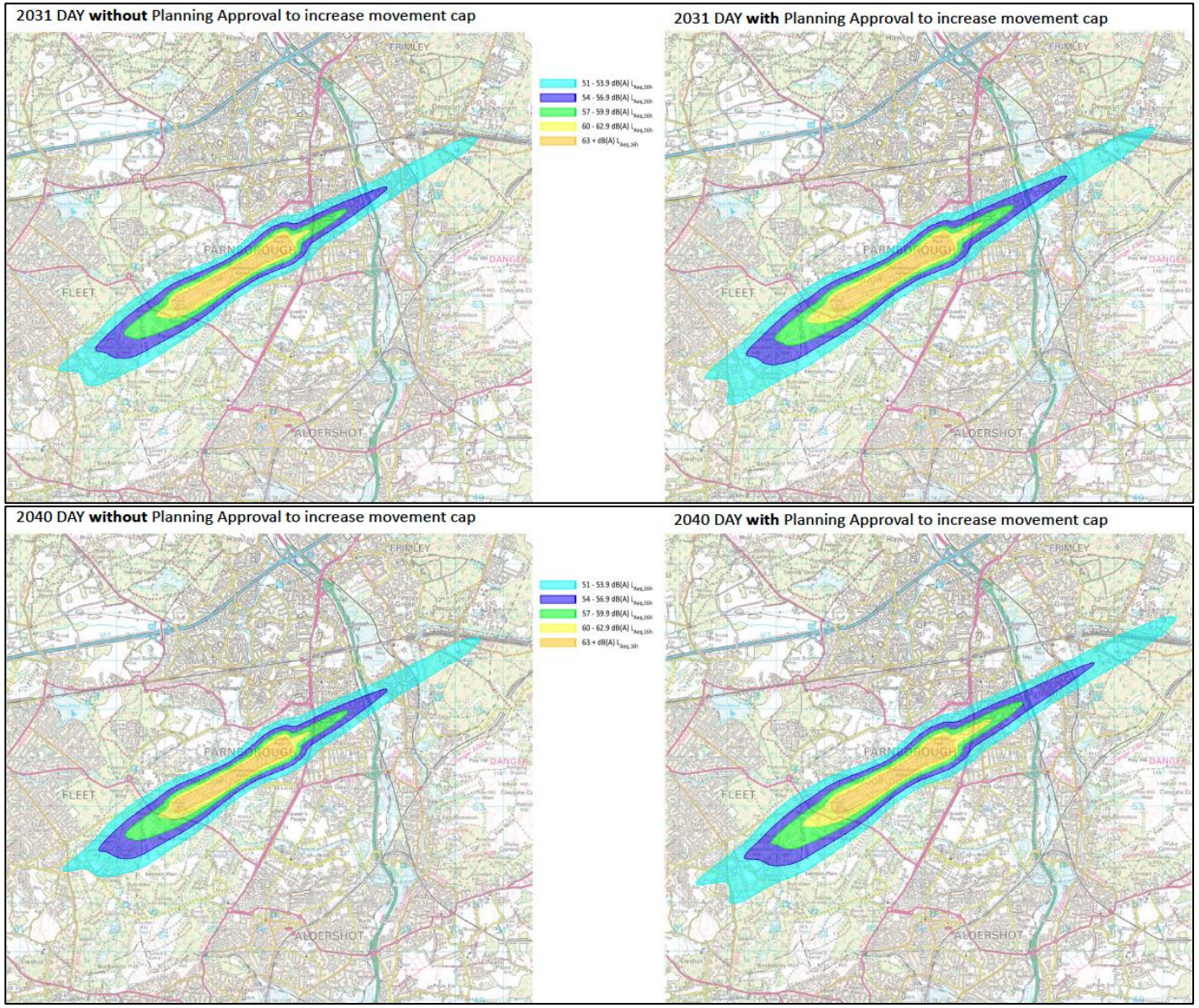


Figure 11: Farnborough's forecast 51dB LOAEL Daytime weekday (07:00 – 22:59) contours (2031 & 2040), with and without planning approval scenarios

2.8.4 More in-depth information on these noise contours, please see the following documents on the Rushmoor Borough Council website:

Appendix 8.2 air noise part 3 of 4

2.9 DVOR Withdrawal

2.9.1 NATS En-Route Limited (NERL) are currently undertaking a rationalisation programme for ground-based DVOR infrastructure. As part of this, the Ockham (OCK) DVOR was withdrawn from service earlier this year. Farnborough's Initial Approach Procedures were dependent on this DVOR although those procedures are flown extremely rarely, only in cases of communication failure between pilots and ATC. These procedures are able to use RNAV Substitution[6] which is an interim measure due to planned decommissioning of a ground-based navigation aid which supports conventional procedures or segments, pending the introduction of new PBN procedures. This ACP is the mechanism for introducing PBN IAPs which connect the end of the STARs to the Instrument Approach Procedure (i.e. the ILS and/or RNP APCH).

[6] See CAP1781 for more information

3. DEVELOPMENT OF A COMPREHENSIVE LIST OF OPTIONS

3.1 Constraints from other LTMA Traffic Flows

3.1.1 As covered in the Statement of Need for this ACP, Farnborough Airport recently implemented an ACP that pre-dates the Masterplan Iteration 2, which saw the implementation of Controlled Airspace and Performance-based Navigation (PBN) routes.

3.1.2 Whilst this ACP has met its objectives (subject to the Post Implementation Review), constraints associated with the surrounding airspace within the LTMA continue to limit the environmental performance of inbound and outbound traffic flows to/from the airport, especially the ability for the current routes to deliver Continuous Climb Operations (CCO) or Continuous Descent Operations (CDO). The majority of these limitations arise from the interdependencies between Farnborough's routes and Heathrow and Gatwick operations.

3.1.3 In this regard, the existing Farnborough airspace design is as efficient as it can be, in the absence of wider changes in the surrounding airspace. Throughout Stages 1 and 2, we have been very careful to manage the expectations of stakeholders in that, whilst this ACP presents an opportunity to climb departures higher, sooner and/or keep arrivals higher for longer, it is highly likely that Heathrow and Gatwick traffic will continue to limit the ability for unconstrained climb and descent to/from 7000ft for Farnborough's movements.

3.2 Approach to Developing Options

3.2.1 We began by exploring the technical feasibility with regards to departures from each runway end. Could departures turn left instead of right, could they turn earlier, could they climb straight ahead? Then for arrivals, could we join final approach earlier or later, could we have different Instrument Approach Procedures?

3.2.2 During these investigations we looked at various Instrument Flight Procedure (IFP) design characteristics in some detail to understand whether the scenarios would ultimately be achievable. Then we looked further afield, to investigate general positioning of traffic between Farnborough and London Terminal Control.

3.2.3 When looking at each scenario, we considered whether it could ever be feasible to progress the idea, given the location of other airports and/or GA operations and with a forward-looking view to meeting our design principles. This phase of work considered only technical viability, it did not consider the pros and cons of any scenario.

3.2.4 All the scenarios investigated, including those which were discounted, were shared with stakeholders and they can be found in our first round of Stage 2A engagement material, in Appendix A, pages 2-74. Figures 12-16 below illustrate the scenarios that we considered to be technically viable. It is these scenarios that were then incorporated into a comprehensive list of system options. The images contain existing CAS boundaries (green), some technical constraints (red outline) and areas of population density although the latter was not a consideration of whether an option was technically viable.

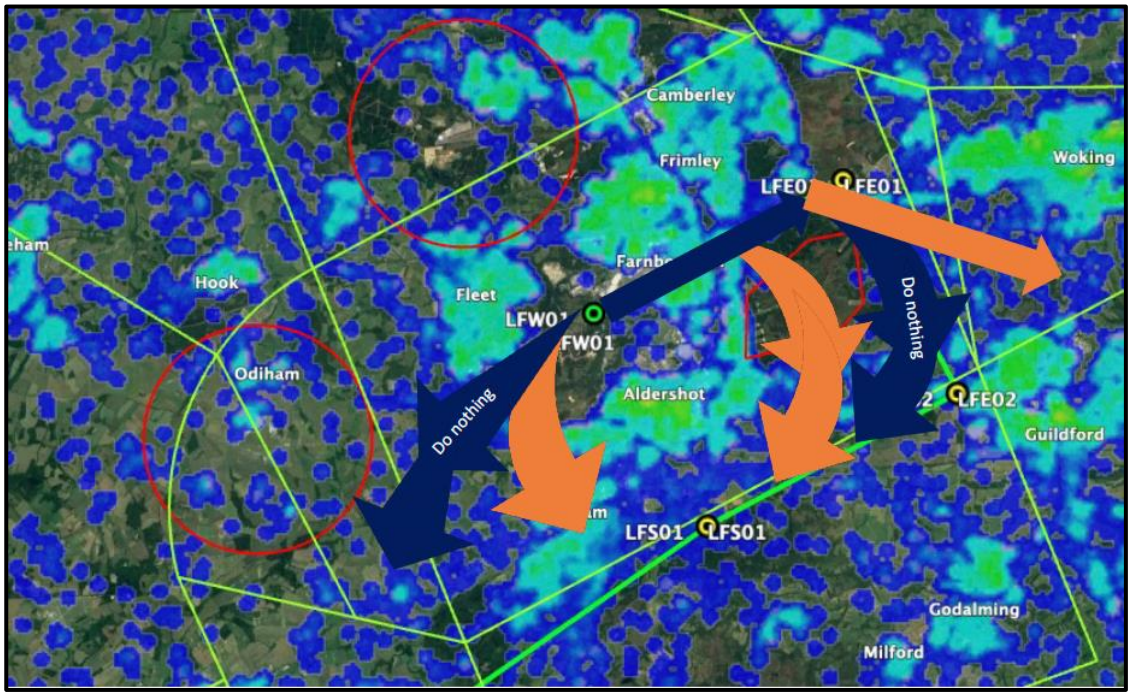


Figure 12: Technically viable first turn departures

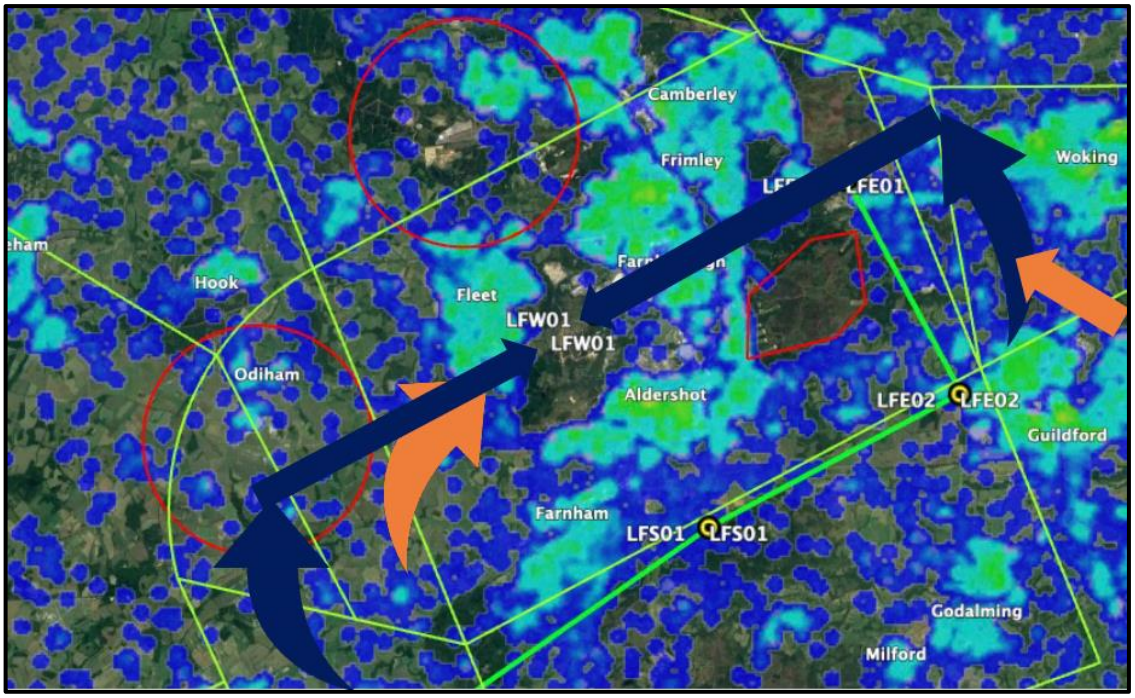


Figure 13: Technically viable transitions to final approach

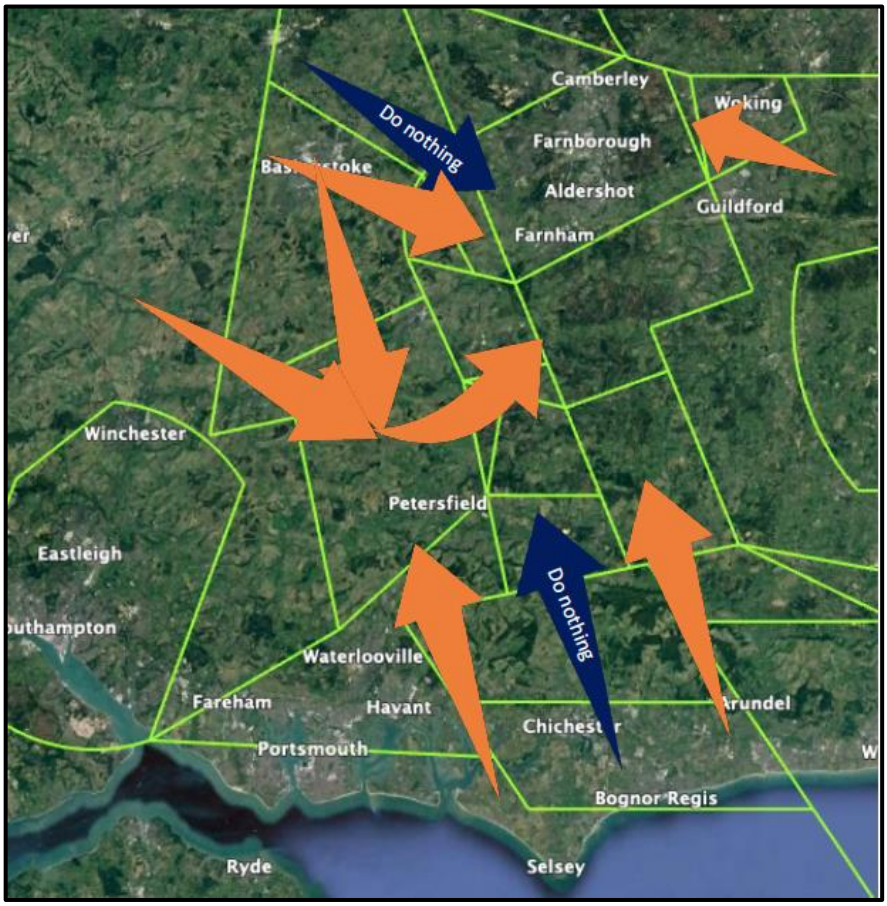


Figure 14: Technically viable arrival flows from the network

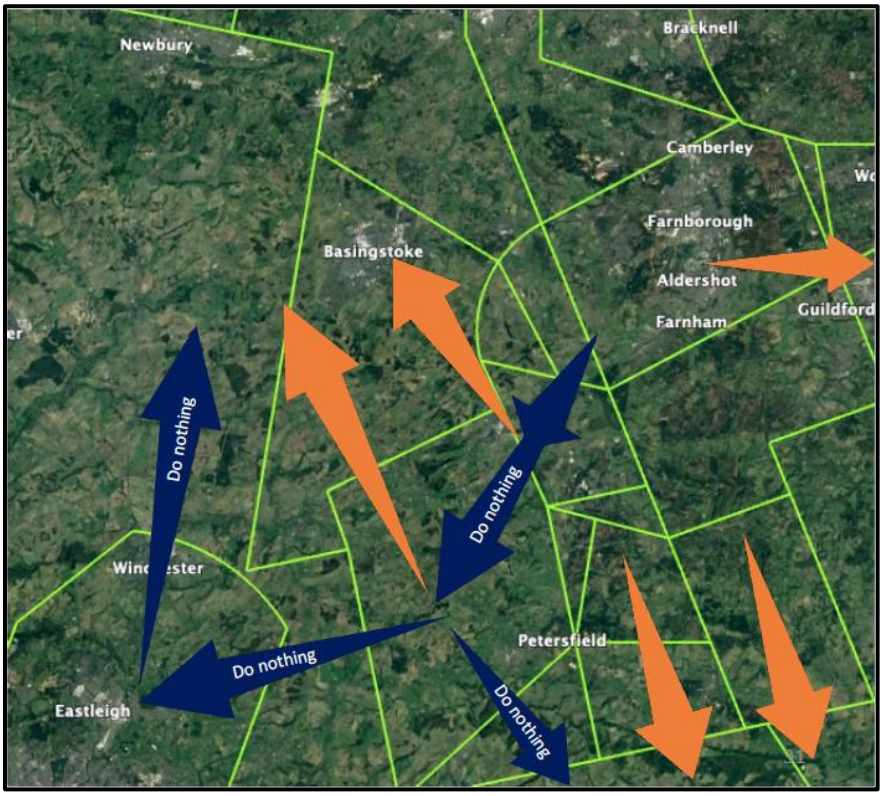


Figure 15: Technically viable departure flows to the network

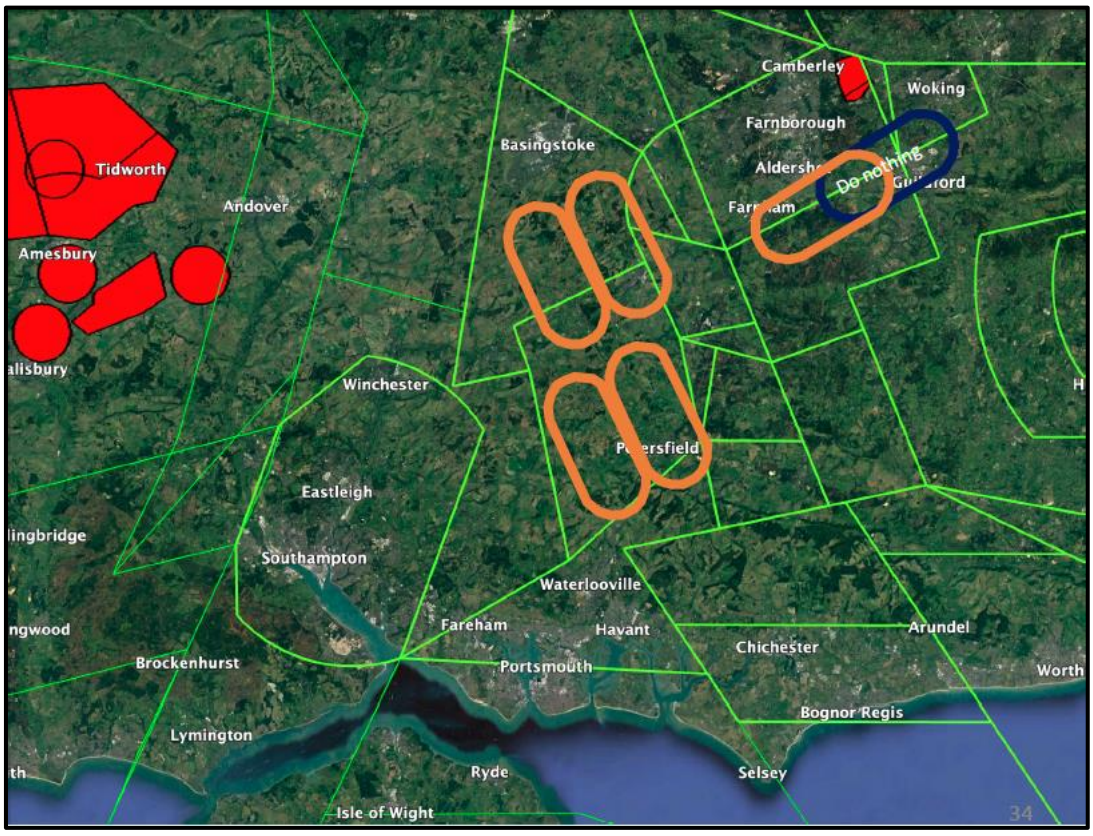


Figure 16: Technically viable areas for contingency holds (below 7000ft)

3.3 Comprehensive List of Options

3.3.1 From the list of technically viable scenarios, we generated four system options in addition to the Do Nothing (Option 1) scenario. A system option is a group of easterly and westerly arrival and departure routes that can work in combination.

3.3.2 The four system options (Options 2 – 5) each build in the amount of change, compared to Do Nothing (Option 1). i.e. Option 2 is quite similar to Option 1 whereas Option 5 is the most different from Option 1. This was done purposefully because, as explained above, the amount of change that Farnborough can deliver is wholly dependent on the changes to the wider airspace system surrounding it. Therefore, in the event that Heathrow and Gatwick's routes did not change enough to the extent to derive significant improvements to Farnborough's published route structure, there are still some more subtle options that could deliver benefit requiring less, but still some, change in the vicinity.

3.3.3 Across the four system options, each of the technically viable scenarios have been incorporated at least once. However, whilst four system options were initially generated, the most likely outcome of a final proposal will be that it is comprised of various components from several options.

3.3.4 This section illustrates each option together with a description of what it tries to achieve. Whilst we have four main system options (in addition to Option 1 Do Nothing), as a result of stakeholder feedback received during Stage 2, we broke these down further into an A and B

version of each one. This was to help articulate the subtle differences that could be introduced across each option.

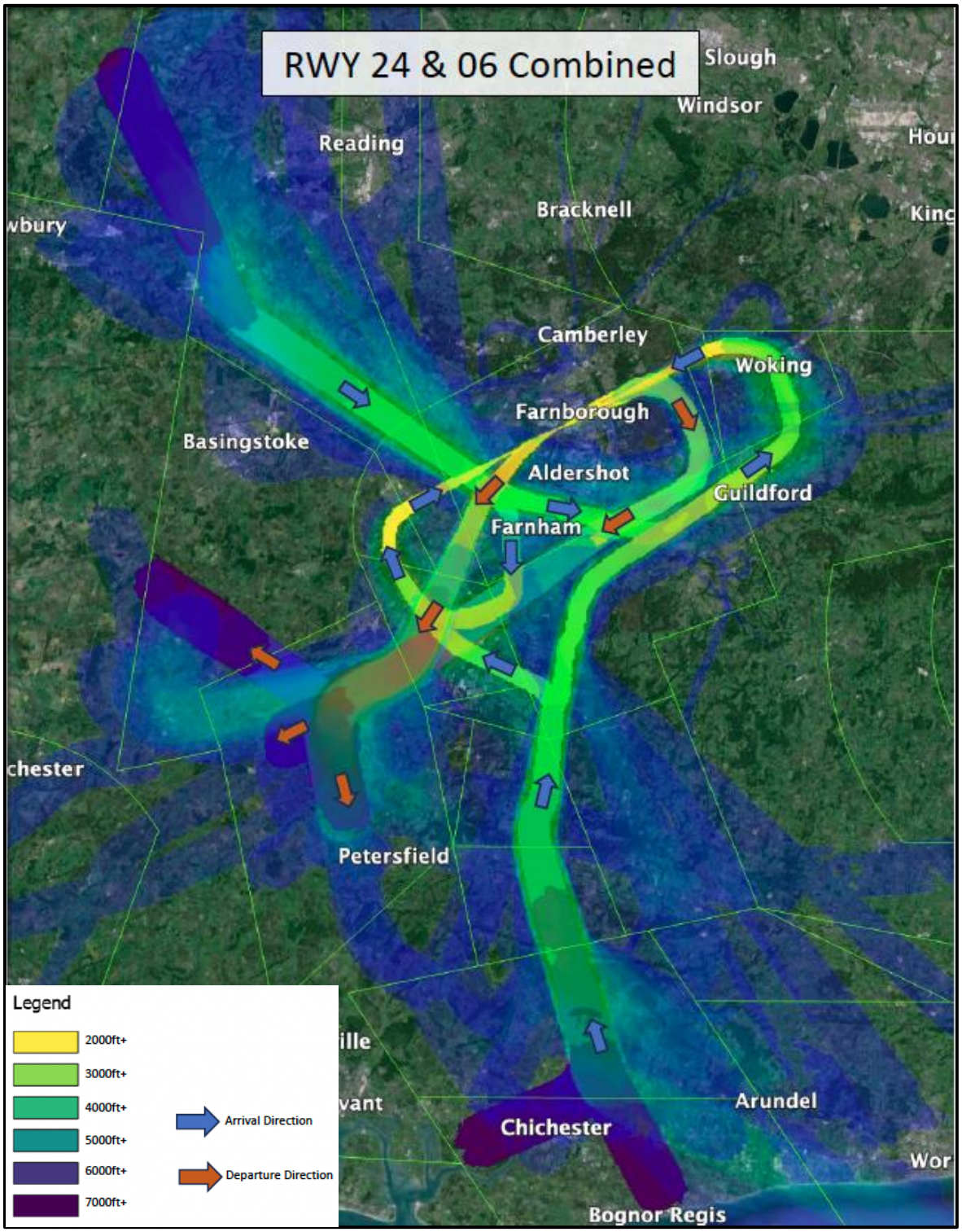
3.3.5 Following our first round of engagement in Stage 2A, stakeholders requested further information and granularity on options, with particular reference to clarity on vertical profiles. Owing to the dependencies on the changes required to the routes to/from adjacent airports combined with the general uncertainty with their designs, defining accurate profiles for Farnborough is extremely challenging. However, we generated an estimate of what typical vertical profiles might be like with each option, based on some assumptions. For each option, including Option 1 (Do Nothing) we have developed average profiles for each traffic flow within the option. For the Do Nothing option, this takes all the actual vertical profiles from a busy day and creates an average vertical profile for each traffic flow.

3.3.6 For Options 2 - 4 this average vertical profile is unchanged, but is just applied to a new centreline, where applicable. For Option 5, the vertical profile is enhanced to what we consider could potentially be a realistic future profile but only with wider changes made for routes to/from Heathrow and Gatwick. This should be treated as an approximate indication only at this stage. Such profiles have been generated at the request of stakeholders and would not normally be produced at this stage of the process for LTMA ACPs. The images assume all traffic remains on the flight path centrelines, in reality we would still expect an element of ATC tactical invention (vectoring).

3.3.7 It is these images we have used below to articulate each option. The options are illustrated as the complete system. For an easterly versus westerly breakdown of each option, please refer to our second round of Stage 2A engagement material, in Appendix A, pages 75-126.

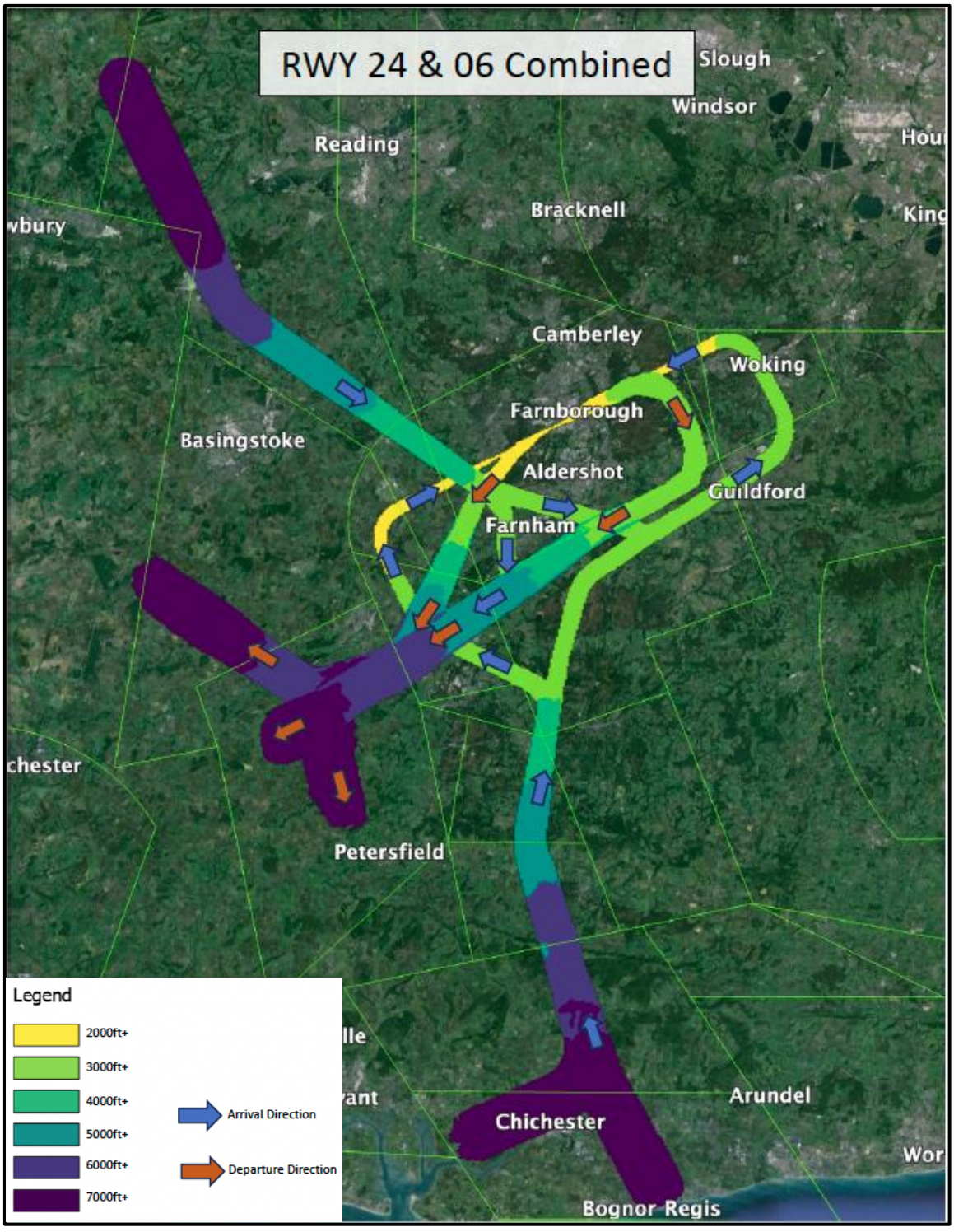
Option 1 (Do Nothing)

3.3.8 This maintains a high level of tactical intervention with all arrivals being vectored to final approach. ATC intervention is required to deconflict arrivals and departures. The existing contingency hold at VEXUB (Guildford) is very rarely used owing to its non-optimal location from an operational perspective. The existing and forecast baseline scenario is described in more detail in Section 2.



Option 2A

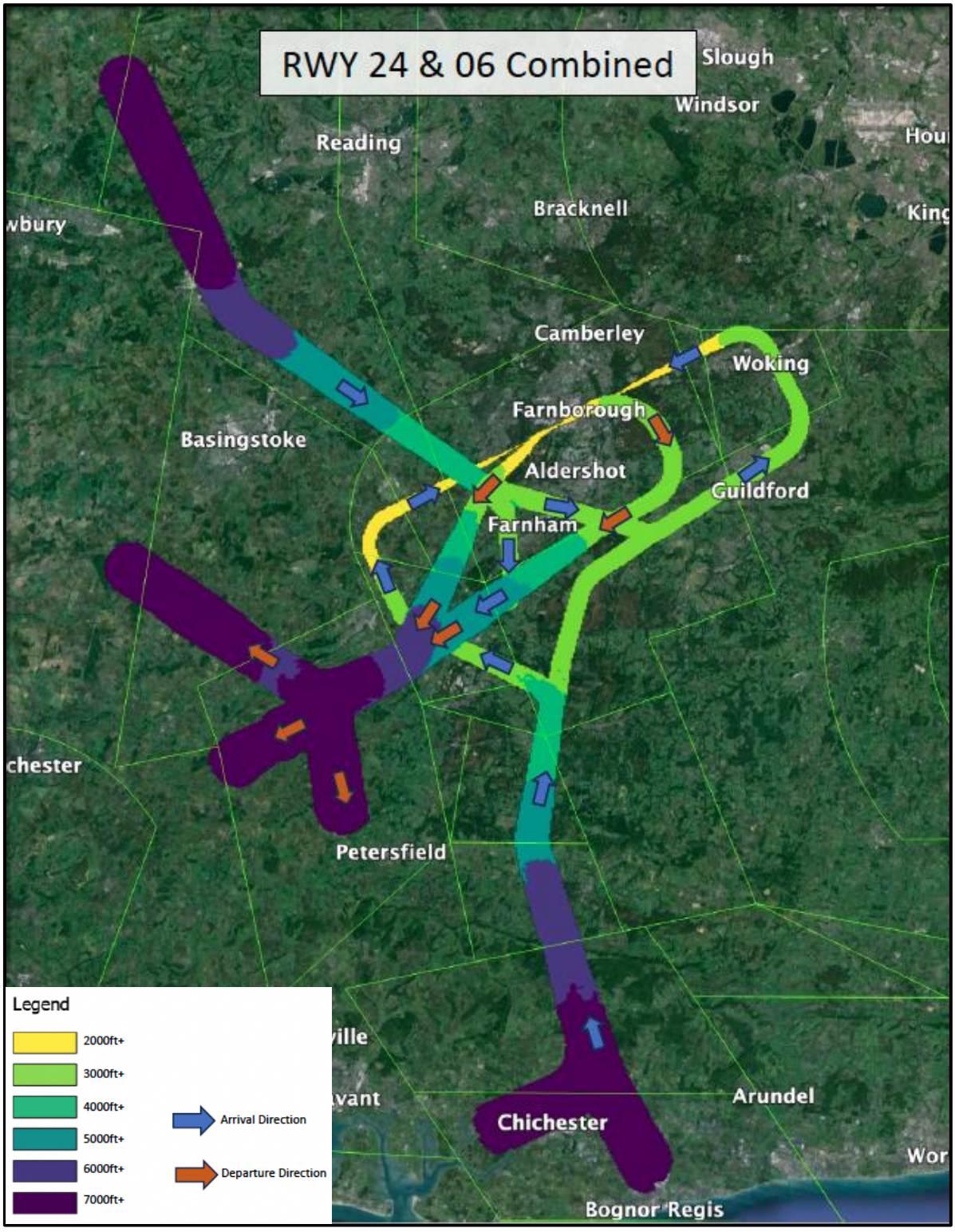
3.3.9 The lateral SID and STAR profiles remain similar to today but with enhancement to procedural and/or tactical vertical profiles, enabled by wider LTMA changes only[7]. A contingency hold to the South, West or Southwest added together with PBN transitions to final approach (ILS only). The latter will address the existing, interim scenario whereby Farnborough's IAPs are reliant on RNAV Substitution. See Section 2.9.



[7] Changes to profiles not assumed or illustrated in this option.

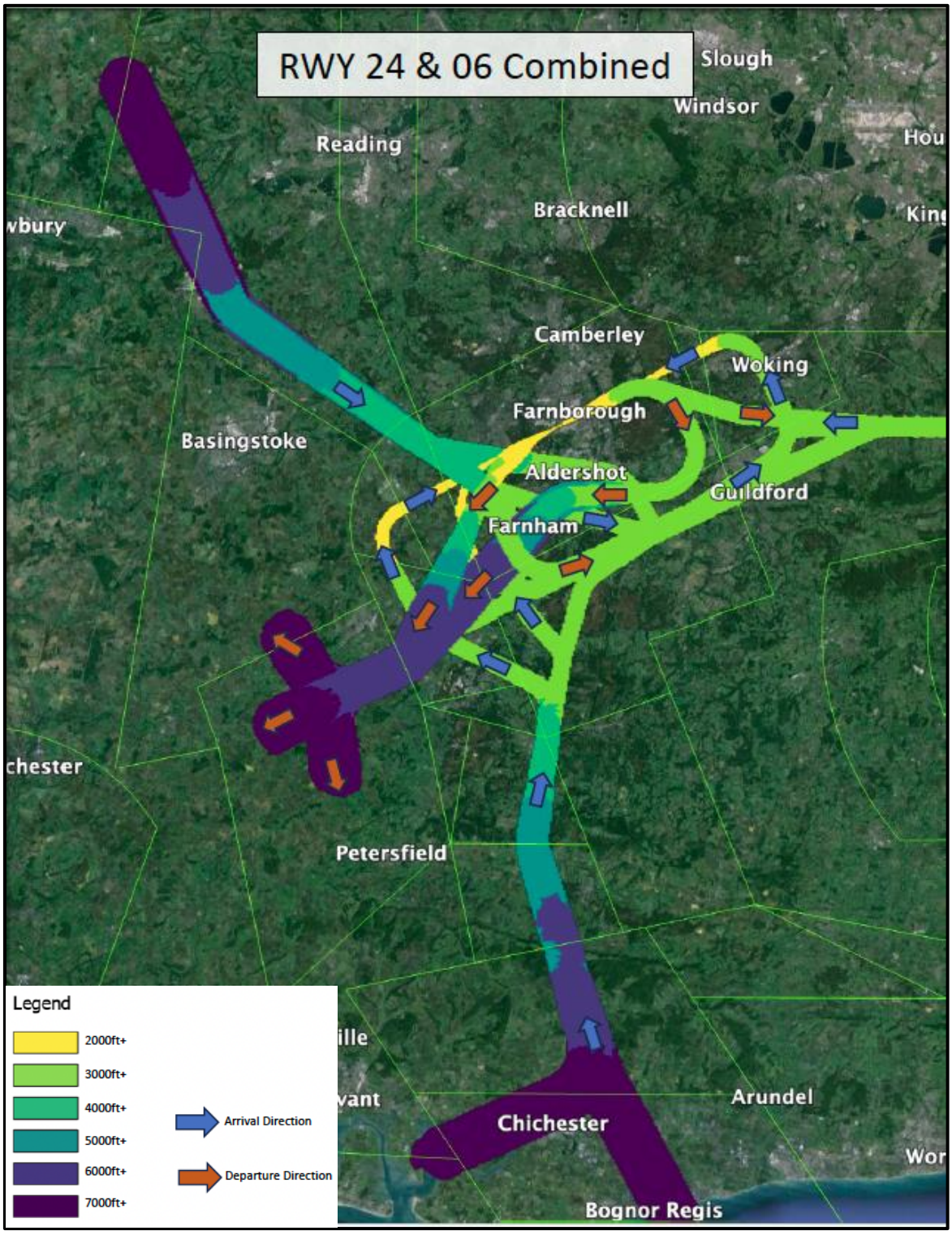
Option 2B

3.3.10 The differences from Option 2A are that the PBN arrival routes connect to both ILS and RNP APCH requiring a slightly longer final approach, likely to require more CAS. The Runway 06 SID turns right earlier than today.



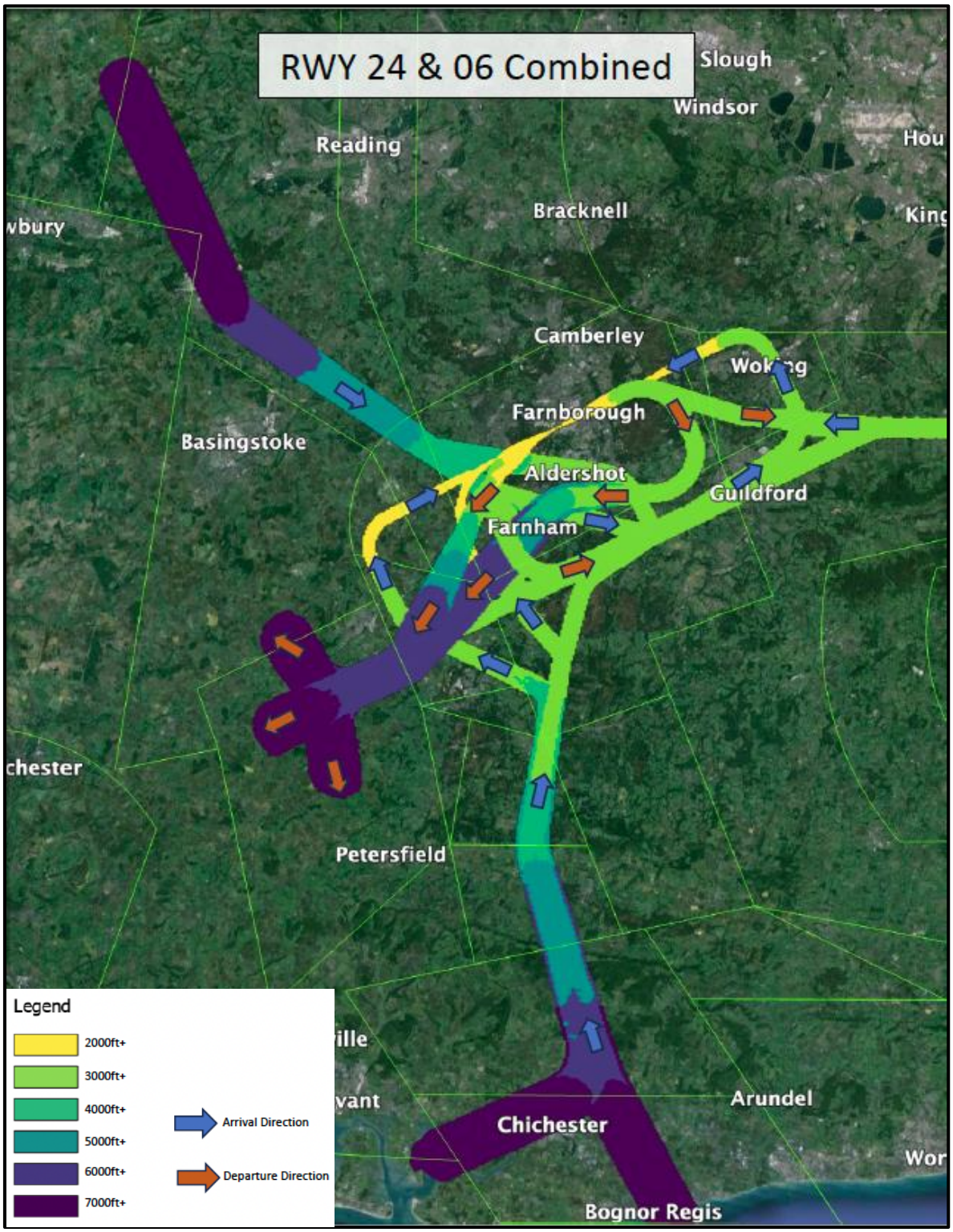
Option 3A

3.3.11 A build on Option 2A with the addition of a low level departure/arrival route to/from the east for flights between Farnborough and Biggin Hill. We may shorten the CPT SID to route more direct, aligned to where they are tactically positioned today, subject to improvements to Heathrow's departure profiles. A RNP-AR arrival to Runway 06 to avoid RAF Odiham and a re-alignment of the RWY 06 SIDs to better separate from arrivals are also considered.



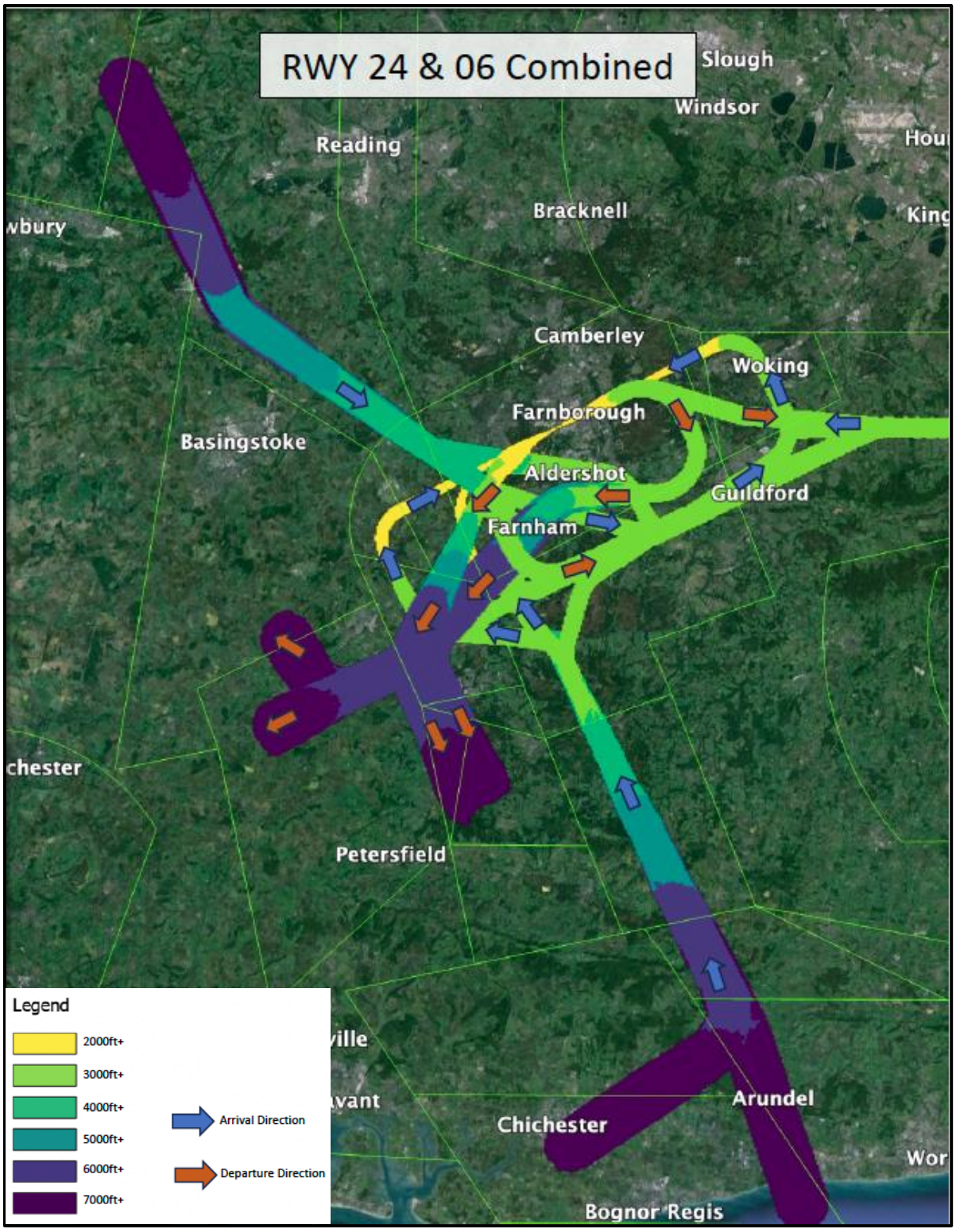
Option 3B

3.3.12 The differences from Option 3A are that the PBN arrival routes connect to both ILS and RNP APCH requiring a slightly longer final approach, likely to require more CAS.



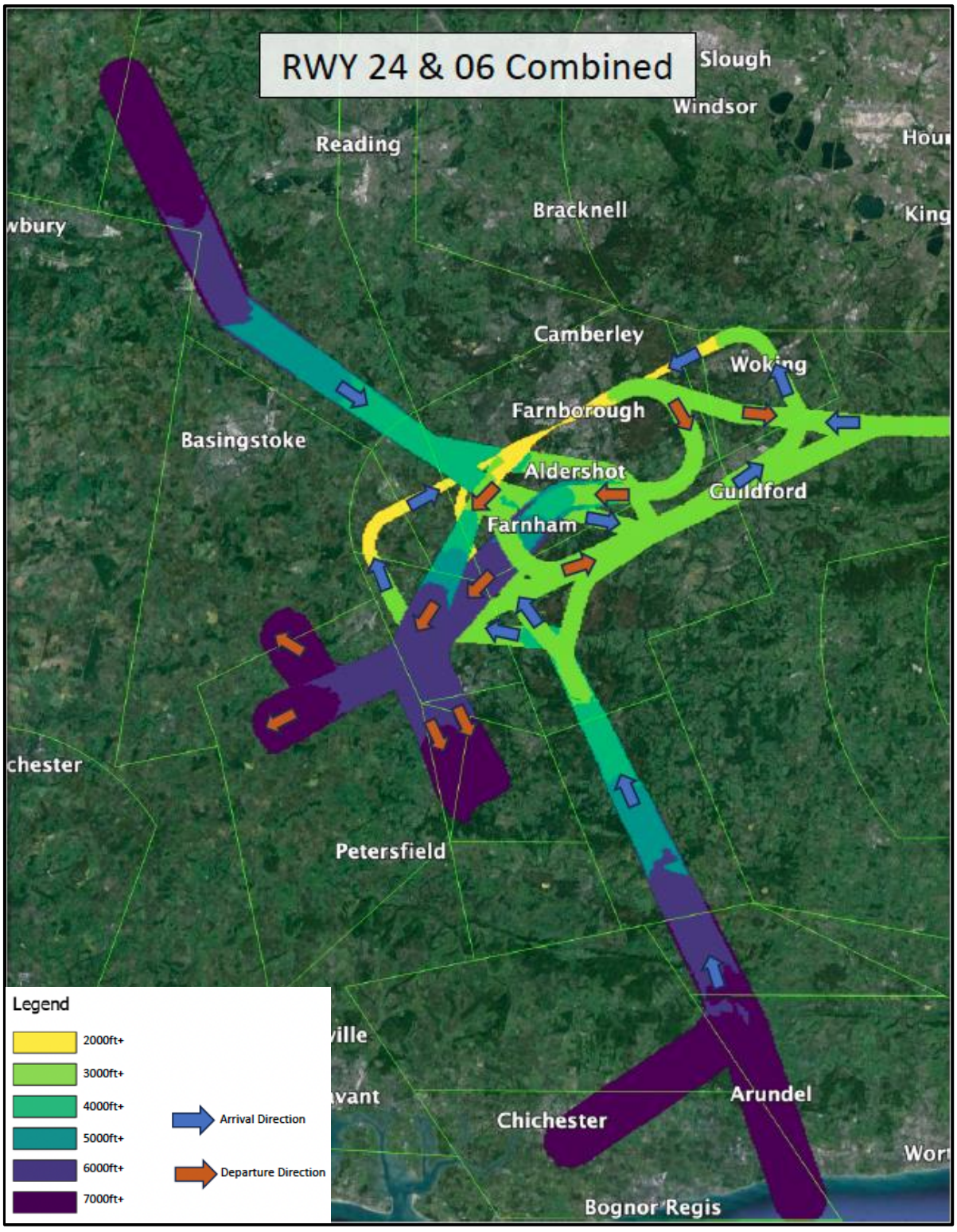
Option 4A

3.3.13 A build on Option 3A with a more direct arrival route from the south enabled by improved profiles for Gatwick departures. As a result, the departure route to the south can be more direct. This option has an example of how SIDs from different runways could converge later to reduce the frequency of overflight for the same communities.



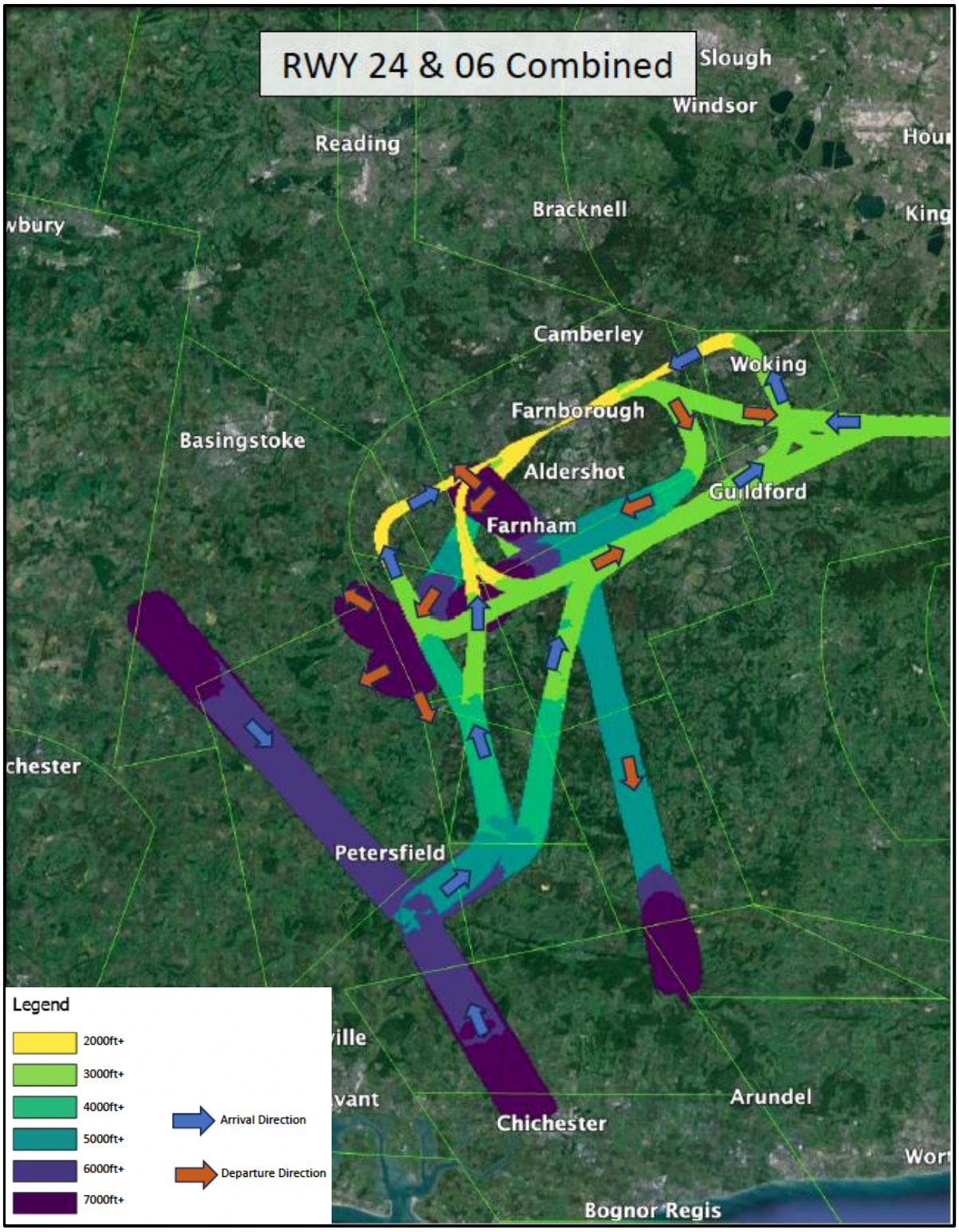
Option 4B

3.3.14 The differences from Option 4A are that the PBN arrival routes connect to both ILS and RNP APCH requiring a slightly longer final approach, likely to require more CAS.



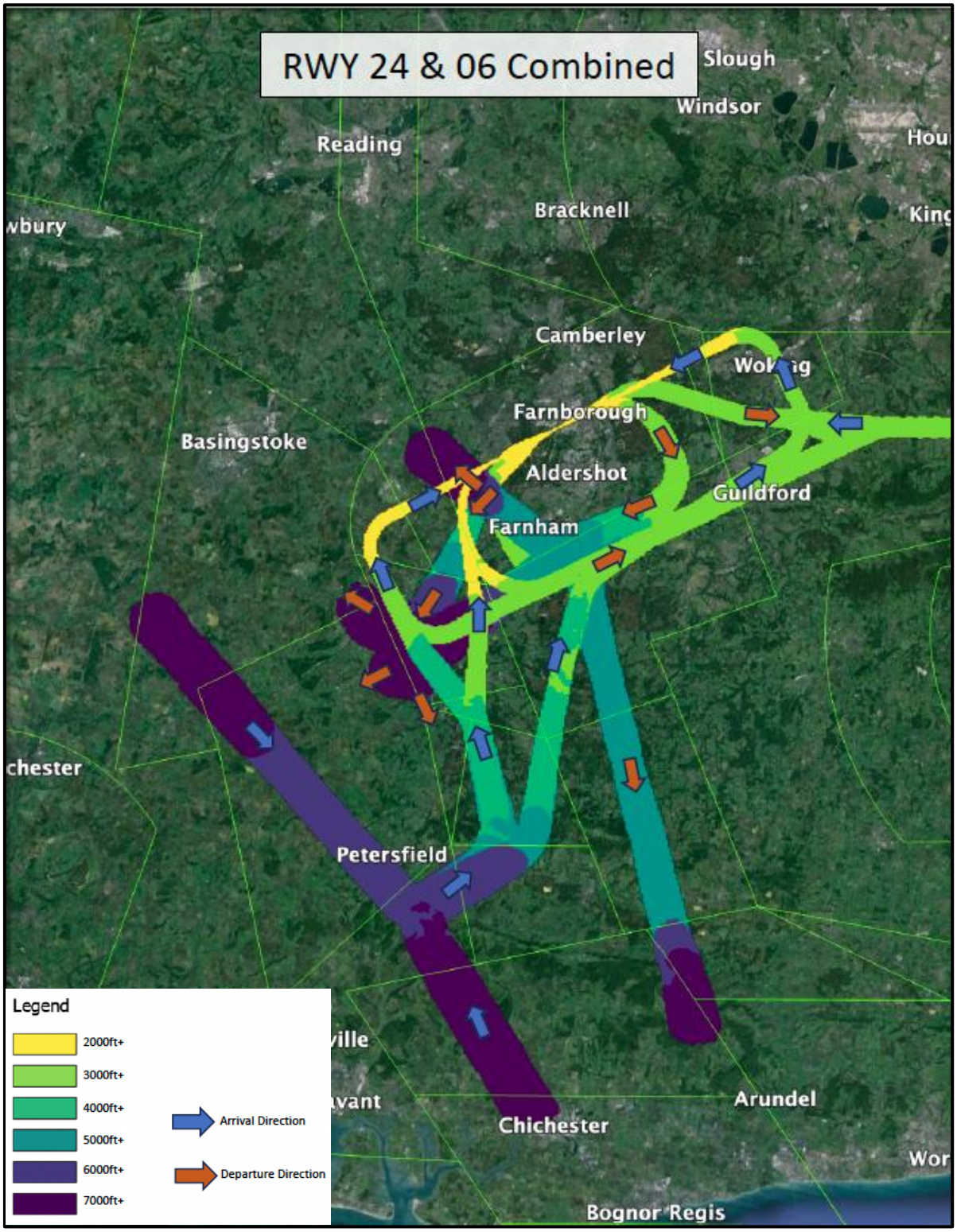
Option 5A

3.3.15 This option sees all arrivals entering Farnborough airspace from the southwest. We assume that, owing to improvements in profiles from Heathrow and Gatwick, Farnborough's departures and arrivals can be deconflicted by design. This requires Farnborough to be guaranteed airspace up to at least 6000ft to the west of Farnborough.



Option 5B

3.3.16 The differences from Option 5A are that the PBN arrival routes connect to both ILS and RNP APCH requiring a slightly longer final approach, likely to require more CAS. The Runway 06 SID turns right earlier than today.



4. STAKEHOLDER ENGAGEMENT

4.1 CAP1616 Requirements

4.1.1 CAP1616 Step 2A requires sponsors to undertake stakeholder engagement following the development of the Comprehensive List of Options (CLoO).

4.1.2 CAP1616 paragraph 125 states that the purpose of the engagement is for the sponsor to preliminarily test the CLoO with the same stakeholders it engaged with in Step 1B, to ensure that they are satisfied that the design options are aligned with the design principles and that the change sponsor has properly understood and accounted for stakeholder concerns, specifically related to the design options[8].

4.1.3 Farnborough Airport carried out stakeholder engagement on the CLoO from December 2023-January 2024.

4.2 Identification of Stakeholders

4.2.1 Farnborough Airport engaged with all the stakeholders who were engaged with at Stage 1. The stakeholders were separated into the following categories:

- Members of Parliament
- Councils/Authorities
- Industry Stakeholders
- Community Stakeholders
- Environmental Organisations/Groups

Members of Parliament

4.2.2 Farnborough Airport identified 47 constituencies within the potentially affected area and made the decision to inform them of the airspace change proposal from the outset, providing them with contact details at the airport.

4.2.3 The list of the constituencies is at Appendix C, page 104.

Councils/Authorities

4.2.4 Farnborough Airport identified 38 Borough Councils, Authorities and County Councils within the potentially affected area, some of these organisations are already represented on the Farnborough Airport Consultative Committee (FACC), however all those listed in Table 7 were invited to participate in the CLoO engagement.

4.2.5 The following table shows the councils and authorities who were contacted:

Borough/County Councils & Authorities	
Adur & Worthing	Arun
Basingstoke & Deane	Bournemouth
Bracknell Forest	Chichester District Council
City of Portsmouth	City of Southampton

[8] CAP1616 Edition 4 Page 39 para 125

East Dorset & Christchurch Borough Council	East Hampshire & Havant Council
Eastleigh Borough Council	Elmbridge Borough Council
Fareham Borough Council	Gosport Borough Council
Guildford Borough Council	Hart District Council
Horsham District Council	Mid Sussex
Mole Valley	New Forest
Reading	Runnymede
Rushmoor	Surrey Heath
Test Valley	The City of Brighton & Hove
Waverley District	West Berkshire
Winchester District	Woking District
Wokingham	Slough Borough Council
Royal Borough of Windsor & Maidenhead	Buckinghamshire County Council
Dorset County Council	Hampshire County Council
Surrey County Council	West Sussex County Council

Table 7: Councils/Authority Stakeholders

Industry Stakeholders

4.2.6 This is a wide range of groups which include, local airports and airfields, aviation operators from Farnborough Airport, the National Air Traffic Management Committee (NATMAC), the military and GA organisations.

4.2.7 NATMAC is a non-statutory advisory board sponsored by the Safety and Airspace Regulation Group (SARG) of the CAA. The committee is consulted for advice and views on any major matter concerned with airspace management. NATMAC is to assist SARG in the development of airspace policies, configuration, and procedures in order that due attention is given to the various requirements of all users of the United Kingdom airspace, civil and military.

4.2.8 Table 8 lists the organisations which are members of NATMAC.

NATMAC Members[9]	
Airlines UK	Airfield Operators Group (AOG)
Airport Operators Association (AOA)	Airspace Change Organising Group (ACOG)
Aircraft Owners & Pilots Association (AOPA)	Aviation Environment Federation (AEF)
Association of Remotely Piloted Aircraft Systems UK (ARPAS-UK)	BAe Systems
British Airways (BA)	British Balloon & Airship Club
British Airline Pilots Association (BALPA)	British Gliding Association (BGA)
British Business & General Aviation Association (BBGA)	British Hang Gliding & Paragliding Association (BHPA)
British Helicopter Association (BHA)	British Microlight Aircraft Association (BMAA)
British Skydiving	Drone Major
General Aviation Alliance (GAA)	Guild of Air Traffic Control Officers (GATCO)

[9] Based on the list provided by the CAA in September 2023

Honourable Company of Air Pilots (HCAP)	Helicopter Club of Great Britain (HCGB)
Heavy Airlines	Light Aircraft Association (LAA)
Isle of Man CAA	Military Aviation Authority (MAA)
Low Fare Airlines	NATS
Ministry of Defence – Defence Airspace & Air Traffic Management (MOD DAATM)	PPL/IR (Europe)
Navy Command HQ	UK Flight Safety Committee (UKFSC)
UK Airprox Board (UKAB)	HQ United States Country Rep – UK (HQ USCR-UK)
United States Visiting Forces (USVF)	

Table 8: NATMAC Members

4.2.9 Table 9 shows the local airfields and airports who were identified as stakeholders, this includes other major airports participating in the FASI-S programme and local airfields. The airports who are part of the FASI programme are highlighted with an asterix.

4.2.10 Additional local airfields and airstrips are also listed on the FAL stakeholder list at Table 12.

Local Airports/Airfields	
Blackbushe Airport	Brimpton Airfield
Denham Airfield	Dunsfold Aerodrome
Fairoaks Airport	Goodwood Aerodrome
Homestead Farm	Popham Airfield
Scotland Farm	Tongham Airfield
Valentine Farm	White Waltham Airfield
Wishanger	Wycombe Air Park
AACen Middle Wallop	Solent Airport
Bembridge Airport	Biggin Hill Airport*
Bournemouth Airport*	Heathrow Airport*
Gatwick Airport*	London City Airport*
London Luton Airport*	Manston Airport*
RAF Northolt*	Southampton Airport*
Southend Airport*	Stansted Airport*

Table 9: List of Airfield/Airport Stakeholders

4.2.11 Table 10 is a list of the aviation operators who operate out of Farnborough Airport.

Farnborough Operators	
AC Shares	Acropolis Aviation
Aero Flight Ops	Arpex BHM
AV8 Jet	Bookajet
Catreus	Crans Aviation
Dubai Airwing	Execujet
Executive Jet Charter	Falcon Air
Flexjet Operations	Gamma Aviation
GF Management	Graff Global
Grantax	Greyscape

GX Holdings	Ineos Aviation
Jet Concierge	LEA
Liberty Global	Mawarid Trading Company
NetJets	TAG
Vistajet	Voluxis
Avidus	European Flight Service (EFS)
Synergy Aviation	

Table 10: List of Farnborough Operators

4.2.12 Table 11 is a list of additional aviation related stakeholders identified by Farnborough Airport. These are operators who use Farnborough Airport on a less routine basis than those in Table 10.

Additional Aviation Stakeholders	
ASP	Eastern Airways
Execujet	Gexair
Global Jet	Premiair Aviation
Titan Airways	Thunder Airlines
Qatar Exec	

Table 11: Additional Aviation Stakeholders

4.2.13 The following table (Table 12) is the list of FAL (Farnborough Airport Limited) stakeholders, some of whom were identified during the previous airspace change proposal. Farnborough Airport felt that organisations and groups who had expressed an interest in the previous airspace change should be included as stakeholders for this proposal.

4.2.14 Following local investigation and searches, additions were made, and the result is a stakeholder list which includes a wide range of industry related groups/organisations including small local airfields, local gliding clubs and other airspace users.

FAL Stakeholders	
ACOG	Embraer
Air Ambulance (Hants & IOW)	Air Ambulance (Surrey)
BAE Corporate Travel	BAE Systems Marine
Bogner Regis Gliding Centre	Parham Gliding Site (Southdown Gliding Club)
Bookajet	Farnborough Aero Club
Cessna	Corporate Jet Management
Direct Aviation	EasyJet
Excellence Aviation	International Jet Club/Gamma International
Farnborough International Ltd	Frimley Park Hospital
Flying TV	ZC Aviation
Harrods Aviation	Head Start Aviation
IACA	Oxford Flight School
Lasham ATC	Lasham Gliding Club
Liberty Global	Avijet

LOWA	Microlight Sport Aviation
National Police Air Service	Special Aviation Services (HEMS/Air Ambulance)
Pitlands Farm Airstrip	Thorney Island Artillery Station
RAF Odiham	Royal Aero Club
Satcom Direct	TAK Aviation
Shoreham Airport	Colemore Common Airfield
Skysurf	Hampshire Microlight Flying Club
Solent School of Flying/Bournemouth Helicopters	London TC
TGC Aviation	Twesledown Racecourse
Thorney Island Flying Club	Hadfold Farm Airfield

Table 12: FAL Stakeholders

4.2.15 Farnborough also identified the following balloon operators as stakeholders as shown in Table 13.

Balloon Operators	
Adventure Balloons	British School of Ballooning
Virgin Balloon	

Table 13: List of Balloon Operator Stakeholders

Community Stakeholders

4.2.16 This group includes the FACC, which was established to develop an understanding between Farnborough Airport and the neighbouring community, local authorities and special interest groups on the operation and use of Farnborough Airport. It operates in an independent advisory capacity and its members are representatives from the following:

Farnborough Airport Consultative Committee (FACC)	
Farnborough Airport Representatives	Rushmoor Borough Council
Dassault Aviation Group Ltd	Guildford Borough Council
GAMA Aviation Ltd	Hampshire County Council
Farnborough International Ltd	Surrey County Council
NATS	Surrey Heath Borough Council
TAG Aviation Ltd	Waverley Borough Council
WJE Associates	Woking Borough Council
Ash Parish Council	Church Crookham Parish Council
Crondall Parish Council	Ewshot Parish Council
Farnborough Airport Residents Association	Farnham Town Council
Fleet & Church Crookham Society	Mytchett, Frimley Green & Deepcut
Farnborough College of Technology	Blackwater Valley Friends of Earth
Hart District Council	

Table 14: FACC members/representatives

Environmental Organisations/Groups

4.2.17 Farnborough Airport identified the following environmental organisations/representatives as stakeholders for this airspace change proposal:

Environmental Organisations/Representatives	
Campaign to Protect Rural England (CPRE)	Colemore Common
Cranborne Chase & West Wiltshire Downs AONB	Dorset AONB
English Heritage	Environment Agency
National Trust	Natural England
New Forest National Park	South Downs National Park
Surrey Hills AONB	Chichester Harbour AONB
Farnborough Noise Group	

Table 15: List of Environmental Organisations/Representatives

4.3 Engagement Methods

Members of Parliament - Inform

4.3.1 The MPs/Constituencies identified in Stage 1 and listed in Appendix C were contacted as information only. As with Stage 1, Farnborough Airport felt that engaging with this group at this stage of the process would be disproportionate.

4.3.2 Farnborough Airport emailed all MPs/Constituencies list in Appendix C to provide them with background information on the ACP, provided a link to the CAA Portal and Stage 1 submission and given information on the aims of the Stage 2A engagement. A copy of the email distributed is available at Appendix C, page 7.

Local Councils/Authorities – Engage

4.3.3 The local authorities and councils identified in Table 7 and Table 14 were invited to engage on the Comprehensive List of Option (CLoO) and were invited to attend the planned workshops.

4.3.4 Copies of the emails sent to these stakeholders are available at Appendix C, pages 8-11.

4.3.5 As part of the feedback received by the CAA on the Stage 1 submission, it was suggested Farnborough Airport could consider adding town and parish councils to the list of stakeholders.

4.3.6 Farnborough Airport has chosen not to do this, as at this stage of the process it would be disproportionate, and Farnborough feels that the level of engagement should be proportionate to the level of detail available. The level of detail for Parish Councils is not mature enough, owing to Farnborough's dependencies on adjacent airports and the high number of Heathrow and Gatwick design options at the end of their Stage 2 processes.

4.3.7 In addition, aside from those parish councils who sit on the Farnborough Airport Consultative Committee, these stakeholders were not included in Stage 1. CAP1616 Ed 4 Para 125[10] states that options in Stage 2 should be tested with the same stakeholders it engaged with in Step 1B.

4.3.8 Farnborough Airport will consult with town and parish councils in Stage 3, during the full public consultation, when proposals and associated details are more mature.

[10] CAP1616 Edition 4 Page 39 para 125

Industry Stakeholders – Engage

4.3.9 All industry stakeholders listed in Tables 8-13 were invited to engage on the CLoO and were invited to attend the planned workshops.

4.3.10 Copies of the emails sent to industry stakeholders are available at Appendix C, pages 8-19.

Community & Environmental Stakeholders – Engage

4.3.11 All community and environmental stakeholders identified in Tables 14-15 were invited to engage on the CLoO and were invited to attend the planned workshops.

4.3.12 Copies of the emails sent to these stakeholders are available at Appendix C, pages 8-20.

4.4 Stakeholder Engagement Workshops

4.4.1 Farnborough Airport planned both on-line and in person events and provided stakeholders with the opportunity to attend whichever event they preferred. An evening session was also scheduled for those stakeholders who may be unable to attend a workshop during the day.

4.4.2 Reminder emails, with details of the workshops and how to register were sent to all stakeholders on 23 November 2024. Copies of the emails sent to all stakeholders are available at Appendix C, pages 21-33.

4.4.3 Farnborough held 4 workshops between 4–12 December 2023. The list of attendees of each workshop is at Table 16.

Workshop 1 (Online) 4 December 2023	Workshop 2 (F2F) 5 December 2023	Workshop 3 (F2F) 11 December 2023	Workshop 4 (Online) 12 December 2023
Stansted Airport	Church Crookham Parish Council	FAL Residents Association	British Gliding Association
NATS	Skysurf	Waverley Borough Council	RAF Northolt
Chichester District Council	Popham Airfield	Stansted Airport	Gatwick Airport
RAF Odiham	Ewshot Parish Council	Blackbushe Heritage Trust	Southdown Gliding Club
West Sussex County	Farnborough Noise Group	Avidus	British Helicopter Association
Surrey Hills AONB	Fleet & Church Crookham Society		National Trust
FACC Chairman			Hart District Council
Southend Airport			Surrey County Council
British Airline Pilots Association			Hampshire Microlight Flying Club
Blackbushe Airport			Stansted Airport
Blackwater Valley Friends of Earth			London Luton Airport
Denham Airfield			NATS
Waverley District			Lasham Gliding Club
South Downs National Park			Heathrow Airport
Ash Parish Council			Basingstoke & Dean Borough Council
Basingstoke & Dean Borough Council			Gulfstream

Heathrow Airport			
Brimpton Airfield			
Woking Borough Council			
South West Surrey County Constituency			
British Gliding Association			

Table 16: CLoO Workshop attendees

4.4.4 The presentation provided by Farnborough Airport covered the following topics:

- Airspace Modernisation Strategy
- ACOG background
- CAP1616 Process
- Stage 1 Recap
- CAP1616 Stage 2
- Baselines (Do Nothing)
    - Existing airspace constraints/overflight patterns/ATMs
- Examples of scenarios investigated for viability
- Overview of technically viable scenarios
- Illustrative System Options

4.4.5 The presentation distributed to all stakeholders following the workshops included additional slides detailing all the scenarios which were investigated for viability. A copy of the presentation is available at Appendix A, pages 2-74.

4.4.6 Stakeholders were asked to respond to the following questions:

- Do you think our current design options are aligned with our Statement of Need and Design Principles?
- Are there any changes or additional options you would like us to consider?

4.4.7 Stakeholders were also encouraged during the workshops to ask any questions, or they could email the bespoke ACP email address. The deadline for feedback was 26 January 2024, giving all stakeholders 6 weeks to provide comments.

4.5 Summary of Feedback and Farnborough Airport's Responses

4.5.1 In total, Farnborough Airport received 23 documents/emails with feedback from stakeholders.

4.5.2 Where possible, the entire feedback has been included in Table 17. However, some of the feedback received was very lengthy, therefore, in those cases, the feedback has been summarised by Farnborough Airport to include only the relevant points regarding the Comprehensive List of Options. Farnborough Airport has annotated in the table where feedback has been summarised.

4.5.3 Farnborough Airport has provided a response to each item of feedback received in Table 17 below.

4.5.4 The full feedback received from all stakeholders is available at Appendix B, pages 3-48.

Stakeholder Group	Stakeholder Name	Do you think our current design options are aligned with our SoN & DPs	Are there any changes or additional options you would like us to consider?	Additional Feedback	EGLF Response
Aviation Industry	**Gatwick Airport**	To our knowledge and understanding, Farnborough's current proposals align with its FASI-South statement of need.	On all options shortlisted concerned with easterly operations, Potential interactions with routes to the North and West of Gatwick should be monitored as designs progress. Positioning of potential Farnborough hold(s) to the Southwest may interact with Gatwick's westward planned and existing departure options. With regard to the potential for "enhanced PBN standard" It is Gatwick's view that with Farnborough's [anticipated] standard of fleet navigation specification, switching to a higher PBN specification would be beneficial to all FASI stakeholders.	Assuming that the current ongoing PIR results in no amendments to the existing airspace for Farnborough, and no change to the current anticipated traffic pattern and population of users, therefore no change to the noted constraints, taking account of the traffic growth aspirations: a. First turn scenarios 1, and 2, appear likely to be compatible at current traffic levels and interactions can be managed successfully. If and when traffic increases, as per Farnborough's plans, it is likely that in both these scenarios there will be an increased possibility of interactions with Gatwick, from proposed routes between Guildford and Woking. b. Re Option 5, Gatwick would need to be appraised of the potential for interaction with both our Arrival and departure streams, as there are likely to be interactions with our Westerly traffic and potentially with Gatwick traffic on Route 4, unless Farnborough plan to climb more aggressively and fly over, so it is likely that more work would be needed. c. The First turn westerly approach, (option 5) appears acceptable to Gatwick. d. Any route designs proposed to the East of Farnborough could potentially interact with Gatwick westernmost FASI proposals, and as such could cause an increase in workload & interactions, which it would be desirable to monitor and manage. e. Re Contingency hold options Gatwick would wish to confirm that there is unlikely to be any effect on Gatwick departures to the West. f. The Option 1, Do nothing Scenario appears acceptable to Gatwick, provided it is possible to accommodate the traffic growth being sought. g. Illustrative System option 2 Runway 24, notes the possibility of upgrading to a higher PBN specification; investigation of any potential for this should be explored as Gatwick believe this would be of benefit to both Farnborough's proposals and also neighbouring airports within the airspace system as a whole. h. Gatwick can see no likely issues with system option 2 Runway 24. i. Gatwick can see no issues with system option 2 Runway 06. j. Option 3: Option 3 Runway 24 - provided arriving traffic was further to the west this option would be acceptable to Gatwick. Illustrative System option 3 RWY06 - Easterly Departure and arrival routes must not interact with Gatwick traffic.	Thank you for your detailed response. We note that any route between Farnborough and Biggin Hill will only be possible with separation from Gatwick (and Heathrow) traffic flows, especially Routes 3 and 4 from Gatwick. Any contingency hold to the west would also have to ensure separation from Gatwick's departures. We will explain that the maximum level of such a hold is dependent on the ability for Gatwick departures to outclimb them – a minimum holding level of 6000ft is potentially viable. We also note proximity of arrival and departures routes to/from the south against your RMA. We will continue to work with Gatwick and NERL in Stage 3 to minimise interdependencies between us.

				Gatwick has /no opinion on moving Approaches East (i.e. Option 4, RWY 24, & 06) k. Option 5: Greater dependency on the wider FASI design Option 5 RWY 24 - the apparent possibility of interaction with Gatwick traffic in South West Corner of Gatwick's RMA would need clarifying and monitoring, Option 5 RWY06 - Gatwick can see no issues with system option 5 RWY 06	
	Heathrow Airport	The current design options appear to be aligned with Farnborough Airport's Statement of Need and Design Principles.	We do not have any proposed changes or additional options for you to consider at this time and we look forward to working collaboratively with Farnborough Airport with regard to our respective future airspace designs.		Thank you for your response.
	London Luton Airport	No response	All design options look good and are aligned with the airport's Statement of Need and Design Principles. Although the options do not directly impact London Luton Airport, we are keen to see Farnborough Airport's progress as quickly as possible to avoid delays in LTMA system-wide and regional cluster changes.		Thank you for your response.
	Southampton Airport	No response	In this process Farnborough need to remove the requirement for some of their departures to work Solent radar, this will reduce the delays incurred to traffic departing Southampton Airport then on the same route. I think the design principles submission document page 34, 5 5.1.1. covers this but in para 5 but this is something to investigate.		Thank you for your response. We very much would like to remove dependencies with Solent Radar too. All our options have a desire for northbound departures to turn NW earlier than today, to avoid Solent's airspace though this is dependent on an ability to guarantee climb to at least 6000ft, west of Farnborough but east of Southampton's CTA.
	NATS NERL (NATMAC)	NERL agreed that the Farnborough design options were aligned to both the Statement of Need and the Design Principles.	NERL considers that Farnborough have created a comprehensive set of design options. In a number of design options there exists a "low level departure and arrival routes to/from the east for flights to between Farnborough and Biggin Hill". NERL would like to suggest that this is not limited to Biggin Hill and made available to Thames Airports. Furthermore, NERL would like to ask whether Farnborough has considered whether this route might be suitable as a departure route, if it could be accommodated by the Network?	Reference to FASI South should be amended as nomenclature has changed. Reference to Farnborough Clutch should be changed to 'Wessex Group'. Low level contingency holds would be outside of the NERL scope. Lateral profiles seem reasonable. Improvements to climb profiles will be dependent on climb profiles of routes from adjacent airfields. Option 4 (Slide 47) and Option 5 (Slide 50) departure route via Midhurst as drawn, may require additional low-level controlled airspace depending upon departure profiles from adjacent airports.	Thank you for your response. Routes between Farnborough and London City/Southend would require the buy in of Biggin Hill unless NERL can guarantee climb above their routes. With Heathrow and Gatwick interactions we thought this unlikely. If this is something that can be accommodated by NERL and Biggin Hill then we are certainly open to exploring this in Stage 3 but we will not assume this in our Stage 3 DPE/IOA at this stage. We have considered more Farnborough traffic routing that way (to/from DVR) but as it's highly unlikely that Farnborough traffic could climb above 3-4000ft until east of Biggin Hill airport, the numbers of people affected by noise from a greater number of Farnborough movements below 4000ft would not be in keeping with DfT's altitude-based priorities. In the unlikely event that NERL can facilitate traffic in this corridor at improved altitude, Farnborough would be happy to investigate this in stage 3. However, discussions with NERL in combination with assessment of Heathrow's options make currently make this scenario unlikely.

General Aviation	**British Gliding Association (NATMAC)**	No response	Thanks for your engagement. The presented options are wide ranging and complex. Like many other stakeholders, we are keen to see Farnborough traffic climb as high and as early as possible and descend as late as possible. Continuing with the current situation of Farnborough traffic routing around southern England below 3000' and with an ambition of doubling movements is clearly unacceptable. The "swathes" do not include dimensions of potentially applicable airspace design. Therefore, we are unable to identify whether they had been correctly evaluated against the relevant Design Principals (DPs), e.g DP's 2, 4c and 5. While we recognise that the ACP is being developed by the sponsor in line with CAP1616 procedure, the absence of any proposed airspace design at this stage makes it impossible for us to understand the potential impact on our airspace user activities and airfields. We understand from the briefing and other engagement that the current approach to trying to achieve cohesive and efficient airspace design anywhere in the UK is hampered by the current process where all ANSP's do their own thing for airports that are in competition with each other, and as a result in this case, Farnborough traffic is unable to integrate with London airports traffic resulting in more controlled airspace (and emissions etc) below 7000'. It would seem obvious that the only option that has the potential to optimise AMS principles is Option 5. However, we understand that Farnborough is 'down the pecking order' when it comes to prioritisation in the LTMA, which does not suggest that ANSPs including NATS are open minded about improving the situation. A top-down solution is needed. In summary, until we see indicative airspace designs with vertical and horizontal dimensions, we are unable to give a view on whether your current design options are aligned with your Statement of Need and Design Principles. The Farnborough ACP is little different from others we are engaged in, i.e. CAP1616 box ticking in nature, complex and almost impossible to understand the impacts.	Owing to the dependencies on the changes required to the routes to/from adjacent airports combined with the general uncertainty with their designs, defining accurate profiles for Farnborough is extremely challenging. However, based on this feedback from BGA and others, we will develop and share a set of average, typical profiles for each option to better illustrate the designs at this stage to enable more feedback. These can then be compared to an existing 'average' profile for Farnborough's traffic flows. We have also provided separate images of westerly configurations, easterly configurations and combined easterly/westerly configurations. We agree that more detailed benefits and impacts cannot be defined until greater maturity of design exists, which will not be until the Full Options Appraisal, in Stage 3 of the process, where dependent airspace change sponsor timelines are aligned into a combined consultation activity. Options will continue to mature in granularity and certainty as we progress through the CAP1616 process. At this stage (Stage 2) of the process, options are relatively immature, and we can only assess based on the information available at the time. CAA allow sponsors of interdependent proposals to progress through Stage 2 in isolation however by Stage 3, designs will need to be integrated and mature enough for Full Options Appraisal. Owing to the scale and complexity of the FASI programme, this is why many sponsors have carried forward multiple options into Stage 3. Following our Initial Options Appraisal (IOA) of our Stage 2 options, we anticipate we will be able to discontinue options, or part of options that are clearly going to underperform against our design principles and the categories of impacts assessed within the IOA.
	Southdown Gliding Club	In answer to the first bullet, we consider that the baseline and initial options presented are (so far) in line with the Statement of Need and the Design Principles defined from Stage 1. As aviation stakeholders, our particular interest is in how Farnborough Airport will demonstrate compliance with Design Principles 4 (improved vertical profiles),	<u>Summary of relevant feedback</u> • Would like to see the existing LOA designed out of the airspace – concerns that an increase in ATMs will be an issue for the existing LOA. • EGLF should be more ambitious with goals to reduce the amount of CAS required, bearing in mind the ambitions of Gatwick. • Unable to see how the options reflect on required volumes of airspace due to all the work of the airports & NERL still to take place. • Contingency Holds seen as a large issue for Southdown Gliding Club & giving cause for concern. They should be within existing airspace or located so that gliders could operate up to FL55 under the structure. Would like further engagement on these. • Containment policy – 2nm vs 3nm on straight legs & turns. 3nm only applies to fly-by turns. Suggestions on using a higher PBN specification RNP-AR/A-RNP if it helps reduced CAS containment volumes.	Thank you for your response. We note the desire to remove a requirement for any LoA. Proposals need to be at a more mature stage before LoAs are considered though we understand the intent. Yes, it is impractical to determine CAS volumes at this stage although we will include a qualitative assessment of CAS impacts in our IOA. We would also wish to see no holding below 6000ft though this is dependent on the ability for Gatwick departures to be guaranteed higher altitudes on their westbound departures. We will provide some more detail on potential holding levels in our updated engagement material.

		5 (remove dependencies with other ATC units and minimise the impacts on other airspace users) and 7 (make best use of Farnborough's modern aircraft fleet capabilities). We also have a general concern that despite the best endeavours of Farnborough Airport, you may not be able to deliver, or at least may have to compromise your designs due to constraints placed on you by NATS NERL, LHR and LGW airports. This, we see as being common amongst all FASI-S ACPs which is why to some extent we reserve any final judgement given that what Farnborough Airport and General Aviation airspace users would prefer to see, may not be realisable or even achievable. This, I'm afraid is a consequence of constraints from the co-ordination process and where Farnborough sits in the wider Southeast airspace modernisation given both the airfield proximity and vertical restrictions.	• Support for Option 4 and any network arrivals that move traffic further east, releasing airspace to the west and enabling our final-glide from the Lasham area. <u>Full Feedback available at Appendix B, pages 12-16</u>		CAA CAS containment rules are noted. Even with a 2nm containment, a 2nm buffer would require more CAS. We hope that a suitable safety argument can be produced that enables c.1-2nm in certain circumstances for Farnborough. As per your recommendation we will investigate A-RNP RF turns onto final approach for this reason. We do have an option for RNP-AR for a RWY 06 arrival to avoid Odiham, though currently, a limited number of arrivals will be able to fly these.
	Lasham Gliding Club	No. The options: • Need to be clearly set within the full set of known influencing factors. • Have to be presented to a greater degree of granular detail to allow for a proper assessment of operational implications and	We would suggest that the further development of the ACP is done through a mix of both engagement with all the relevant stakeholder groups as well as technical working sessions with key aviation stakeholders specifically. If Farnborough is serious about getting the optimal outcome for its ACP that we strongly suggest that greater collaboration is a far more productive way to proceed at a	<u>Summary of relevant feedback:</u> • The final outcome of the PIR will have a fundamental bearing on the starting point for any ACP. We would expect Farnborough to provide a clear explanation as to how the Stage 2A outputs and the scope of timings of its stages 2 & 3 ACP processes might have to change, depending on the results of the PIR. • LGS input to the PIR highlighted critical need for a full safety and risk review – no acknowledgement for such a review in the Stage 2A output. • None of the options put forward refer to the LOA areas agreed by LGS, EGLF & RAF Odiham which were agreed	Thank you for your response. Please also refer to response to BGA to avoid duplication of text. As mentioned above, the lack of clarity on the wider airspace designs means that being exact about impacts, positive or negative, on controlled airspace is not possible at this stage. The volume of Farnborough's CAS requirements is directly dependent on the profiles of traffic to/from Heathrow and Gatwick airports. However, as committed to in Stage 1, we are using flight density plots of traffic patterns outside CAS, to support the qualitative assessments of our options at this stage. These

		consequential impacts. • Should be more reliably representative of what Farnborough might need to do under the wider LTMA system construct rather than be concerned with a design that is centred entirely on Farnborough and which may not survive much engagement with the wider LTMA reconciliation.	technical level than arms-length engagement.	years ago, but never implemented - no explanation given as to why. • impossible to know how the options will fare when considered against Heathrow & Gatwick options - our options should take account of how the conflicts might be resolved. Implications for the timings of the process but stakeholders would be asked for feedback on options that have potential. • Intention to change movement numbers under planning permission is confusing. • Options are broad, involved and complex and insufficient information understand the profile and/or impacts of an option. More information is needed to answer the questions. • No insight on the impact of options on transit traffic - major omission. • LGS would like further clarification on 2 points. 1) page 16 - require more detailed information before we accept the assertation that EGLF deps & arrivals are held down by EGLL deps. Would like to know if relatively small changes to EGLL deps would be easy to achieve & bring benefits (reduce in CAS). 2) page 21 - using peak hourly movements leads to inefficient and wasteful use of CAS. If a smaller by default volume of airspace is used to deal with a given and reasonable percentage of peak demand levels, then it may achieve the optimal balance between efficient use of controlled airspace and the small amount of time that some form of ATC restrictions might need to be in place to handle extreme peaks. <u>Full Feedback available at Appendix B, pages 17-20.</u>	flight density plots will be shared with you in a second round of engagement together with more detail of anticipated vertical profiles. To highlight an example of how we have used this flight density information, in the DPE summary you'll see that options with a slightly longer RWY 06 approach have been assessed as only Partially Meeting DP1 and DP5 for the 'B' options which all contain that component which would most likely require an extension of CAS to the west into an area of very high GA density. We agree that technical working sessions are going to be invaluable but with so much fluidity and uncertainty in the surrounding airspace design right now, we first need to reduce options to a smaller number of components based on the slightly less-detailed IOA assessments. Whilst the PIR could have an impact on this, different, ACP, it has still not yet been determined and it is part of a different process. We anticipate this will include commentary on the LOA areas agreed by LGS, EGLF & RAF Odiham and /or any safety and risk review. The CAA have advised that because the PIR has not concluded that the do nothing can only be based on the current scenario and the ACP should be progressed on the current position known at the time. Therefore, at stage 2, our baseline incorporates the existing published airspace arrangement an assumes no changes to that arrangement are required. We can update our baseline position in Stage 3 if required. Regarding the two points of clarification: 1) We can confirm that Heathrow departures are the reason Farnborough 06 departures cannot climb procedurally above 3000ft. If Farnborough could climb departures higher, sooner and release CAS they certainly would do that. In terms of what it would take for Heathrow (and Gatwick) departures to not constrain Farnborough traffic, we propose they would require 2 changes: A) A considerable increase in minimum climb gradient for Heathrow departures and/or B) The extant westerly southbound SIDs (towards Southampton and via Midhurst to the French coast) together with any tactical vectoring to remain well east of Farnborough. Farnborough would not consider these to be relatively small changes although Heathrow does have options within their comprehensive list that could enable B.

					2) and to address the comment that the intention to change movement numbers under planning permission is confusing): As LGS rightly point out, the planning application is indeed a separate process and there is not a dependency on that planning decision and this ACP. However, CAP1616 requires sponsors to set out the baseline for the Do-nothing scenario for year of implementation and also needs to take account of planned developments. We therefore shared information and data on the future forecasts, both with and without expansion, presented as part of the planning application. The Government's Airspace Modernisation Strategy vision is to deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. The peak hourly demand can be a daily occurrence and the ACPs in progress all aim to provide that capacity in balance with other competing factors such as the environment and access to airspace. Farnborough is in a fortunate position to have already implemented airspace to meet demand, but this ACP is hoping to make the airspace complexity and CAS volume more efficient on the back of wider changes that have so far been constraints.
	Skysurf (hang-para gliding club)	No response	Thank you very much for the reminder and the slide pack again. One aspect of the information that is missing is a comparison of the altitudes of the current flight paths and the possible new flight paths. It would be very useful to see how the proposed new routes reduce/increase the impact on both general aviation and the general public living under flight paths. People may be more supportive of a new option if they can see that it is higher then the previous flight path and therefore reduce the noise impact and the restriction on GA airspace.		Thank you for your response. Owing to the dependencies on the changes required to the routes to/from adjacent airports combined with the general uncertainty with their designs, defining accurate profiles for Farnborough is extremely challenging. However, based on this feedback from Skysurf and others, we will develop and share a set of average, typical profiles for each option to better illustrate the designs at this stage to enable more feedback. These can then be compared to an existing 'average' profile for Farnborough's traffic flows. We have also provided separate images of westerly configurations, easterly configurations and combined easterly/westerly configurations.
	BMAA (NATMAC)	I would disagree that current options are aligned with the Design Principles, specifically (but not limited to) Principle 4(c) - reduction in the volume/complexity of airspace. In the absence of any objective assessment my view is that alignment with other	It is difficult to conduct any meaningful analysis on proposals which clearly represent minimal change in the context of constraints which have not change from adjoining airports, not least Heathrow and Gatwick. My overall view is that this is a work in progress which cannot be completed until the airspace change proposals are clarified from adjoining airports. It is only then that we shall be able to evaluate a meaningful set of additional options.		Thank you for your response. Owing to the dependencies on the changes required to the routes to/from adjacent airports combined with the general uncertainty with their designs, defining accurate profiles for Farnborough is extremely challenging. However, based on this feedback from BGA and others, we will develop and share a set of average, typical profiles for each option to better illustrate the designs at this stage to enable more feedback. These can then be compared to an existing 'average' profile for Farnborough's traffic flows.

		Principles is weak at best and does not represent significant improvement over the 'as is' scenario. I think the design options are so constrained by surrounding airspace and operations that they are better described as tinkering within existing airspace design, and do not offer any significant change or modernisation to justify the huge effort and input to the airspace change programme at this stage. If the benefits described from the options presented are, as they seem to be, possible within existing airspace arrangements, then why not implement immediately? For example, during the briefing session I attended, much emphasis was placed on the 'new' low level routes between Farnborough and Biggin Hill. For the amount of traffic this represents (minimal) I would make the comments that a) it was over-emphasised, and b) echoing my views above, why not just get on and implement this change		We have also provided separate images of westerly configurations, easterly configurations and combined easterly/westerly configurations. We agree that more detailed benefits and impacts cannot be defined until greater maturity of design exists, which will not be until the Full Options Appraisal, in Stage 3 of the process, where dependent airspace change sponsor timelines are aligned into a combined consultation activity. Options will continue to mature in granularity and certainty as we progress through the CAP1616 process. At this stage (Stage 2) of the process, options are relatively immature, and we can only assess based on the information available at the time. Any changes, even in Option 2 are reliant on wider changes to the surrounding structures. For example, the shorter route between Farnborough and Biggin Hill inside CAS is not currently achievable without closely spaced PBN routes and improved climb profiles from Gatwick and Heathrow. Unfortunately, any level of change, even those that may appear minor, have dependencies and cannot just be implemented.
Military	**DAATM (NATMAC)**	Design Principle 5: Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users. While some options have been discarded due to impact on other nearby airspace users, there are several that appear to have the potential to increase impact on RAF Odiham airspace users and thereby require a dependency or	The Farnborough ACP and anticipated increase to traffic levels will have an impact upon RAF Odiham and MOD Airspace users, however, until further detail is available regarding design options, the extent to which it affects cannot be fully defined. A letter of agreement exists between RAF Odiham and Farnborough detailing the “fair and equitable use” of airspace and dependencies between the two airfields with respect to access and flight procedures. Any increase to controlled airspace is unlikely to be supported by the MOD due to concerns regarding RAF Odiham freedom of manoeuvre, complexity of procedures and associated impact upon airspace access, operational and training volume and the potential for increased reduction in the availability of those procedures which overlap between Odiham and Farnborough. The Farnborough ACP will require an updated letter of agreement and is likely to increase the dependencies between the two agencies.	Thank you for your response. The potential impact on RAF Odiham of any increase in Farnborough CAS to the west is understood and this will be reflected in our DPE and IOA. We have some options that can hopefully allow a PBN arrival to RWY 06 without requiring CAS amendments to the west although this will require a bespoke safety case to be accepted by the CAA. We also have an RNP-AR arrival that completely avoids RAF Odiham although currently, a limited number of arrivals will be able to fly these.

		continued letter of agreement between RAF Odiham and Farnborough.			
Farnborough Operators	**NetJets**	No response	Thank you for forwarding and including me on the mailing list. What are the expectations regarding an operator's involvement in this process? We have looked at the current documentation and have two observations: • One of the "Options" proposes an RNP(AR) approach for Runway 06. We need to advise on keeping this to RNP 0.3 on the approach and RNP 1 on the missed approach. Otherwise, the majority of bizjets will not be able to use it. • Another "Option" looks to provide a radius to fix the transition onto the final approach for Runway 24 (although it doesn't give that much technical detail), so this could cause an issue for those types which are not RF capable (not sure which of our types are still not RF capable). Can you provide feedback on the above?		Thank you for your response, before your email we were considering RNP-AR 0.1 owing to issues with close in obstacles, but we have amended to 0.3 which means a slightly earlier final approach joining point but we think it is still achievable. Yes, we're aware use of RF could be limiting to some aircraft. Based on your (and others') suggestions we will explore options with both RF and Flyby turns and would only default to the higher specification where required to address other factors outside of our control.
	Avidus Jet	No response	The meeting was very informative with the number of options being discussed. From an operators point, I think it was option 5, aircraft climbing to 5 or 6000 ft on departure would be our preference. I appreciate this would require changes to both Heathrow, Gatwick airspace and departure/ arrival procedures. Modern Jet aircraft can easily climb to these altitudes in short time, given sensible level off points. The workload in the cockpit will be reduced, and often climbing above the first level of turbulence will provide more comfort to the passengers. Operation of the aircraft will be safer, due to lower departure workload. I also believe that although the initial noise level may be extended slightly after take-off, the overall noise level will affect less people.		Thank you for your response.
Local Authorities/ MPs	**Chichester District Council**	Yes	No	Nil	Thank you for your response.
	Hart District Council (FACC)	No response	<u>Summary of relevant feedback:</u> • Questions regarding the boundaries being managed with the ACOG framework. • How will safety be objectively measured, when comparing options? • Wider adoption of GPS based navigation does increase reliance and hence vulnerabilities. Will proposals look to increase resilience, perhaps through ground-based systems? • Suggestions to use 3D models to illustrate designs • Why is a left turn from RWY06 not possible? • Could you streamline arrivals and departures to avoid crossing? • Can we move away from simplistic circular TMAs to airspace that changes depending on runways in use? • Suggests we consider adjusting CAS boundaries. • Feels that some option could be explored more carefully, and additional options generated (no suggestions were proposed). • Additional comments on individual options around holding levels Full feedback is available at Appendix B, pages 29-30.		Thank you for your detailed response. Regarding ACOG, they are not responsible for the designs or physical airspace issues or design solutions. Their role is to co-ordinate the multiple interdependent ACPs from a comms and process perspective and to manage project timelines. The safety of an option is almost impossible to assess in alignment with ANSP Safety Management Systems without a full and integrated system design. The safety of a proposed design evolves and matures through its development. At this stage of the ACP we're looking for SME or stakeholder option on the general viability of a solution and if there are any obvious safety grounds on which something can't be progressed. Resilience – PBN does not necessarily mean total reliance on GNSS. Farnborough's existing PBN design does also rely on ground-based navigation infrastructure. ANSPs are required to ensure there is

				adequate system and navigational resilience against GNSS interference amongst other things. 3D models will be useful and sponsors and ACOG will be visualising options in 3D granularity for public consultations. A left turn from RWY 06 is not possible due to Heathrow departures. They cannot make the heights required in enough time for Farnborough departures to climb above 2000ft. Altitude flexibility is required to deconflict arriving and departing traffic as inevitably they need to cross in most circumstances. Option 5 seeks to enable this though there is a greater reliance on a higher upper limit to Farnborough's airspace. Dynamic airspace that flexes and changes depending on runway direction - This is a very complex topic, but it is a manageable concept for a single airport in certain forms and characteristics and known local airspace users. Unfortunately, the switching on and off of Controlled Airspace at random times throughout a day is not yet achievable especially when multiplied into several airports who operate on different and conflicting runway ends. Regarding your suggested available holding levels (for example, a hold at FL45 above Lasham as their 'zone' extends to 3618ft MSL), they appear to be based on airspace structures such as ATZ but have not taken into account Controlled Airspace. In this example a minimum holding level of 6000ft above the 5500ft LTMA base is required.
	Waverley Borough Council	No response	I am a Waverley Borough Councillor for Hindhead and Beacon Hill ward and also a Churt Parish Councillor. I have the following comments. The options presented in the slide deck are incredibly difficult to follow. When they were presented to us at the online workshop the presenter used multiple clicks on each slide to walk through the progression of departures and arrivals. They accompanied this with a commentary/explanation. The hard copy of the slides we have been given cannot and does not provide the detail to make informed judgements. The slides are now just a meaningless jumble of coloured arrows with inadequate explanations. At the very least a recording of the presentation should have been made available but even this has not been done. The current design options are also flawed as they are derived from a baseline that ignores any potential changes from the Post Implementation Review. No options should be finalised until the PIR is completed and existing noise and pollution in villages such as Beacon Hill and Churt are properly measured and evaluated. Design principle 1 states an airspace change "Must be as safe or safer than today for all stakeholders that are affected by the airspace change" and goes onto say you will set out the methodology for assessing safety in Stage 2. This is Stage 2 and nowhere is this methodology explained. Without it none of the options can be properly assessed and this is a major failing. The first turn departure options appear to show routes from both runways being directed towards the area south of Farnham. This seems incompatible with Design principle 6 which states that options should " minimise population numbers newly overflown" and "avoid overflying the same communities with multiple routes to & from Farnborough Airport". The contingency Hold options indicate a stack south of	Thank you for your response. Comments regarding readability/clarity of the Stage 1 slides are noted and we will provide additional information in a different format. This includes a set of average, typical profiles for each option to better illustrate the designs at this stage to enable more feedback. These can then be compared to an existing 'average' profile for Farnborough's traffic flows. We have also provided separate images of westerly configurations, easterly configurations and combined easterly/westerly configurations. Whilst the PIR could have an impact on this, different, ACP, it has still not yet been determined and it is part of a different process. We anticipate this will include commentary on the LOA areas agreed by LGS, EGLF & RAF Odiham and /or any safety and risk review. The CAA have advised that because the PIR has not concluded, that the do nothing can only be based on the current scenario and the ACP should be progressed on the current position known at the time.

			Farnham and we are concerned that the strategy of “reduction in tactical intervention” and an increase in flights will result in these holding areas having more and more aircraft circling in them at low height. This seems incompatible with Design principle 6 as stated above.	Therefore, at Stage 2, our baseline incorporates the existing published airspace arrangement and assumes no changes to that arrangement are required. We can update our baseline position in Stage 3 if required. The engagement took place in Stage 2A where we share the options developed. This is done before any evaluation of those options. Our Stage 2 submission to the CAA will provide more information on evaluation methodologies and outcomes. Our options were designed to explore multiple competing demands/principles i.e. improved operational performance, a reduction in population numbers affected by noise, a reduction in CO2 emissions per flight, a reduction in the volume of CAS, minimise overflight of AONBs and National Parks and so on. In airspace design, it is highly unlikely that a single option can address all these demands to the maximum extent. Therefore, the airspace design process seeks to enable sponsors to investigate a series of different options that meet each principle to a greater or lesser extent. It is inevitable that where one option may fully meet Principle X it may only partly meet Principle Y, and another option vice-versa. Our goal is to arrive at a final proposal that best balances the series of competing demands and in order to do that, options need to be created at the outset that may be undesirable against a single objective. As we progress through the Initial Appraisal (Stage 2), network integration, Full Options Appraisal, consultation (Stage 3) and refinement (stage 4), designs will be whittled down and/or merged to combine the optimal components of different options.
	MP South West Surrey	No response	Thank you for your correspondence and all you have done to assist with communicating the proposals of Farnborough Airport. Please find below my observations and possible changes for your consideration. 1. Operations restricted to more modern aircraft, using green aviation fuel. 2. AONB / tranquillity / habitats should be avoided. 3. Holding space not below 7,000 ft. where possible. 4. Where increase in flight numbers and operating times is proposed, consider an extension of compensation for all those areas impacted. And that, compensation should be used appropriately through liaison with Councils and communities. I would like to take this opportunity to reiterate that communication is key – It’s been encouraging that Farnborough Airport recognises this. I politely request that you continue in this vein, and that you take residents with you rather than they are left feeling they haven’t had their voices heard.	1. Within this Airspace Change Process Farnborough Airport has a Design Principle to "Make best use of Farnborough's modern aircraft fleet capabilities". However, CAP 1616 does not require an airspace change to enforce or restrict the type of fuel in use. Nevertheless, Farnborough Airport has a proud history of leading on sustainability, becoming the first airport of its kind to be Carbon Neutral accredited in 2018. More detail can be found on our website https://www.farnboroughairport.com/environment 2. We are required to adhere to Air Navigation Guidance which states that "where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over Areas of Outstanding

			(5) In addition, please could you reconfirm you have decided not to pursue any change to the current non-weekend operating times; that you revised annual non-weekend flights – (limits have been proposed to ensure growth is phased over time), that you have new measures, 'to mitigate and reduce the potential for increased aircraft noise'; and that you have planned for additional funding to the Airport's community funding programme, and also for 'the potential for a broader remit in terms of local community initiatives'. (6) In addition, that you have proposed additional monitoring and reporting on emissions reduction and air quality with aims to adopt 100% Sustainable Aviation Fuel (SAF). I sincerely hope this response is helpful, and I look forward to receiving confirmation on the points I have asked you to reconfirm above.	Natural Beauty (AONB) and National Parks". It goes on to say "Given the finite amount of airspace available, it will not always be possible to avoid overflying National Parks or AONB, and there are no legislative requirements to do so as this would be impractical. The government's policy continues to focus on limiting and, where possible, reducing the number of people in the UK adversely affected by aircraft noise and the impacts on health and quality of life associated with it. As a consequence, this is likely to mean that one of the key principles involved in airspace design will require avoiding over-flight of more densely populated areas below 7,000 feet. However, when airspace changes are being considered, it is important that local circumstances, including community views on specific areas that should be avoided, are taken into account where possible. 3. Farnborough already has holding stacks; some distance away from the airport above 7000ft and one very rarely used close-in contingency stack at 3000ft. One of the features we aspire to achieve is a new contingency holding stack in a more suitable location, ideally at altitudes higher than this. We are however limited by Heathrow and Gatwick's departure and arrival routes and Controlled Airspace boundaries. 4. Thank you and we will. (5) We can confirm these points. (6) We can also confirm these points, albeit with regards to SAF, this will rely on its practical availability.
	Guildford Borough Council	We agree that you have covered a multitude of options and anticipate that the evaluation exercise will have alignment with the principles you are striving to achieve. The economic costs and benefits should be weighted to promote improvements in environmental factors and to address noise and air quality impacts. We also note that localities likely to be affected in Guildford Borough's area	The expansion of Farnborough airport and this process cannot be dealt with in isolation. Are there are assumptions that you have made regarding the potential increase of flights?	Thank you for your response. Should the Danger Area at Pirbright (D132) ceased to be used, it doesn't necessarily mean they would then be used for flight path positioning. We already have options which investigate an earlier turn over D132 because this is thought to already be operationally achievable given the ATC procedures that already exist to manage activation of D132. However, the merit of doing so (with or without D132 status) needs to be considered alongside all categories of Initial and Full Options Appraisal. The planning application and airspace change processes are very separate processes and there is not a dependency on the planning decision and this ACP or vice versa. No assumptions have yet been made however, CAP1616 requires sponsors to set

		are Ash, Pirbright and Worplesdon. Pirbright includes the danger areas under military control and therefore flying is restricted. If these areas ceased to be so, would they be utilised?		out the baseline for the Do-nothing scenario for year of implementation and also needs to take account of planned developments. We therefore shared information and data on the future forecasts, both with and without expansion, presented as part of the planning application. By the time of this ACP being in Stage 3 and a Full Options Appraisal, there will have been a decision on the planning application but in the event, this is not the case, our appraisals will need to take place on both the scenario of a cap uplift and the scenario of the existing cap constraint.
	Hart District Council (FACC)	No response	Regarding take-offs from RWY24, then the earliest turn to the south (labelled 5 on slide 59) would be most beneficial from a noise abetment stand-point for Church Crookham residents. Regarding slide 67, a hold pattern directly over populated areas should avoided (option 2), holding around Lasham (option 3) will not be popular either. Slide 68:- currently having arrivals from the north flying route 1 (today's procedure) does doubly impact overflown residents in Church Crookham, so if this can be changed for a different option that would seem fairer.	Thank you for your response.
	Mole Valley District Council	Does not consider that the proposed options consulted upon are compliant with the final design principles submitted in 2023.	<u>Summary of relevant feedback:</u> • Opposed to any airspace changes that will exacerbate existing issues, especially if no effective mitigation is proposed and delivered. • DP6h (overflight of same communities with EGLF routes & routes to/from other airports below 7000ft) the scale of flight increase and bids for airspace have not been properly accounted for in determining options & is contrary to DP6h. • Any options that would increase air traffic to the east of Farnborough Airport should be discounted and are considered to be inappropriate & harmful. • DP7 (modern fleet capabilities) MVDC is unconvinced that new technologies/fuels will be implemented widely enough to reduce noise levels, emissions or climate impacts. Any option which hinges on improvement of technologies should be given minimal weight. • Surrey Hills has not been properly considered and its status is not reflected in the design principles. The proposed new boundaries should be considered when assessing any and all options. • MVDC provided a table with their position on the design options. • The council are unable to support any option that would result in an increase in flight movements which would result in any negative environmental impact to the east of Farnborough airport. Full feedback is available at Appendix B, pages 35-37.	Thank you for your detailed response. Our options were designed to explore multiple competing demands/principles i.e. improved operational performance, a reduction in population numbers affected by noise, a reduction in CO2 emissions per flight, a reduction in the volume of CAS, minimise overflight of AONBs and National Parks and so on.In airspace design, it is highly unlikely that a single option can address all these demands to the maximum extent. Therefore, the airspace design process seeks to enable sponsors to investigate a series of different options that meet each principle to a greater or lesser extent. It is inevitable that where one option may fully meet Principle X it may only partly meet Principle Y, and another option vice-versa. Our goal is to arrive at a final proposal that best balances the series of competing demands and in order to do that, options need to be created at the outset that may be undesirable against a single objective. As we progress through the Initial Appraisal (Stage 2), network integration, Full Options Appraisal, consultation (Stage 3) and refinement (stage 4), designs will be whittled down and/or merged to combine the optimal components of different options. Whilst the design principles do not explicitly reference AONBs, DP2 includes “accordance with ANG2017” which says where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over AONB and National Parks. It also says

				given the finite amount of airspace available, it will not always be possible to avoid overflying National Parks or AONB, and there are no legislative requirements to do so as this would be impractical. The government's policy continues to focus on limiting and, where possible, reducing the number of people in the UK adversely affected by aircraft noise and the impacts on health and quality of life associated with it. As a consequence, this is likely to mean that one of the key principles involved in airspace design will require avoiding over-flight of more densely populated areas below 7,000 feet. Our IOA will consider the amount of AONBs (and National Parks) that each option overflies whilst also presented data on numbers of population overflown as well as noise metrics. Thank you for raising the potential boundary expansion of Surrey Hills AONB and we expect a decision will have been reach by SoS by the time that Farnborough's proposals are more mature at Full options Appraisal and will therefore be included in the assessments. We note a strong objection to the direct route between Farnborough and Biggin Hill. Please note that the engagement carried out in Stage 2 was targeted engagement with our Stage 1 and 2 stakeholders. Consultation does not take place until we have mature proposals in Stage 3.
Residents Groups	**Farnborough Noise Group**		Summary of relevant feedback: 1. Farnborough are not applying the Gunning principles to the consultation. 2. There is no baseline, as basic information on noise and emissions have not been measured. 3. The list of options is not comprehensive and outcomes from this stage appears to be a foregone conclusion (there is only one options - the current unapproved airspace change & and additional route to BH) 4. No consideration for effects of GA/military aircraft which underrepresents the situation - states there are fundamental problems with the AMS objectives. 5. DP's do not recognise that rural areas have lower ambient noise levels therefore noise impacts are greater. 6. PBN creates concentrated flight paths and noise sewers. 7. Your DP says "Shall not constrain the ability to meet forecast demand for Farnborough Airport" yet changes in airspace within FASI-S will not have any bearing on FALs operational capacity, now or in the future. 8. DP4b - emissions at Farnborough are 30-40x the equivalent of a commercial flight per passenger mile. 9. DP4d - the 2020 airspace change routes are not being flown because aircraft are being given a choice.	Thank you for your detailed response. 1. Please note this is not a consultation. This stage of the ACP involves engagement with elected stakeholder representatives' discussion between the change sponsor and affected stakeholders at this early stage in the process. Local stakeholders will normally include local authorities elected representatives, local community groups, the airport consultative committee and representatives of local General Aviation organisations or clubs. 2. We have shared information which includes existing and forecast L_{Aeq} noise contours. Our IOA will also include modelled single sound event contours which extend far beyond the L_{Aeq} boundaries presented so far. 3. We presented multiple viable options together with an explanation of many more options considered but ruled out as unviable.

			10. DP6b - challenges who should be considered newly overflown, as those newly overflown from the previous ACP should also be included. 'minimising' is subjective and not enforceable. 11. DP6c - the engagement said that the flightpaths implemented under the current ACP are the only viable options and will remain as they are in the FASI-S proposal . 12. DP6d - flights above 7000ft still cause noise disturbance, particularly in rural areas. 13. The design does not include the large number of aircraft using flightpaths to Fairoaks and Blackbushe. 14. Data provided in consultation is misleading when using altitudes due to the difference between altitude and height. 15. Where is the methodology for assessing safety? 16. No baseline noise measurements have been taken. 17. Noise contours should be provided for all aircraft (GA, commercial, military etc) flying in the region 18. Noise footprint should also include other sources of noise (ground noise, transport etc). 19. Banning GA aircraft from under CAS to reduce the total noise has not been considered. 20. A flight path between Biggin Hill and Farnborough is ludicrous. 21. Concerns over the location of the contingency holds, there is already too much holding. 22. ATC intervention is of no concern, cost of operating is miniscule compared to harm & disturbance cause to the public. Full feedback is available at Appendix B, pages 38-46.	4. Farnborough is not responsible for the noise or emissions of airspace users other than to/from its own airport. 5&6. DP2 references the need to accord with ANG2017 & other relevant policy and legislations. This includes the Government's overarching aviation noise policy 7. The DP is to 'not constrain the ability to meet.', it isn't to 'create the capacity to meet..' 8. DP4 is to reduce CO2 emissions per flight. 9. If we can better deconflict arriving and departing routes through design and improved vertical profiles, this will enable ATC to leave more aircraft on the flight paths. 10. Our baseline is the extant airspace in operation at the time the change is proposed. 11. This is incorrect. We explained that the current airspace design is the best design that could be achieved given the constraints of the existing surrounding traffic flows within controlled airspace. We did not say they will remain as they are in this ACP. If this was the case, there wouldn't be an ACP in the first place. 12. Government Policy is that noise is the priority up to 7000ft. At or above 7000ft, the reduction of aircraft CO_2 emissions and the minimising of noise is no longer the priority. 13. The design will need to cater for traffic sharing the same flight paths to/from Fairoaks and Blackbushe that is joining/leaving airways, and this is reflected in DP8. Flights to/from those airports staying outside CAS is not the responsibility of Farnborough airport. 14. At this stage, we believe reference to altitude is satisfactory. Actual noise modelling and production of overflight contours, including those we have committed to develop and share shortly will be based on height above ground level. 15. The engagement took place in Stage 2A where we share the options developed. This is done before any evaluation of those options. Our Stage 2 submission to the CAA will provide more information on evaluation methodologies and outcomes. 16. We have shared information which includes existing and forecast L_{Aeq} noise contours. Our IOA will also include modelled single sound event contours which extend far beyond the L_{Aeq} boundaries presented so far. 17. Farnborough is not responsible for the noise or emissions of airspace users other than to/from its own airport. 18. Noise modelling and analysis will be performed in accordance with CAP2091.

					19. Farnborough is not responsible for the noise or emissions of airspace users other than to/from its own airport. 20. Noted. 21. Airborne holding for Farnborough arrivals is not a common occurrence though when it does it happen it takes place above 7000ft. There is already a contingency hold to the SE of Farnborough at 3000ft. Though 'contingency' refers to an unusual event, we would wish to investigate if our contingency hold can be located in a more operationally useful position and higher than 3000ft. 22. If we can better deconflict arriving and departing routes through design and improved vertical profiles, this will enable ATC to leave more aircraft on the flight paths and therefore reduce tactical intervention.
	Mytchett, Frimley Green & Deepcut Residents Society	No response	I write as the Surrey Heath Borough Councillor for Mytchett & Deepcut and on behalf of the Mytchett, Frimley Green & Deepcut Residents Society. I do not write on behalf of Surrey Heath Borough Council. I have reviewed the Stage 2 Workshop material in regard to the above and, as a layperson with little knowledge of the technical aspects of airport operations, I can only comment from my perspective as an elected Borough Councillor on Surrey Heath Borough Council in reflecting the views of my communities. I must therefore make the point that the approach changes made a few years have resulted in a slightly better experience of the airport with its noise and air pollution generation for residents of the Mytchett, Frimley Green and Deepcut villages. For the people of Mytchett & Deepcut, in particular, there is no alternative, given current legislation and regulation, but to accept some 80% of the incoming flights flying at low level over their properties due to the configuration of the Farnborough runway. Clearly this causes residents considerable inconvenience and loss of amenity, most especially at weekends and Bank Holidays. Therefore, any change to the current arrival and departure routes at Farnborough Airport that causes any increase whatsoever to aircraft movements over Mytchett, Frimley Green and Deepcut would not be acceptable to residents of those villages or to me as their elected representative. This is the only important consideration that these residents and I have in regard to the proposals put forward at the Stage 2 Workshop. I would happily receive any observations on this feedback that might be appropriate.		Thank you for your response.
	FACC Member	The Statement of Need acknowledges that significant gains in "environmental performance of inbound and outbound traffic" are dependent upon NERL making significant changes to the LTMA route network; potential gains accruing primarily from an ability to operate Continuous Climb and Departure operations (CCO/CDO). This, presumably, enabling the floor of the airspace to be	Regarding your second question, there are no further design options that I would like you to consider.		Thank you for your detailed response. Regarding the LAMP Stage 2 (typo; they have not yet submitted Stage 3 submission) they are describing that unless changes to the en-route airspace system are made, the LTMA would see increased flow mitigation measures. An increase in holding is one potential effect but this is not considered a flow management measure. Such measures are usually delaying aircraft on the ground before their departure. Airborne holding exists when there is an over delivery of arrivals that exceeds the landing capacity. Farnborough, as well as all other airports, could see increased delay in the absence of new airspace designs in the network above 7000ft to reduce air traffic controller workload per flight. This is different to

		raised for the benefit of those who are overflown, and the uncontrolled airspace corridor between Farnborough's and Gatwick's controlled airspace be increased for the benefit of other GA users. A further aim is to create an airspace capacity that enables "efficient "growth. It is worth noting that the CAA, in response to the LAMP stage 3 submission, draw attention to its Qualitative Safety Assessment which concludes that increases in Farnborough traffic has the potential to raise safety issues within the LTMA that would need to be mitigated by enhanced flow management measures. I assume that the establishment of environment friendly holding volumes of airspace would be among those measures. Given these two observations, the Stage 2 design principles cannot be wholly aligned with the Statement of Need as they cannot include definitive 'en-route' design options; they can only identify the limited noise mitigation options available when aircraft are operating within the initial or final 'transition' phases of flight.			Farnborough, or any other airport, having the capacity for growth which NERL are saying they may be unable to accommodate without change. Farnborough's ACP is not to directly increase capacity at Farnborough Airport but the statement of need refers to 'The widescale airspace upgrades planned for the LTMA through the FASI South programme….to help to deliver the airspace modernisation objectives'. In doing so, the changes that NERL make will "will result in changes to the way arrivals are delivered to Farnborough and the way that the network receives Farnborough's departures." For this reason Farnborough have commenced this ACP and in conjunction with the changes made by Heathrow, Gatwick and Southampton, potentially provides an opportunity for Farnborough to improve environmental and operational performance. There is still a great amount of uncertainty with all airports' options, as well as the wider network design. We agree that more detailed benefits and impacts cannot be defined until greater maturity of designs exists, which will not be until the Full Options Appraisal, in Stage 3 of the process, where dependent airspace change sponsor timelines are aligned into a co-ordinated consultation activity. Options will continue to mature in granularity and certainty as we progress through the CAP1616 process. Our final proposal will consider the size and shape of the controlled airspace to ensure that it is the minimum required to maintain a high standard of air safety. At this stage (Stage 2) of the process, options are relatively immature, and we can only assess based on the information available at the time. CAA allow sponsors of interdependent proposals to progress through Stage 2 in isolation however by Stage 3, designs will need to be integrated and mature enough for Full Options Appraisal. Owing to the scale and complexity of the FASI programme, this is why many sponsors have carried forward multiple options into Stage 3. Following our Initial Options Appraisal (IOA) of our Stage 2 options, we anticipate we will be able to discontinue options that are clearly going to underperform against our design principles and the categories of impacts assessed within the IOA.

Table 17: CLoO Stakeholder Feedback & Farnborough Airport response

4.6 Outcomes of Stakeholder Engagement

4.6.1 Following analysis of the feedback received on the Comprehensive List of Options engagement, it was clear that many stakeholders felt that more detail was required, particularly on vertical profiles, to enable them to provide meaningful feedback on the options.

4.6.2 Farnborough Airport made the decision to commission additional work to provide stakeholders with as much clarity as possible at this stage, to help provide better-informed feedback.

4.6.3 Stakeholders were informed via email in April 2024 that an additional round of engagement would take place during May 2024.

4.7 Additional Stage 2 Stakeholder Engagement

4.7.1 Farnborough Airport created average, typical profiles for each option including the Do Nothing scenario. Each option was split into 2 sub-options, to better articulate the subtleties being explored. There were still 4 core Do Something options, but each option could have a slightly different final approach joining point and/or earlier turn for the Runway 06 departures. The slides also provided more details on the approximate heights of the aircraft.

4.7.2 Farnborough created a presentation for stakeholders which contained the following information:

- Purpose of this engagement
- Re-cap – The Airspace Change Process
- Farnborough's Design Principles
- Re-cap of CAP1616 Stage 2 Requirements
- Our Stage 2 progress so far
- Response to Stakeholder Feedback Themes
- Details on Options – including initial Design Principle Evaluation information
- Potential contingency holding stack information
- Traffic density outside CAS
- DPE Summary

4.7.3 A copy of this presentation is available at Appendix A, pages 76-126. This presentation along with an updated 'Frequently Asked Questions' (available at Appendix D) was emailed to all stakeholders on 10 May 2024. Stakeholders were provided with 4 weeks to provide any additional feedback or ask any questions.

4.7.4 As this engagement was in additional to the required Stage 2A engagement, Farnborough Airport decided not to hold any online workshops to present the material. Instead, we scheduled 2 online "drop-in" sessions. The presentation and email contained 2 TEAMS links for stakeholders, who could then join a call, dedicated to where the Farnborough ACP team

would be on-line ready to answer any questions on the additional material, rather than spend the majority of the time presenting the material.

4.7.5 The two drop-in sessions took place on Monday 20 May and Wednesday 29 May 2024. The following stakeholders attended the sessions.

Monday 20 May 1300-1400	Wednesday 29 May 1730-1830
Farnborough Noise Group	Mychett & Deepcut (FACC Member)
RAF Odiham	Farnborough Noise Group
NATS NERL	NATS
RAF Brize Norton	Waverley Council
Southdown Gliding Club	

Table 18: Drop-in session attendees

4.7.6 During the second drop-in session, Farnborough Noise Group (FNG) requested an individual in-person workshop with Farnborough Airport. FNG were invited to use the remaining amount of time (approximately 45 minutes) of the drop-in session to ask any questions and present any material, however they declined the opportunity.

4.7.7 Following the online drop-in, Farnborough Airport responded to the FNG request by email on 30 May 2024, a copy is available at Appendix C, page 93.

4.7.8 To ensure all stakeholders had equal opportunity for engagement, Farnborough emailed all stakeholders on 30 May 2024 to offer a third drop-in online session. A copy of the emails sent to stakeholders is available at Appendix C, pages 94-101.

4.7.9 This additional session was held on 5 June 2024, 1730-1830hrs, there were no attendees.

4.8 Summary of Feedback from additional engagement and FAL's responses

4.8.1 Farnborough received written feedback from 3 stakeholders on the additional Stage 2 engagement.

4.8.2 Where possible, the entire feedback has been included in Table 19. However, some of the feedback received was very lengthy, therefore, in those cases, the feedback has been summarised by Farnborough Airport to include only the relevant points regarding the additional engagement. Farnborough Airport has annotated in the table where feedback has been summarised.

4.8.3 Farnborough Airport has provided a response to each item of feedback received in Table 19 below.

4.8.4 The full feedback received from all stakeholders is available at Appendix B, pages 49-57.

Stakeholder Group	Stakeholder	Feedback	Farnborough Response
Environment	Cranborne Chase National Landscape	I sense from earlier exchanges you have a good understanding of the Cranborne Chase National Landscape position, so I don't need to repeat them. I should mention, in case it has passed you by, that the amended s.85(A1) of CRoW Act puts a more onerous responsibility on 'relevant authorities' in connection with decisions that affect National Landscapes and National Parks.	Thank you for your response and highlighting this.
	Surrey Hills AONB Planning Advisor	Thank you for your email below together with the latest information on the options being examined. I see in the G & A paper that consideration has been given to protected landscape/AONB at this stage. I may have missed it but can you please let me have the AONB assessments for each option. Understandably, in your assessments you used the "official" boundaries which presumably were the AONB boundaries designated in 1958. Also I note you are aware of Natural England's proposals to extend the Surrey Hills AONB (now termed National Landscapes) boundaries. The next stage of NE's proposals were to be published on 31 May but have been put back until just after the General Election on 4 July. There will be a further statutory and public consultation on the changes to the previous proposals published last year. Submission to the Secretary of State for a formal designation order to be made is expected to be at the end of this year. However, we do not know quite when the Secretary of State will make a final decision. You can be forgiven not to know of the significance of the new Levelling-Up and Regeneration Act 2023 in relation to proposals affecting AONBs which your proposals would do. The Act has introduced a new and stronger legal requirement on relevant authorities, which includes not just planning authorities but yourselves, at section 245 66B(6)(a)(A1) the following: "In exercising or performing any functions in relation to, or so as to affect, land in an area of outstanding natural beauty in England, a relevant authority other than a devolved Welsh authority must seek to further the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty." The duty "must seek to further the purpose" is an active duty and not a passive one. It is not simply a process, as possibly before under the previous "duty of regard" under the CROW Act 2000, but is outcome focussed. Your proposals must therefore take all reasonable steps to explore how the statutory purposes of the protected landscape would be furthered.	Thank you for your response. You will see in our Stage 2B material and appendices and assessment of each option in terms of the area of AONBs (and National Parks) overflown compared to the existing situation. Please note this is based on the assumption that all aircraft fly the route centrelines at all times, which is not the case in reality. You are correct that these assessments include the existing Surrey Hills boundary. Thank you for raising the potential boundary expansion of Surrey Hills AONB and we expect a decision will have been reached by SoS by the time that Farnborough's proposals are more mature at Full Options Appraisal and will therefore be included in the assessments. Thank you for highlighting the new Levelling-Up and Regeneration Act 2023 in relation to proposals affecting AONBs. We will certainly investigate how to comply with this new legal provision from an airspace change perspective.

		If your proposals do not conserve and enhance the natural beauty, which includes tranquillity, of the AONB, then they need to include the maximum practical mitigation measures and explain why the option selected would be in the public interest. The same would apply to the CAA in determining the proposals. I suggest you take legal advice as to how you can comply with this new legal provision. As it is so new the courts have not given any interpretation or direction on how this legal provision needs to be applied in practice. We are awaiting formal Government advice to be issued through Natural England, which should be shortly.	
NATMAC	**DAATM** **(MoD)**	Thank you for the additional information provided for the Stage 2A feedback for the Farnborough FASI ACP. While the presented design options largely look to comply with the DPs, some of them may not entirely meet DP5 (*Aim to remove interdependencies with adjacent ATC units and minimise impacts on other airspace users.)* Instrument flight approaches to Odiham are already impacted by Farnborough arrivals and departures due to the nature of the airspace and the proximity of the two units, this is covered in the LOA between the two units which would require update to ensure a fair and equitable use of airspace. Funnelling of GA and other airspace users to the south further restricts airspace and limits options of where Odiham traffic can hold while awaiting clearance to transit Farnborough Class D. The Odiham ILS to RW27 requires access to Farnborough Class D airspace. Interdependency cannot be removed without significant impact upon Odiham and Defence traffic. MOD would also like to emphasise the potential impact of both this ACP, and additional movements at Farnborough would have on adjacent MOD ATC units, and defence airspace users in this area, including Ash Ranges. Any increase to the volume of CAS around Farnborough, particularly when combined with the collective increases in CAS through the FASI programme, will have an effect on airspace availability and freedom to manoeuvre.	Thank you for your response. The potential impact on RAF Odiham of any increase in Farnborough CAS to the west is understood and this will be reflected in our DPE and IOA. We have some options that can hopefully allow a PBN arrival to RWY 06 without requiring CAS amendments to the west although this will require a bespoke safety case to be accepted by the CAA. We also have an RNP-AR arrival that completely avoids RAF Odiham although currently, a limited number of arrivals will be able to fly these. We anticipate that an LoA will need to exist in any future design to continue access for RAF Odiham to Farnborough airspace. The context of DP5 was to try and remove interdependencies where possible but the likelihood of *no* dependencies between RAF Odiham and Farnborough is very low indeed. If the option for an earlier turn for RWY 06 departures is progressed, we will engage with DAATM to ensure the MoD activity in D132 is unaffected. As set out in our statement of need we hope that the FASI South programme presents an opportunity to reduce the volume of controlled airspace and there not be collective increases in CAS from all sponsors.
Residents Groups	**Farnborough Noise Group**	<u>Summary of feedback</u> • Issues with the format of the engagement “We specifically require the process notes our objection to the poor consultation process and Farnborough Noise Group should not be listed as an organisation that has been consulted with as consultation with us has not occurred.” • Issues with the CAP1616 process. • FNG strongly opposes all the proposed flightpaths put forward as there should be no expansion of airports and none of the proposed flightpaths address concerns that we have raised. They all cause harm with no benefits to the general public. • Farnborough’s options are scored against their design criteria, not against national noise & environmental guidelines (ANG17). • Farnborough’s designs only consider Farnborough aircraft. • Helicopters are breaching minimum height.	Thank you for your response.

		• DP6d is not satisfactory as aircraft from Luton, Heathrow & Gatwick are flying lower. Ground height and aircraft noise from other sources need to be considered. • No baseline evaluation of noise and pollution, this needs to be all noise & pollution, not just Farnborough aircraft. • Flightpaths and climbs/descents are not currently being followed. • Options scoring is based on DPs, which do not align with guidance and legislation. • There should not be a direct route to Biggin Hill/LGW as it will increase the density of aircraft at low height (2,000ft AGL) over the same areas that are suffering GA rat-running. • CTA4 should be lowered to the ground to force GA to go further south to spread their noise burden over a larger area, • None of the proposed options are acceptable as the principles on which they are based are wrong and not consistent with aviation guidelines, health guidelines and national legislation Full feedback available at Appendix B, pages 53-57.	

Table 19: Additional engagement feedback summary

4.9 Outcomes of Stakeholder Engagement

4.9.1 Farnborough Airport would like to thank all stakeholders who gave their time to consider the issues and opportunities associated with the airspace change and share their views.

4.9.2 We understand that there will never be unanimous agreement on all the airspace design options. We also acknowledge that some of the principles do come into conflict with one another and difficult trade-offs need to be made. We feel we have been transparent about these conflicts and provided as much information as we can, at this stage.

4.9.3 Stakeholder feedback made it clear that the information we provided during the initial Comprehensive List of Options engagement did not have sufficient clarity to enable people to understand the merits of each option. We therefore made the decision to commission additional work to provide stakeholders with as much clarity as possible at this stage and delayed our Stage 2 Gateway submission date accordingly. Even where stakeholders did not provide further feedback, we hope that the additional information was useful.

4.9.4 Specific points raised by stakeholders lead us to:

4.9.5 Revise the RWY 06 RNP-AR arrival option to a RNP0.3 and not RNP0.1 specification in order to maximise the types of aircraft that could fly the procedures (Netjets feedback)

- Explore the use of Radius to Fix (RF) to final approach to see if this may help reduce the amount of CAS required to protect the turns. However, we did find that use of RF would in this circumstance require a longer final approach which in turn, pushed the curved turn beyond existing CAS boundaries. (Southdown GC and Netjets feedback)
- Be made aware of the new Levelling-Up and Regeneration Act 2023 in relation to proposals affecting AONBs
- Be made aware of the proposed boundary expansion of the Surrey Hills AONB
- Note strong concerns from RAF Odiham and Lasham Gliding Club regarding *any* CAS extension to west
- Ensure that our Initial Options Appraisal considers potential noise impacts beyond the LOAEL. We will generate L_{AMAX} single sound event contours to inform our IOA
- Ensure that our Initial Options Appraisal attempts to quantify impacts on AONBs and National Parks.

4.10 Technical Engagement Summary

4.10.1 In addition to the engagement that has been undertaken as part of the CAP1616 process, Farnborough Airport have also taken part in a number of technical working groups and bilateral workshops with ACOG and adjacent ACP sponsors.

4.10.2 The following table is a list of meetings Farnborough has attended during CAP1616 Stage 2 up until the end of July 2024.

Meeting	Date
ACOG Comms Group	4 May 2023

ACOG LTMA Technical Coordination Group	6 May 2023
ACOG/Farnborough Programme Discussion	13 June 2023
NATS/NERL Technical Bi-Lat	24 July 2023
ACOG LTMA Programme Coord Group	9 Aug 2023
ACOG FASI Programme Board	13 Sep 2023
Heathrow Lead Technical Bi-Lat	14 Sep 2023
DfT/CAA SDE Event	20 Sep 2023
LTMA Tech Coord Group	28 Sep 2023
NATS Deployment meeting	5 Oct 2023
ACOG Group Meeting	19 Oct 2023
NERL Airspace Engagement Session	20 Oct 2023
LTMA Programme Coordination Group	30 Oct 2023
Biggin Hill & Farnborough Technical Bi-Lat	31 Oct 2023
ACOG Programme Board Meeting	15 Nov 2023
LTMA Programme Coordination Group	14 Dec 2023
ACOG Comms Meeting	17 Jan 2024
ACOG LTMA Technical Coordination Group	25 Jan 2024
LTMA Programme Coordination Group	8 Feb 2024
Biggin Hill/Farnborough interactions workshop	21 Feb 2024
NERL FASI-S engagement	28 Mar 2024
Heathrow Stage 2 engagement	16 Apr 2024
ACOG Tech Co-ordination Group	25 Apr 2024
ACOG LTMA Prog Co-ordination	9 May 2024
ACOG FASI-S Programme Board	22 May 2024
ACOG Development Workshop	23 May 2024
ACOG LTMA Programme Coordination Group	13 June 2024
ACOG Tech Co-ordination Group	27 June 2024
ACOG LTMA Programme Coordination Group	11 July 2024
ACOG FASI Programme Board	17 July 2024

Table 20: Technical Engagement Meetings

5. DESIGN PRINCIPLE EVALUATION

5.1 CAP1616 Requirements

5.1.1 As part of the Airspace Change Process at Step 1B, Farnborough developed a set of Design Principles with identified stakeholders. The aim of the Design Principles is to provide high-level criteria that the proposed airspace design options should meet. They also provide a means of analysing the impact of different design options and a framework for choosing between or prioritising options.

5.1.2 The Design Principle Evaluation (DPE) involves taking all the options developed and qualitatively evaluating them against the Design Principles to understand how well they are aligned.

5.2 Airspace Modernisation Strategy Criteria

5.2.1 The CAA has requested evidence that the DPE includes an assessment of how the different design options respond to the relevant AMS objectives:

"Subject to the overriding design principle of maintaining a high standard of safety, the highest priority principle of this airspace change that cannot be discounted is that it accords with the CAA's published Airspace Modernisation Strategy (CAP1711) and any current or future plans associated with it".

5.2.2 Farnborough Airport incorporated this AMS objective in Design Principle 2.

5.2.3 There are four objectives of the Airspace Modernisation Strategy (AMS), as detailed in CAP1711. The table below sets out which parts of the DPE assess each of the four AMS objectives.

AMS objective	Farnborough's Design Principle(s) which evaluated this objective
Safety: Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation.	DP1 Must be as safe or safer than today for all stakeholders that are affected by the airspace change
Integration of diverse users: Airspace modernisation should wherever possible satisfy the requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, General Aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems).	DP4C Improve vertical profiles compared to the baseline published SID/STAR levels, to enable: a reduction in the volume and where possible, complexity of Farnborough Airport's CAS DP4D Improve vertical profiles compared to the baseline published SID/STAR levels, to enable: a reduction in the reliance on tactical intervention

	DP5 Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users
Simplification, reducing complexity and improving efficiency: Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic, accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers.	DP4 Improve vertical profiles compared to the baseline published SID/STAR levels, to enable a reduction in population numbers affected by noise, a reduction in CO_2 emissions per flight from Farnborough aircraft, a reduction in the volume and where possible, complexity of Farnborough Airport's CAS and a reduction in the reliance on tactical intervention DP5 Aim to remove dependencies with adjacent ATC units and minimise impacts on other airspace users DP7 Make best use of Farnborough's modern aircraft fleet capabilities DP8 Ensure that Wessex Group airways traffic can still be accommodated, as a result of the changes
Environmental sustainability: Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance and, in doing so, will take account of the interests of all stakeholders affected by the use of airspace.	DP4 Improve vertical profiles compared to the baseline published SID/STAR levels, to enable a reduction in population numbers affected by noise, a reduction in CO_2 emissions per flight from Farnborough aircraft, a reduction in the volume and where possible, complexity of Farnborough Airport's CAS and a reduction in the reliance on tactical intervention DP6 Where lateral changes to existing tracks are required to achieve improved environmental and operational performance, options should deliver an overall reduction in flight plannable track miles, minimise population numbers newly overflown, avoid overflying the same communities with multiple routes to & from Farnborough Airport and avoid overflying the same communities with Farnborough's routes and those routes to & from other airports below 7000ft

Table 21: AMS objectives & Farnborough Design Principles

5.3 Design Principle Evaluation Methodology

5.3.1 To evaluate each option in a fair and transparent way, the methodologies set out in Table 22 have been followed when evaluating against each Design Principle.

5.3.2 Within our DPE, we have chosen to break some Design Principles into components in order to fairly and transparently evaluate different aspects of the Design Principle. For example,

the assessment of Design Principle 6d ‘avoid overflying the same communities with Farnborough's routes and those to & from other airports below 7000ft’ has been broken down into four components to qualitatively assess this against Southampton, Gatwick, Heathrow and Biggin Hill’s options. In this circumstance, where evaluation of all the groups of illustrative tracks within an option have the same result (Met, Partially Met or Not Met), the Option will receive that evaluation outcome for that Principle.

5.3.3 Where there are different results depending on the different groups of illustrative tracks, that DP will be marked as Partly Met for the option.

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 cannot take account of non-conspicuous aircraft. This analysis is presented in Appendix A, pages 119-121.	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 DP1and Partly Met that design principle	Evaluated in DP1and 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
		Overall AMS Evaluation		All evaluations Met	All evaluations Partly Met ot 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 Rushmoor Borough Council and which we featured within our Stage 2 engagement material alongside 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 nuber 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 1,000 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 overflown

		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 overflown	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.			
		Overall DP 2 Evaluation				
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 intervenion
		Overall DP4 Evaluation				
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
	Overall DP5 Evaluation					
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 plannable track miles	This is the same assessment as DP4b	Overall reduction in miles	No Change	Overall increase in miles
		b) minimise population numbers newly overflown	A visual assessment of the scale of change between the Average Overflight Contours of the option and the existing area overflown (the full swathe) by Option 1 (Do Nothing)	Average overflight cones wholly contained within existing Do Nothing Swathe	Some excursions 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 Hil 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.	Heathrow Airport	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
				Gatwick Airport	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
				Southampton Airport	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
				Biggin Hill Airport	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
		Overall DP6 Evaluation					
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 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 can 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

Table 22: Design Principle Evaluation Methodology

5.4 DPE: Summary Table

5.4.1 The full DPE can be found in Annex 1. It contains a breakdown of how each option has responded to each category within each DP. Table 23 contains a summary of the full DPE, showing each options' performance against each DP as a whole. This summary table was shared with stakeholders in our 2nd round of engagement in May 2024.

	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 (CAP1711) 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 plannable track miles b) minimise population numbers newly overflown 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 Objective	Overall DP2						
Option Name									
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	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

Table 23: Summary of Design Principle Evaluation

5.5 Outcomes of the DPE

5.5.1 Our options were designed to explore multiple competing demands/principles i.e. improved operational performance, a reduction in population numbers affected by noise, a reduction in CO_2 emissions per flight, a reduction in the volume of CAS, minimise overflight of AONBs and National Parks and so on.

5.5.2 In airspace design, especially for complex ACPs like this, it is highly unlikely that a single option designed at the outset can address all these demands to the maximum extent. It is inevitable that where one option may fully meet Principle X it may only partly meet Principle Y, and another option vice-versa. This is demonstrated by Table 23.

5.5.3 There is no CAP1616 requirement to discontinue options based on the outcome of the DPE. Owing to the purely qualitative DPE, Farnborough Airport decided not to discontinue any option on that basis alone, especially as all but one option (Do Nothing) either fully or partly met every principle.

5.5.4 Our goal is to arrive at a final proposal that best balances the series of competing demands. As we progress through the Initial Options Appraisal (Stage 2), network integration, Full Options Appraisal, consultation (Stage 3) and refinement (Stage 4), designs will be whittled down and/or most likely merged to combine the optimal components of different options. For this ACP, the more detailed Initial Options Appraisal is the most suitable opportunity to begin the discontinuation process.

5.6 Next Steps

5.6.1 The ACP now progresses to Step 2B of CAP1616 Stage 2. This involves carrying out an Initial Options Appraisal (IOA) of the remaining options, to understand in further detail the benefits and impacts of each option.

5.6.2 The IOA is the first of three phases of appraisal undertaken as part of the ACP. It forms part of the iterative process of CAP1616, whereby the detail of analysis builds as options are refined and matured through the stages.

6. GLOSSARY

Acronym	Term	Description
ACOG	Airspace Change Organising Group	Established in 2019 at the request of the Department for Transport and Civil Aviation Authority to coordinate the delivery of key elements of the UK's Airspace Modernisation Strategy.
ACP	Airspace Change Proposal	To carry out any permanent change to the published airspace, the Civil Aviation Authority (CAA) requires the change sponsor to carry out an airspace change proposal in accordance with CAP1616.
ADS-B	Automatic Dependent Surveillance Broadcast	A means by which aircraft can automatically transmit and/or receive data such as identification, position, and additional data, as appropriate in a broadcast mode via a data link.
AIP	Aeronautical Information Publication	A publication which contains details of regulations, procedures and other information pertinent to the operation of aircraft in the particular country to which it relates.
AMS	Airspace Modernisation Strategy	UK Government has tasked the aviation industry to modernise airspace in the whole of the UK. The long-term strategy of the CAA and the UK Government is called the Airspace Modernisation Strategy (AMS). Its CAA document reference number is CAP1711.
AMSL	Above Mean Sea Level	
ANSP	Air Navigation Service Provider	An organisation that provides the service of managing the aircraft in flight or on the manoeuvring area of an airport and which is the legitimate holder of that responsibility.
AONB	Area of Outstanding Natural Beauty	
ATC	Air traffic control	The ground-based personnel and equipment concerned with controlling and monitoring air traffic within a particular area.
ATZ	Aerodrome Traffic Zone	An airspace of defined dimensions established around an aerodrome for the protection of aerodrome traffic.
CAA	Civil Aviation Authority	The UK Regulator for aviation matters
CAP1616	Civil Aviation Publication 1616	The airspace change process regulated by the CAA
	Capacity	A term used to describe how many aircraft can be accommodated within an airspace area without compromising safety or generating excessive delay
CAS	Controlled Airspace	Generic term for the airspace in which an air traffic control service is provided as standard; note that there are different sub classifications of airspace that define the particular air traffic services available in defined classes of controlled airspace.
-	Centreline	The nominal track for a published route
-	Concentration	Refers to a density of aircraft flight paths over a given location, this generally refers to high density where tracks are not spread out; this is the opposite of dispersal
CCO	Continuous Climb Operations	An aircraft operating technique facilitated by the airspace and procedure design and assisted by appropriate ATC procedures, allowing the execution of a flight profile optimised to the performance of aircraft, leading to significant economy of fuel and environmental benefits in terms of noise and emissions reduction
CDO	Continuous Descent Operations	An aircraft operating technique in which an arriving aircraft descends from an optimal position with minimum thrust and avoids level flight to the extent permitted by the safe operation of the aircraft and compliance with published procedures and ATC instructions
-	Conventional navigation	The historic navigation standard where aircraft fly with reference to ground-based radio navigation aids

Acronym	Term	Description
-	Conventional route	Routes defined to the conventional navigation standard, i.e. using ground-based radio navigation beacons to determine their position.
CTA	Control Area	Controlled airspace extending upwards from a specified limit above the earth. Control Areas are situated above the Aerodrome Traffic Zone (ATZ) and afford protection over a larger area to a specified upper limit.
CTR	Control Zone	Controlled airspace extending upwards from the surface of the earth to a specified upper limit. Aerodrome Control Zones afford protection to aircraft within the immediate vicinity of aerodromes
db	Decibels	A unit used to measure the intensity of a sound (or the power level) of an electrical signal by comparing it with a given level on a logarithmic scale.
DER	Declared End of Runway	
-	Dispersal	Refers to the density of aircraft flight paths over a given location, this generally refers to lower density – tracks that are spread out; this is opposite of Concentration
DPE	Design Principle Evaluation	An evaluation of each option against each design principle which forms part of Stage 2A of the CAP1616 process
-	Easterlies	When a runway is operating such that aircraft are taking off and landing in an easterly direction
-	Final Approach	The final part of an arrival flight path that is directly lined up with the runway
FL	Flight Level	The Altitude above sea-level in 100 feet units measured according to a standard atmosphere. A flight level is an indication of pressure, not of altitude. Only above the transition level (which depends on the local QNH but is typically 4000 feet above sea level) are flight levels used to indicate altitude; below the transition level feet are used.
FLARM	Flight Alarm	FLARM (an acronym based on 'flight alarm') is the proprietary name for an electronic device which is in use as a means of alerting pilots of small aircraft, particularly gliders, to potential collisions with other aircraft which **are similarly equipped.**
FUA	Flexible Use Airspace	Airspace which is not solely designated for a single purpose, but can be allocated flexibly according to need, or switched entirely on/off according to a schedule or agreed process.
-	Flight-path	The track flown by aircraft when following a route, or when being directed by air traffic control
ft	Feet	The standard measure for vertical distances used in air traffic control
FASI	Future Airspace Implementation Strategy	Under the Government's Airspace Modernisation Strategy (AMS, ref 15) airports in the UK are required to update their airspace and routes in a coordinated way.
GA	General Aviation	All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire. The most common type of GA activity is recreational flying by private light aircraft and gliders, but it can range from paragliders and parachutists to microlights, balloons, and private corporate jet flights.
IFP	Instrument Flight Procedures	A published procedure used by aircraft flying in accordance with the instrument flight rules, which is designed to achieve and maintain an acceptable level of safety in operations and includes an instrument approach procedure, a standard instrument departure, a planned departure route and a standard instrument arrival.
ILS	Instrument Landing System	An ILS operates as a ground-based instrument approach system that provides precision lateral and vertical guidance to an aircraft approaching and landing on a runway, using a combination of radio signals to enable a safe landing even during poor weather.
IOA	Initial Options Appraisal	A qualitative appraisal of an option against a baseline 'do nothing' scenario, as required at Step 2B of CAP1616

Acronym	Term	Description
L_{Aeq}		The most common international measure of noise, meaning, 'equivalent continuous sound level'. This is a measurement of sound energy over a period of time.
$L_{Aeq\ 16h}$		The A-weighted Leq measured over the 16 busiest daytime hours (0700-2300) is the normal time-period used to develop the Airport Noise Contours for day-time operations.
$L_{Aeq\ 8h}$		The A-weighted Leq measured over the 8 night-time hours (2300-0700) is the normal time-period used to develop the Airport Noise Contours for night-time operations.
-	Lower Airspace	Airspace in the general vicinity of the airport containing arrival and departure routes below 7,000ft. Airports have the primary accountability for the design of this airspace, as its design and operation is largely dictated by local noise requirements, airport capacity and efficiency
NAP	Noise Abatement Procedures	Noise abatement procedures are designed to minimise exposure of residential areas to aircraft noise, while ensuring safety of flight operations
NATS NERL		NATS NERL - The UK's licenced air traffic service provider for the en route airspace (upper network) that connects airports with each other, and with the airspace of neighbouring states.
nm	Nautical Mile	Aviation measures distances in nautical miles. One nautical mile (nm) is 1,852 metres. One road mile ('statute mile') is 1,609 metres, making a nautical mile about 15% longer than a statute mile.
-	Network Airspace / Upper network	En route airspace above 7,000ft in which NATS has accountability for safe and efficient air traffic services for aircraft travelling between the UK airports and the airspace of neighbouring states.
NTK	Noise Track Keeping	A system that monitors and records radar data to monitor aircraft operations and report statistics focused around noise.
PANS OPS	Procedures for Air Navigation Services Aircraft Operations	PANS-OPS is contained in an ICAO Document 8168 which sets out the design criteria and rules for instrument flight procedures which include approach and departure procedures.
PBN	Performance Based Navigation	Referred to as PBN; a generic term for modern standards for aircraft navigation capabilities including satellite navigation (as opposed to 'conventional' navigation standards)
RMA	Radar Manoeuvring Area	An ATC operational area articulated as a volume of airspace by the ANSP. It facilitates the close-in radar vectoring by ATC that is required to take the aircraft safely from a holding stack and established onto final approach.
RNAV / RNAV 1	aRea NaVigation	This is a generic term for a particular specification of Performance Based Navigation. The suffix '1' denotes a requirement that aircraft can navigate to with 1nm of the centreline of the route 95% or more of the time. In practice the accuracy is much greater than this.
RNP-RF	Required Navigation Performance – Radius to fix	An advanced navigation specification under the PBN umbrella. The suffix '1' denotes a requirement that aircraft can navigate to with 1nm of the centreline 95% or more of the time, with additional self-monitoring criteria. In practice the accuracy is much greater than this. The RF means Radius to Fix, where airspace designers can set extremely specific curved paths to a greater accuracy than RNAV1.
RNP-AR	Required Navigation Performance – Authorisation required	An advanced navigation specification under the PBN umbrella. 'Authorisation required' refers to aircraft and operators complying with specific airworthiness and operational requirements. RNP-AR allow airspace designers to set extremely specific curved paths to a greater accuracy than RNAV1, these can be designed before and after the Final Approach Fix.
-	Separation	Aircraft under Air Traffic Control are kept apart by standard separation distances, as agreed by international safety standards. Participating aircraft are kept apart by at least 3nm or 5nm lateral separation (depending on the air traffic control operation), or 1,000ft vertical separation.

Acronym	Term	Description
SID	Standard Instrument Departure	Usually abbreviated to SID; this is a route for departures to follow straight after take-off.
	Tactical Intervention	Air traffic control methods that involve controllers directing aircraft for specific reasons at that particular moment (see Vector)
TMA	Terminal Manoeuvring Area (Terminal Airspace)	An aviation term to describe a designated area of controlled airspace surrounding a major airport or cluster of airports where there is a high volume of traffic.
TMZ	Transponder Mandatory Zone	Airspace of defined dimensions where the carriage and operation of transponder equipment is mandatory.
VFR	Visual Flight Rules	Visual Flight Rules (VFR) are the rules that govern the operation of aircraft in Visual Meteorological Conditions (VMC) (conditions in which flight solely by visual reference is possible)
VMC	Visual Meteorological Conditions	Visual meteorological conditions (VMC) are the meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima
VSA	VFR Significant Area	A volume of airspace which has been identified as being particularly important to VFR operations. A VSA might take the form of a route, a zone, or an area chosen for its particular importance to GA users. These areas do not have any official status but are intended to highlight the importance of a particular area so that future airspace development plans can take account of the GA activity.
-	Vector / vectoring	An air traffic control method that involves directing aircraft off the established route structure or off their own navigation – ATC instruct the pilot to fly on a compass heading and at a specific altitude. In a busy tactical environment, these can change quickly. This is done for safety and for efficiency.
-	Westerly operation	When a runway is operating such that aircraft are taking off and landing in a westerly direction