UK Civil Aviation Authority

Report of the CAA's Post Implementation Review of Farnborough Airport's Airspace Change Proposal

CAP 2586

Published by the Civil Aviation Authority 2025

Civil Aviation Authority
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

Published April 2025

Enquiries regarding the content of this publication should be addressed to: airspace.policy@caa.co.uk

The latest version of this document is available in electronic format at: www.caa.co.uk/CAP2586

Contents

Executive Summary

Farnborough Airport's proposal to create a new operating environment to introduce precision area navigation (P-RNAV) Standard Instrument Departures (SIDs) & Standard Terminal Arrival Routes (STARs), contained in a new controlled airspace (CAS) environment was approved by the CAA on 11 July 2018.

The change was implemented on 27 February 2020.

The post-implementation review ("**PIR**") data collection period (which often follows immediately after implementation, for 12 months, but was delayed due to the COVID-19 pandemic) continued from 1 April 2022 until 31 March 2023. The comprehensive Airspace Change Process Post Implementation Review Data Request[1] for ACP-2013-07 was sent to the sponsor in February 2022.

This PIR has been conducted in accordance with CAA's CAP 1616[2]. However as set out in the CAA's decision[3] this airspace change was developed and assessed in accordance with the CAA's former airspace change process known as CAP 725, the Secretary of State's former Air Navigation Directions (dated 2001 as amended in 2004[4]) and the Secretary of State's Guidance to the CAA on its environmental duties when carrying out its air navigation functions (dated 2014[5]). Therefore, when assessing whether the change has had the intended outcomes the CAA has used the methodology and government policy in force at the time of the original CAA decision in order to do so.

Farnborough Airport's report on the data it gathered over the 12-month period and the associated annexes were published on the Farnborough Airport public webpage and additionally, on the CAA Farnborough Airport webpage. On publication of Farnborough Airport's PIR report, the CAA opened a feedback window to enable all stakeholders and members of the public to provide their comments on the published information.

The CAA has assessed Farnborough Airport's data and report and reviewed all stakeholder feedback.

As a result, the CAA has reached the following conclusions:

[1] Published at Appendix 1 in the sponsor's PIR Main Document
[2] CAP1616: The Process for Changing the Notified Airspace Design | UK Civil Aviation Authority and its associated guidance CAP1616f: Guidance on Airspace Change Process for Permanent Airspace Change Proposals | UK Civil Aviation Authority
[3] Decision CAP 1678
[4] See Appendix III of this document
[5] https://www.gov.uk/government/publications/air-navigation-guidance

- The change maintains a high standard of safety by creating a known environment in the vicinity of Farnborough airport and no detrimental impact on safety has been identified.
- The change enables the most efficient use of airspace and within acceptable tolerance limits has achieved an equitable means of satisfying the requirements of operators and owners of all classes of aircraft commensurate with achieving the safety objectives of the change.
- The change has had the expected outcome with regard to the impact of the change on local air quality, daytime noise, night-time noise, indirect (consequential) noise impacts from other airspace users (i.e., those airspace users neither departing from nor arriving at Farnborough airport), overflight, tranquillity and biodiversity.
- The change has had a greater impact on CO_2 emissions than anticipated but the impact is broadly what was expected given the difference in methodology used in the original proposal and the PIR.

The CAA has therefore concluded that the change has produced the intended outcomes, and that the implemented design satisfactorily achieves, within acceptable tolerance limits, the objectives and terms of the CAA's approval. **As a result the airspace change is confirmed**.

The CAA has also concluded that Farnborough Airport must continue some further mitigations and on-going engagement activity including in relation to the undertakings (given by the airport operator to the CAA at the time of our decision).

1 Scope and background to the PIR

What is a Post Implementation Review?

1.1 A PIR analyses the impacts of the implemented airspace change to determine if it has or has not produced the intended outcomes.

1.2 The PIR is not a review of the decision that was made on the final airspace change proposal, and neither is it a re-run of the decision-making process[6].

Data collected for the purpose of the PIR

1.3 The comprehensive Airspace Change Process Post Implementation Review Data Request[7] for ACP-2013-07 was sent to the sponsor in February 2022.

1.4 On 15 May 2023 the CAA received the change sponsor's PIR report, which provided all of the data and analysis that the CAA had requested. This report was published and presented on both the Farnborough Airport and relevant CAA Farnborough Airport webpages. Alongside the main document, the change sponsor provided data covering the period from 1 April 2022 to 31 March 2023 as follows:

- Gate analysis for all flights between 1 Apr 2018 and 31 March 2019, and 1 April 2022 and 31 March 2023 (Annex A)
- Traffic density plots to show concentration and lateral dispersion during June 2019 and August 2022 (Annex A)
- Traffic density plots that show vertical profiles during June 2019 and August 2022 (Annex A)
- Meteorological data
- Traffic density plots to show postcodes overflown pre and post ACP (Annex A)
- Operational feedback submitted to Farnborough Airport from targeted aviation stakeholders (Annex B)
- Farnborough Airport Consultative Committee (FACC) minutes relevant to the ACP between February 2020 and February 2023 (Annex B)

[6] CAP1616 paragraphs 3.51 and 3.52
[7] Published at Appendix 1 in the sponsor's PIR Main Document

- Mandatory Occurrence Events (MORs) data (Annex C)
- Airprox reports data (Annex C)
- Infringement data (Annex C)
- Complaints received by Farnborough Airport (Annex D)
- Email evidence of feedback received (other than complaints) during the data collection period (Annex D Appendix of Redacted Emails)
- General Aviation and Glider Study including GA heat maps and Glider FLARM heat maps pre and post ACP (Annex E)

1.5 On 13 December 2023 the CAA emailed the sponsor to indicate that some of the data provided in its PIR Annex E document was inaccurate and that the related conclusion for that part of its report would therefore need to be reconsidered.

1.6 On 27 February 2024, the CAA received version 1.1 of the Farnborough PIR Annex E GA and Glider – Parham Box and CTA 7 document. The data had been updated to reflect the correct information and the sponsor had also included additional information, including Section 7 – Appendix regarding Parham Box Section 5, and CTA7. This additional information identified the reason for the air traffic controllers' thought process when descending aircraft to set altitudes once inside the lateral boundaries of a controlled airspace structure. This information was not incorporated in v1 of the document but has now been included to deliver more rationale for the design and usage of CTA 7, and an explanation of how that aligns with procedures and process detailed in CAP493 Manual of Air Traffic Services.

1.7 On 26 April 2024, the CAA received an amended version 1.1 of the Farnborough PIR Annex E GA and Glider – Parham Box and CTA 7 document. This version has been amended to reflect a correction to errata in the original Section 5 re: Parham Box data, and an insertion of a new Section 7 appendix re: controllers' use of CAS and additional radar data analysis – all marked by blue brackets to signpost the changes.

Other data we have considered

1.8 The **CAA Airspace Analyser Tool** enabled the CAA to analyse GA (powered) transits routeing to the west of Farnborough. This tool takes track data and imports the data into a graphical interface, which enables the CAA to assess historic use of volumes of airspace over a selected time period.[8] The sponsor's PIR report Annex E v1.1 General Aviation & Glider Study

[8] A representative example of the output from this tool can be found in Appendix I. For a fuller explanation of the tool, see page 7 of this separate CAA report https://www.caa.co.uk/publication/download/20519

included a series of heat maps that summarises the intensity of this traffic at different altitude bands.

1.9 In addition, to add data relating to an airspace user's perspective, the CAA's considered occurrences reported by airspace users, air traffic controllers or aerodrome operators through the Mandatory Occurrence Reporting (MOR)[9] system, which is relevant information when considering the safety of the change in this operating area, including from a pilot's perspective.

[9] Occurrence reporting | UK Civil Aviation Authority Occurrence information can only be used to maintain or improve aviation safety. This means that we can't release occurrence information.

2 Objectives and Anticipated Impacts

The original proposal and its objectives

2.1 The original proposal was developed for Farnborough Airport and was to create a new operating environment with RNAV standard instrument departures (SIDs) and standard terminal arrival routes (STARs) and elements of controlled airspace to contain these new instrument flight procedures.

2.2 The change sponsor sought to bring benefits to the Farnborough ATC operation and to other airspace users in the region, to enhance aviation safety, and to reduce noise impact on the local population.

2.3 The objectives of the airspace change were to increase the predictability and efficiency of departure and arrival routes, to reduce the complexity of airspace interactions, to establish a route structure that, as far as practicable, would avoid towns and villages below 4000ft and avoid major population centres between 4000ft and 7000ft, and would encourage the GA community to use the services provided by Farnborough ATC.

2.4 The sponsor indicated that the airspace change would aim to maintain a high standard of safety, improve the overall efficiency of the airspace for all airspace users, provide equitable access to airspace for all users and lessen the environmental impact by reducing over-flight of populated areas at low altitude where possible. Additionally, the new procedures aimed to provide an efficient routeing for Farnborough's departures and arrivals, connecting to the established en-route network in southeast England and to deconflict Farnborough procedures from adjacent Heathrow and Gatwick operations.

3 CAA Assessment

Operational Assessment

Overall conclusion

3.1 The airspace design change has maintained a high standard of safety, the airspace design is working as intended, has achieved an efficient use of airspace and within acceptable tolerance limits has satisfied the requirements of all operators and owners of aircraft.

3.2 Feedback indicates that where issues and efficiencies are identified, procedures between stakeholders have been, and continue to be, refined. The airspace construct, interdependencies, and procedures in terms of arrival and departure routes in a controlled environment are operating as expected. It is noted, however, that further co-ordination is required with some affected stakeholders. The CAA is content that the change sponsor has engaged and continues to engage with stakeholders to ensure that all operational requirements are considered.

Safety

3.3 Incident data is contained within the Farnborough Airport's Airspace Change Post Implementation Review (ACP-2013-07) Annex C. As the change introduced a class of airspace with significantly different Air Traffic Management procedures, direct comparison of Mandatory Occurrence Reports (MORs) regarding loss of separation and loss of deconfliction minima pre/post implementation of the change does not provide a meaningful output in terms of safety analysis. It does, however, define a safety baseline. In accordance with extant regulation, the air navigation service provider is required to report and investigate all instances of loss of separation within controlled airspace and all instances of loss of deconfliction minima for aircraft being provided with a deconfliction service outside of controlled airspace.

3.4 The CAA has concluded that the introduction of a known operating environment has enhanced the ability of the Air Traffic Service Unit to provide the safe, orderly and expeditious management of Air Traffic in the associated airspace construct and that the airspace design maintains a high standard of safety.

3.5 The CAA has concluded that the outcome is as intended.

Air Navigation Service Provision

3.6 Noting that the impacts of COVID-19 and available operational resource resulted in occasional capacity constraints in delivery of UK FIS, as part of the implementation of the change, the Farnborough air traffic control operational requirement was reviewed and increased to meet the needs of service delivery. The CAA is content that the ANSP meets the obligations of UK Regulation 2017/373 ATM/ANS.OR.B.001 for technical and operational competence and capability and that all services are provided in accordance with regulatory requirements.

Utilisation and Track Keeping

3.7 Utilisation data provided by NATS Farnborough demonstrates systemised use of the designated arrival and departure routes supported by operational procedures and letters of agreement. Initial issues with track keeping regarding use of RNAV5 vs RNAV1 arrival routes have been resolved through review and amendment of procedures. Utilisation of CTA 7 is discussed below. The CAA has concluded that the airspace constructs are being utilised as described within the concept of operation and that track keeping requirements are as predicted.

Requirements of aircraft operators and owners

3.8 Overall, the CAA has concluded that within acceptable tolerance limits the change has satisfied the requirements of all operators and owners of aircraft.

3.9 Flight progress data supplied by NATS and verified by the CAA Airspace Analyser Tool has led the CAA to conclude that the airspace is managed in a manner which allows equitable access arrangements in accordance with the class of airspace for the following reasons.

3.10 At the time of its Decision the CAA anticipated that the new controlled airspace, combined as applicable with associated transponder mandatory zones, would provide fair and proportionate access to all airspace users and all classes of aircraft. The Decision (paragraph 102-111) set out the reasons for the CAA's conclusion. These reasons included offers from Farnborough Airport of letters of agreement with a number of stakeholders.

3.11 Farnborough PIR aircraft movement data and stakeholder feedback suggests that establishment of controlled airspace has affected the lateral track of some aircraft transiting the area remaining outside of controlled airspace, with some displacement to the West/Southwest, to the extent anticipated at the time of the decision. The CAA has concluded that the change has had the intended outcome. The CAA analysed MOR data for the area and no adverse impact on safety was identified. The air navigation service provider is

encouraged to continue to monitor service provision in this area ensuring resource demands can be met.

3.12 The following undertakings were made by Farnborough Airport at the time of the CAA's decision:

i. *When electronic conspicuity devices (for example ADS-B) have advanced to a state of development that they are considered acceptable and interoperable by meeting EASA safety requirements, Farnborough undertake to implement the surveillance of such devices as another standard means for VFR traffic to gain access to Class E + conspicuity airspace.*

ii. *During the lengthy discussion about this airspace change Farnborough have produced draft letters of agreement (LoAs) which if implemented, would allow special access rights for Lasham and South Down gliding clubs. Farnborough undertake to make these or new agreed (and improved) LoAs available in the future when these gliding clubs are minded to request them.*

iii. *Farnborough will demonstrate continued collaboration with Lasham Gliding Society and Southdown Gliding Club to agree reasonable access arrangements to CTA's 2, 3, 6, 8, and 9.*

iv. *Noting that all flights operating in the new Class E+TMZ airspace shall carry and operate Secondary Surveillance Radar (SSR) transponders capable of operating on Modes A and C or on Mode S, unless in compliance with alternative provisions prescribed for that particular airspace by Farnborough ATC, Farnborough will consider whether specific access arrangements can be agreed for pilots who meet radio carriage and operation requirements, wishing to operate in the new Class E+TMZ airspace without serviceable transponder equipment.*

3.13 The CAA notes the following on-going activity related to these undertakings as follows:

i. The CAA's work on electronic conspicuity continues and the conditions detailed above have been acknowledged and will continue to be followed by Farnborough.

ii. Most of the revised LoAs have been published and the accommodation of some local airspace user requirements have been satisfied. (a) Following an update meeting with NATS Farnborough in May 2024, it was recognised that the operation of Lasham Gliding Society (LGS) continues with complete autonomy and remains outside controlled airspace without

presenting any airspace infringement risk. The CAA has concluded that the recognised airmanship of these glider pilots presents no safety concerns to the IFR operation at Farnborough. (b) Nevertheless, the CAA notes the work on the LoA with LGS continues. The special access rights and the procedures developed to introduce flexible use of airspace arrangements (FUA) for LGS were introduced on a trial basis. However, the results recognised that it is difficult to satisfy the operational demands for Farnborough IFR arrivals with integration of LGS activities when Farnborough is operating on runway (RW) 06. The work and discussion between LGS and NATS Farnborough continues. The new airspace structure is compact and care must be taken to manage the complex interactions satisfactorily and safely at all times. The CAA notes the new CAA Policy for the Establishment and Operation of Special Use Airspace[10] may help to assist some of the ongoing airspace management arrangements considerations. Should LGS continue to request controlled airspace access under the initial FUA arrangements, both stakeholders will need to continue proactive working arrangements to conclude whether these arrangements are still required.

iii. Farnborough continue to work with LGS and Southdown Gliding Club (SDGC). The access arrangement to CTA's 8 & 9 fully satisfies SDGC requirements. However, as noted below access arrangements for CTA 7 need to be reconsidered to better accommodate SDGC activities to enable more autonomous access for SDGC aircraft to CTA 7.

iv. Access to Class E+TMZ CTA's 8 & 9 is generally working efficiently. However, there were a number of British hang-gliding and paragliding (BHPA) operators that responded to the CAA 42-day feedback window to raise their concerns. Their issues were two-fold. Firstly, they were worried that the CAA may be considering additional volumes of controlled airspace across the south-coast region, based on BHPA airspace users perhaps misinterpreting the original consultation and the follow-up with subsequent redesign options submitted by the sponsor. Secondly, the establishment of the two Class E+TMZ CTAs has had a restrictive effect on some BHPA flyers, in that they are not transponder equipped and do not have individual access arrangements in place with Farnborough to accommodate their flights in these Class E+ volumes of CAS. Noting the reasons for the CAA's Decision, and notwithstanding the CAA's overall conclusion that within acceptable tolerance limits the change has satisfied the requirements of all operators and owners of aircraft, NATS Farnborough is encouraged to make progress to accommodate, where safe to do so, airspace users operating without transponders when

[10] SARG Policy 133: Policy for the Establishment and Operation of Special Use Airspace | UK Civil Aviation Authority

requesting access to cross the Farnborough CTR/CTA controlled airspace complex.

3.14 The Farnborough airspace change was implemented on 27 February 2020. As specified in the sponsor's PIR Report, this airspace change was implemented immediately preceding the UK's first COVID-19 Government-imposed lockdown. The COVID-19 pandemic had significant and long-term impacts on the UK aviation industry, in particular during 2020 and 2021.

3.15 The sponsor's PIR Report articulates clearly that there was an unprecedented change in air traffic due to travel restrictions, and the reduction in the number of flights meant that typical air traffic flows were no longer present across the UK. During this period, Farnborough air traffic controllers were able to provide their aircraft with more direct and efficient routeings due to there being little or no other aviation to consider.

3.16 SDGC operate out of Parham airfield and its cross-country flying activities routinely involve flights to and from the area west of Farnborough and then returning, negotiating CTAs 8 and 7 en-route back to their airfield. The conspicuity requirements for SDGC gliders to cross Class E+(TMZ) CTA 8 are managed satisfactorily due to on-board transponder equipage, partly financed by Farnborough airport. However, although there is a LoA in place between Farnborough airport and SDGC to help navigate through Class D CTA 7, it has been reported that on several occasions gliding flight efficiency has been compromised due to protracted clearances and requests to maintain a set altitude when crossing from Farnborough ATC.

3.17 Farnborough airport was asked to provide detailed data as part of its post-implementation review on the use of the 'Parham Box' contained within CTA 7. In particular the CAA has considered whether CTA 7 was operating so as to secure the most efficient use of airspace.

3.18 The Parham Box is an area within CTA 7 where RNAV1 IFR arrivals to Farnborough are routeing from the south in line with the intended systemised arrival route structure. Although the data clearly indicates that CTA 7 serves this purpose and these IFR arrivals are all contained within the lateral limits of CTA 7, their vertical profile is based on the controlling characteristics and procedures associated with the standard descent profile to help maintain a positive environmental flight profile with a continuous descent operation, notwithstanding a relatively small percentage of these IFR arrivals actually penetrate the vertical volume of CTA 7.

3.19 Aircraft arriving on the southerly STAR during the enroute phase and then positioning for arrival at Farnborough airport are controlled by London Terminal Control (LTC). LTC controllers will initiate the descent of these aircraft and plan to follow the published RNAV1 arrival procedure. As

published, the aircraft have to be no higher than 4000ft altitude (height above mean sea level) at EVATA. In accordance with CAP493, Manual of Air Traffic Services Part 1, any LTC air traffic controller working this arrival should not allocate a level (descent clearance) to an aircraft which provides less than 500ft vertical separation above the lower limit of the control area (CTA 7) where Class G airspace adjoins vertically. This will provide some vertical separation from aircraft operating at the lower limit of controlled airspace. When the controller issues the descent instruction, the pilot may descend immediately to 4,000ft or may choose to descend at a more optimal rate for their aircraft, provided they make the required altitude at the required point - in this case, EVATA. Further information provided by NATS indicates that on analysis of their radar data for Farnborough arrivals, and specifically Mode S SFL (selected flight level), which is the record of the altitude the pilot has selected on their flight management system, 78% of flights had selected a level within the vertical aspect of CTA 7 and were cleared to enter this control area via descent to 4,000ft.

3.20 Although the data analysed from August 2022 indicated that only 5.5% of Farnborough southerly RNAV1 arrivals crossed CTA 7 below 4,500ft in the descent to achieve the STAR vertical constraint of 4,000ft by EVATA, 78% of arrivals flying the procedure had been cleared by air traffic control to enter CTA 7 by descent to 4,000ft.

3.21 NATS has therefore concluded that CTA 7 is being used and is compliant with CAA airspace design policy including controlled airspace containment requirements. The CAA has concluded that the airspace is managed in accordance with regulatory requirements and associated operational procedures.

3.22 The CAA has concluded that within acceptable tolerance limits the impact of the change on the requirements of aircraft operators and owners is as expected.

Infringements and Denied Access

3.23 No meaningful comparison can be made with regards to airspace infringement before the change as there were no controlled airspace structures prior to the airspace change. However, NATS analysis of MOR data suggests infringements count for 45% of all reported occurrences. Farnborough has committed to actively assist in the reduction of infringements through continued engagement with several initiatives with airspace users and working groups. NATS Farnborough has advised the CAA that there were no refusals of service attributable to this change within the PIR period, with submitted data demonstrating that the airspace is being serviced to enable equitable access to all airspace users. NATS Farnborough

has advised that no delay was attributable to the airspace change during the PIR period.

3.24 The CAA is content that the airspace is managed in accordance with regulatory requirements and associated operational procedures.

3.25 The CAA has concluded that this outcome is as expected

3.26 The CAA has concluded that the change sponsor has engaged and continues to engage with stakeholders to ensure that all operational requirements are considered.

Environmental Assessment

3.27 The purpose of the environmental PIR is for the CAA to determine whether the environmental outcomes as anticipated in the original proposal and published decision have been achieved. To evaluate this, the CAA established analysis requirements for the sponsor (published at Appendix 1 in the sponsor's PIR Main Document). In addition, the CAA has utilised data from the **CAA Airspace Analyser Tool** to evaluate the indirect or consequential impact of the change.

Anticipated Environmental Outcomes of the CAA's Decision

3.28 CAP 725 identifies a number of environmental assessment requirements which are designed to inform an assessment against the Government's statutory guidance to the CAA on our environmental duties when making airspace change decisions. As noted in the CAA's Decision, the anticipated environmental outcomes for the ACP for each relevant environmental aspect were as follows (paragraph numbers refer to those from the CAA Decision CAP 1678):

Overall

- Paragraph 65 - The proposed change was not anticipated to have any significant environmental impacts as identified in paragraph 9 of the 2001 Directions

Local Air Quality

- Paragraph 70 - The airport is neither in or adjacent to an Air Quality Management Area (AQMA) and therefore air quality in the vicinity of the proposed airspace change was unlikely to be noticeably affected and limits are therefore unlikely to be breached

Noise

- Paragraph 65 - The overall exposure of any individual or community to noise on the ground was not anticipated to increase to a level that

exceeds 57dB LAeq,16h, where the increase in the level of exposure to noise in itself exceeds 3dB as a result of the proposed change
- Paragraph 65 - The proposed changes to departure routes was not anticipated to have an impact upon the airport's LAeq,16h noise contours
- Paragraph 73 – It was anticipated that no new people will be significantly affected by noise
- Paragraph 73 – It was anticipated that any areas overflown more often are likely to result in people experiencing an increase in aircraft noise, but not at levels that would be considered "significant"

Overflight

- Paragraph 67 – It was anticipated that the introduction of the RNAV routes would result in greater concentration of aircraft flying those routes meaning some people will be overflown more frequently but the concentration of traffic would result in less people being overflown by Farnborough Airport traffic
- Paragraph 67 – It was anticipated that there would be a reduction in the low overflight of populated areas
- Paragraph 79 – It was anticipated that after the first turn, the vertical profile of aircraft departing Runway 06 SID would improve in comparison to current departures meaning that they will typically be higher than departing aircraft before the change was implemented
- Paragraph 87 – It was anticipated that after passing Ewshot the vertical profile of aircraft departing the Runway 24 SID was expected to improve in comparison to departures before the change meaning that they will typically be higher than departing aircraft before the change was implemented
- Paragraph 94 - It was anticipated that during the descent from 7,000ft arriving aircraft would typically be between 600ft and 1,000ft higher than the equivalent traffic before the change

CO_2 Emissions

- Paragraph 67 – It was anticipated that CO_2 emissions would increase as a result of the introduction of the proposed RNAV routes which would result in longer tracks
- Paragraph 69 - Based on the actual number of aircraft movements in 2016 and the anticipated increase in number of aircraft movements, it was anticipated that the change would generate an increase of 1,700 tCO_2e per year

Tranquillity and Visual Intrusion

- Paragraph 71 - With regard to Areas of Outstanding Natural Beauty (AONB) and National Parks it was anticipated that the impact of the

change would be no worse than currently experienced, with the potential to improve if aircraft achieve anticipated improved vertical profiles

- Paragraph 96 – It was anticipated that the South Downs National Park and Surrey Hills AONB would continue to be overflown by arriving aircraft though generally in a narrower swathe, and at altitudes similar to or higher than before the change was implemented
- Paragraph 100 – It was anticipated that the pattern of traffic over the South Downs National Park would change at altitudes below 7,000ft, and that the change would represent a redistribution of aircraft rather than a change in altitudes or numbers of aircraft.

Biodiversity

- CAP 1678 did not make reference to any anticipated impact on biodiversity. However, the Annex E Environmental Assessment concluded that “based upon the nature of the proposal there are unlikely to be any biodiversity impacts”.

Assessed Environmental Outcomes of the CAA’s Decision

Local Air Quality

Applicable policy

3.29 The Air Navigation Guidance 2014 states that due to the effects of mixing and dispersion, emissions from aircraft above 1,000ft above mean sea level (amsl) are unlikely to have a significant impact on local air quality. However, the CAA should consider situations where prioritising the mitigation of noise impacts creates unacceptable costs in terms of local air quality or might risk breaching legal limits. An assessment of local air quality is only required where there is the possibility of pollutants breaching legal limits following the implementation of an ACP.

Anticipated impacts

3.30 With regards to local air quality, the ACP was not anticipated to increase traffic numbers and the change in the departure flight procedure below 1,000ft would only result in a redistribution of emissions. Further, the airport is neither in or adjacent to an Air Quality Management Area (AQMA) and therefore air quality in the vicinity of the proposed airspace change and air quality limits are unlikely to be breached.

Conclusion

3.31 The CAA has concluded that that the implementation of the change has not led to a breach or worsening of legal air quality limits. The outcome was therefore as intended.

Noise

Applicable policy

3.32 The change was not anticipated to have the significant environmental impacts identified in paragraph 9 of the Secretary of State's Air Navigation Directions 2001 (as amended in 2004) because the overall exposure of any individual or community to noise on the ground was not anticipated to increase to a level that exceeds 57dB LAeq16 hour, where the increase in the level of exposure to noise in itself exceeds 3dB as a result of the change. As set out in the CAA's 2018 Decision this was because it was anticipated that the proposed change would have no impact on the airport's LEQ noise contours.

3.33 The Air Navigation Guidance 2014 stated that the Government's overall policy on aviation noise is to limit, and where possible reduce, the number of people in the UK significantly affected by aircraft noise. In determining whether or not someone is "significantly affected" by aircraft noise, the Aviation Policy Framework 2013 states that the Government will continue to treat the 57dB LAeq,16h contour as the "*average level of daytime aircraft noise marking the approximate onset of significant community annoyance*".

3.34 CAP 725 states that sponsors must produce LAeq,16h noise exposure contours for airports where the proposed airspace change entails changes to departure and arrival routes for traffic below 4,000ft above ground level (agl) based on the published minimum departure and arrival gradients.

3.35 CAP 725 also states that SEL footprints must be used when the proposed airspace includes changes to the distribution of flights at night below 7,000ft agl and within 25 km of a runway. Night is defined as 2300 to 0700 local.

3.36 However, Farnborough Airport was not required to produce noise contours as part of its airspace change proposal because it provided evidence to the CAA to demonstrate that the proposed change would have no effect on the 57dB LAeq,16h contour. Therefore, there was no likelihood that any changes in noise experienced due to implementation of the proposed change would have any impact on the number of people significantly affected by aircraft noise.

3.37 Furthermore, Farnborough Airport was not required to produce SEL contours as the airport is open from 0700 to 2200 and therefore does not operate flights during the night-time period of 2300 to 0700.

Anticipated impacts

3.38 The CAA expected that noise on the ground would not increase to a level that exceeds 57dB and therefore no new people would be significantly affected by noise as a result of this proposal (i.e., no new people affected by noise above 57dB LAeq,16h).

3.39 The CAA also expected less people to be overflown by Farnborough traffic at low level although the CAA expected some people would be overflown more frequently (due to concentrated routes).

Conclusion

3.40 The sponsor has provided evidence to show that the changes to airspace have not had an impact on the 57dB LAeq,16h contour and therefore the change has had no impact on the number of people significantly affected by aircraft noise. The track density diagrams produced as part of the PIR data set, show that changes to actual flown mean track occur beyond the 57dB LAeq,16h contour. The sponsor has also provided noise contours post-implementation to support and confirm that the changes in airspace design and the design of the early left turn are not influencing the shape or size of the 57dB LAeq,16h contour. The CAA has concluded the outcome was therefore as anticipated.

Indirect (consequential) noise impacts

3.41 The CAA process (CAP 725 in this case) does not normally require an assessment of the indirect consequential noise impacts from other traffic and instead only considers the direct noise impacts from the actual aircraft operations landing at and departing from the airport.

3.42 In this PIR, the CAA has undertaken its own analysis to determine whether there has been a significant noise impact (as defined by the Secretary of State) resulting from any General Aviation (GA) traffic not arriving or departing Farnborough but flying in the vicinity of Farnborough. This assessment was performed using data sourced from the CAA Airspace Analyser Tool on GA aircraft activity between 16 June and 15 September 2023[11]. For example, for a small aircraft certificated to ICAO Chapter 6 noise standards, the average certified noise level is 72dB LAmax at 1,000 ft. Therefore, 180 such flights would be required to cause noise exposure above 57dB LAeq,16h. Observations from the CAA Airspace Analyser Tool indicated that GA traffic levels in the vicinity of Farnborough were below this threshold. The CAA's assessment of this data has led the CAA to conclude that the level of noise experienced as a result of aircraft not arriving or departing Farnborough airport, but flying around the controlled airspace, has not exceed 57dB LAeq,16h. The CAA has concluded the outcome was as intended.

[11] Selected as typically the busiest summer months of aviation activity

Overflight and Operational Diagrams

Applicable policy

3.43 With regards to performance based navigation, the Air Navigation Guidance 2014 states that concentration as a result of PBN is likely to minimise the number of people overflown but is also likely to increase the noise impact for those directly beneath the track as they will be overflown with greater frequency than if the aircraft were more dispersed. CAP 725 does not explicitly require an assessment of overflight or areas overflown. However, CAP 725 does acknowledge that an assessment of areas directly overflown may be useful in portraying noise impact and can help inform an assessment against Government policy that the best environmental outcome is derived from the concentration of departures on the least number of practical routes designed specifically to minimise the number of people over-flown at low levels (Air Navigation Guidance 2014 paragraph 7.2).

Anticipated impacts

3.44 The proposed change will lead to a concentration of traffic which will result in approximately 255,000 fewer people being directly overflown by Farnborough traffic. However, for people under the new arrival and departure routes there will be an increase in the number of times they are overflown which is an inevitable consequence of concentration. Both arriving and departing aircraft were anticipated to typically be higher, reducing the low overflight of populated areas.

Conclusion

3.45 Farnborough Airport has calculated the reduction in the number of people directly overflown by Farnborough Airport traffic, which is approximately 500,000 fewer people. As seen in the figures in Farnborough Airport Airspace Change PIR Annex A Traffic Dispersion and Environmental Overflight Diagrams Issue 1.0, arriving aircraft remain higher for longer while departing aircraft climb more quickly, thus reducing the number of people overflown at low altitudes. The CAA has concluded that the outcome was as intended.

CO_2 Emissions

Applicable policy

3.46 The Air Navigation Guidance 2014 states that the Government's climate change strategy on aviation is to ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions. The CAA can contribute to the Government's aim of reducing CO_2 emissions by prioritising the most efficient use of airspace including procedures that enable aircraft to climb efficiently, allow direct routings, reduce holding times, and facilitate the consistent use of continuous descent and low power/low

drag procedures. The potential to maximise CO_2 efficiency is primarily above 7,000ft (amsl) where local impacts are not a priority. CO_2 efficiency is also a consideration below 7,000ft (amsl), although at these altitudes it must be balanced with other local impacts.

3.47 CAP 725 states that sponsors must demonstrate how the design and operation of their proposal will impact on emissions, including the total annual fuel burn/mass of carbon dioxide in metric tonnes emitted.

Anticipated impacts

3.48 The CAA anticipated that there would be an increase in CO_2 emissions resulting from the introduction of the proposed RNAV routes due to their longer tracks. The assessment predicted that the most likely forecast was that CO_2 would increase by 1,697 tCO_2e (or by 53 $kgCO_2e$ per flight).

Conclusion

3.49 The sponsor has provided an updated CO_2 emissions assessment which indicates that the change increased CO_2 emissions by 3,739 tCO_2e. However, the sponsor has used an adapted methodology for this calculation which does not allow a direct comparison. Therefore, to better understand the direct impact of the change, the CAA has reviewed the per flight CO_2 emissions pre and post the airspace change which indicate that the impacts are 33 $kgCO_2e$ per flight more than those anticipated. For perspective, a typical flight from Farnborough Airport to Dubai International Airport is approximately 15,000 $kgCO_2e$[12] (15 tCO_2e). Given the difference in methodology as explained above, the CAA has concluded that the outcome is broadly what was expected.

Tranquillity and Visual Intrusion

Applicable policy

3.50 The Air Navigation Guidance 2014 states that flights over National Parks and Areas of Outstanding Natural Beauty (AONB) are not prohibited by legislation as a general prohibition against overflights would be impractical. However, avoidance of overflight of National Parks and AONBs below 7,000ft (amsl), where practicable, is encouraged.

3.51 CAP 725 further notes that National Parks and AONBs are afforded certain statutory protection, but this does not extend to precluding overflight by aircraft. CAP 725 does not issue any formal guidance on the assessment of

[12] This estimate is based on the sponsor's assumption of 1.6 kg fuel burn/nm for a typical executive jet at cruise flight level.

tranquillity and visual intrusion, however, sponsors may use operations diagrams to communicate impacts on these metrics.

Anticipated impacts

3.52 With regards to Surrey Hills AONB and South Downs National Park, there was no anticipated increase in traffic over these areas but there may be a redistribution of traffic patterns. Aircraft were also expected to be higher than current traffic over these areas.

Conclusion

3.53 On review of figures in Farnborough Airport Airspace Change PIR Annex A Traffic Dispersion and Environmental Overflight Diagrams Issue 1.0, it is concluded that there is no net increase in flights over the AONB and National Park. Traffic is concentrated and redistributed[13] following the airspace change, as anticipated at the time of the CAA's decision. As noted in the overflight assessment (referred to above), the vertical profiles of arriving and departing aircraft are higher, as anticipated. The CAA has concluded that the outcome is as intended.

Biodiversity

Applicable policy

3.54 CAP 725 states that it is considered unlikely that ACPs will have a direct impact on animals, livestock, and biodiversity. For that reason, biodiversity is assessed on a case-by-case basis.

Anticipated impacts

3.55 The CAA's Annex E Environmental Assessment of the proposed change concluded "that based upon the nature of the proposal there are unlikely to be any biodiversity impacts".

Conclusion

3.56 As the change is in keeping with that proposed, the CAA has concluded that the biodiversity impacts are as intended.

Community Stakeholder observations

Summary

3.57 Two primary strands of feedback were taken into account as part of the PIR; feedback submitted to the change sponsor following the implementation of

[13] A consequence of concentration is a redistribution of other flights surrounding the RNAV procedures. However, there is no overflight of new National Park and AONB areas.

the airspace change, and feedback submitted to the CAA during the 42-day feedback window.

3.58 The change sponsor prepared an analysis of the feedback it received in Annex D to its PIR report. We have reviewed and taken into account the results of the change sponsor's analysis and concluded that the feedback received was consistent with the traffic patterns we were expecting and that have been demonstrated.

3.59 We have also analysed the feedback submitted directly to the CAA during the 42-day feedback window. As per the feedback submitted directly to the change sponsor, this feedback was also consistent with the traffic patterns we were expecting.

3.60 The CAA also received additional feedback from stakeholders outside of the 42-day feedback window. While this correspondence is not part of the PIR process, we have carefully reviewed it and included details in Appendix II.

3.61 Within the feedback we received comments related to the correctness or otherwise of the original decision, or that was otherwise outside the scope of this review, for example concerning the CAP 1616 PIR process generally. This feedback has been carefully reviewed and we have provided our comments to this feedback, however where it is not relevant to this review, it has not been taken into account for the purposes of this review and our conclusions.

Enquiries/complaints submitted to the change sponsor

3.62 As part of the data collection process, the change sponsor was required to accept, process and collate enquiries/complaints relating to the implementation of the airspace change. This data was subsequently analysed by the change sponsor and submitted to the CAA in Annex D to the change sponsor's PIR report.

3.63 The change sponsor received a total of 3,239 complaints from 104 different complainants during the PIR period. The majority of complainants (86 out of 104) submitted between one and five complaints, while a small number of individual complainants made a large number of complaints (one individual made 873 complaints (27% of the total), the five most prolific complainants made 2,408 complaints (74% of the total) and the 20 most prolific complainants made 3,114 complaints (96% of the total)).

3.64 During the comparable period in 2018/2019, before the implementation of the airspace change, the change sponsor received 149 complaints from 48 complainants. The PIR period therefore saw a 2,074% rise in the number of complaints, and a 117% increase in the number of complainants, when compared to the same period in 2018/2019. While the change sponsor has

stated that this increase is reflective of the change taking place, it has not been possible to infer if this increase was also influenced by the impact of the abrupt stopping, and subsequent resumption, of air traffic caused by the COVID-19 pandemic.

3.65 The change sponsor has analysed the themes of complaints during the PIR period and categorised 62% as relating to noisy aircraft, with the next two most common themes being aircraft perceived to be off track (20%) and low aircraft (8%). Both the number of complaints and the number of different complainants were higher during the summer months than in the winter, but complaint volumes in a specific month did not always correlate with traffic levels. The change sponsor has cited periods of hot weather during July and August 2022, the Farnborough air show in July 2022, three separate periods between May and September 2022 when the Instrument Landing System was unavailable, and a sustained period of wet weather in March 2023 as likely contributing factors.

3.66 The change sponsor also analysed complaints by location, which showed that 1,749 complaints (54%) came from the GU10 postcode, followed by 957 from GU26 (30%) and 341 from GU1 (11%). 873 of the 957 complaints (91%) from GU26 were submitted by a single complainant, as were all 341 complaints from GU1.

3.67 While the GU10 postcode covers a relatively large area the change sponsor's analysis shows that the majority of complaints came from the area of Churt (a village situated 10 miles South of Farnborough Airport), and it has conducted a specific analysis relating to Churt which can be found in Annex A.

3.68 During the comparable period in 2018/2019, seven complaints (5%) came from GU10, while the majority came from GU51 and GU52, which are situated close to the airport to the West and Northwest.

PIR feedback submitted to the change sponsor

3.69 The change sponsor also established a dedicated email address to gather specific feedback about the airspace change for the purpose of the PIR. This email address was provided to 187 stakeholders for the airspace change, published on the airport's website, and shared at meetings of the Farnborough Airport Consultative Committee and Flight Operations Committee. The change sponsor has stated that 67 emails about the airspace change were received from 55 distinct respondents, with the majority of the responses (44) being submitted at the end of the PIR period in March 2023. Two responses were received from a local council and one from a local noise group, with the remainder appearing to be from individuals.

3.70 The change sponsor has identified that 26 of these respondents (40%) also submitted a complaint during the PIR period. In terms of location, 41

responses (61%) were from the GU10 postcode area, with 34 (51%) appearing to be from the Churt area, which is a similar proportion to the complaints data.

3.71 The emails often covered more than one subject, not all of which were relevant to the scope of this PIR (for example, decisions around the number of flights permitted at Farnborough, which is a matter for the local planning authority). The main themes that the change sponsor identified in its analysis were an increase in noise, flying over AONBs, air pollution/climate change/emissions, lower flights and an increase in flights.

3.72 The change sponsor concluded that the emails did not provide any evidence of an impact of the airspace change that had not been expected. We have reviewed this feedback alongside the feedback received by the CAA from stakeholders and members of the public during the 42-day feedback window and agree with the change sponsor's conclusion.

Feedback received by the CAA during the 42-day feedback window

3.73 After the PIR data collection period finished on 31 March 2023, the change sponsor was required to analyse the data it collected and prepare a detailed analysis of how the impacts of the change compare with the anticipated impacts set out in the airspace change proposal and decision. Once this analysis was completed and the data published, the CAA opened a feedback window, during which any stakeholder could provide feedback on the data received and the impact of the change. For reasons including public holidays over the Easter period, the change sponsor requested 42 days rather than the usual 28 days to complete and publish its PIR data and the analysis of it required by CAP 1616. The CAA agreed to that request.

3.74 The CAA decided to also extend the stakeholder feedback window from 28 to 42 days.

3.75 The change sponsor's data and analysis were published on the CAA website on 15 May 2023 and stakeholders were invited to submit their own observations to the CAA via email. The feedback window closed on 26 June 2023. A total of 119 responses were received from 110 individuals. All responses have been analysed and taken into account as part of our review.

3.76 A number of themes were identified when reviewing the contents of this correspondence. These themes were similar to those identified by the change sponsor within the feedback it received directly. The themes and our comments to the feedback are summarised below.

Main themes of stakeholder feedback received

3.77 We have collated and analysed all of the feedback received by the CAA within the 42-day window, and the specific feedback about the airspace change

provided to the change sponsor. We have identified the main themes contained in the feedback, summarised stakeholders' feedback for each theme, and provided our comments to that feedback below.

Increased noise impact in particular locations, including early in the morning and late at night and at weekends

3.78 A common concern from respondents was a perceived increase in noise impact, including from flights early in the morning and late at night, with residents sometimes being woken from flights before 6am and after 11pm. Some residents said they had been woken up by flights during the early hours, around 2.30am. Many respondents noted an increased noise impact at weekends, stating that the frequency of flights on a Sunday afternoon can often be every 2-3 minutes, while other respondents wished for weekend flights to be curtailed.

3.79 Stakeholders referred to the following areas being affected by a significant increase in noise: Church Crookham, Ewshot, Farnborough, Grayshott, Headley Down, Rushmoor, South Hay, Wheatley and Wyck in Hampshire; Churt, Elstead, Farnham, Frensham, Haslemere, Hindhead, Mytchett, Pirbright, Rowledge, Seale, The Bourne, The Sands, Tilford, Worplesdon and Wrecclesham in Surrey.

CAA comments

3.80 The areas stakeholders referred to as being impacted are areas where overflight is as expected, either as a result of being in the vicinity of the arrival or departure routes within controlled airspace, or where General Aviation flights occur.

3.81 The number of flights permitted to/from a particular airport, or the operation of flights at particular times of the day, are not matters for the airspace change process. This is the responsibility of the appropriate planning authority responsible for Farnborough Airport. Farnborough Airport's opening hours are 7am – 10pm on weekdays and 8am – 8pm at weekends and bank holidays, therefore flights outside of these hours are most likely to originate from, or be arrivals destined for, other airports.

Impact of increased noise on mental and physical health and wellbeing, including sleep deprivation and impact on family life

3.82 Many respondents stated that an increase in aircraft noise has resulted in sleep deprivation which is affecting their mental health. Some residents advised that they have been unable to get to sleep or had been woken early in the morning by aircraft noise, even when the windows were firmly shut. The noise was referred to as distressing, unsettling, oppressive and highly intrusive. The impact on life included an inability to concentrate when working

from home and the inability to enjoy homes and gardens. Many residents said they were unable to continue a conversation when an aircraft was passing, especially during the summer months. Many residents explained that they moved to the area due to how quiet and peaceful it was previously. Some residents now wished to move home due to the increased noise impact but cited economic implications and hoped for financial compensation.

CAA comments

3.83 The CAA's assessment of, and conclusions in respect of, aircraft noise impacts are covered earlier in this document. The airspace change was not an enabler for any increase in traffic levels. The impacts of noise in the early morning, late evening and during the night is not a matter for this airspace change proposal nor was this proposal an enabler for increased flights during these periods. Farnborough Airport's opening hours are 7am – 10pm on weekdays and 8am – 8pm at weekends and bank holidays, therefore flights outside of these hours are most likely to originate from, or be arrivals destined for, other airports.

Use of particular noisy aircraft

3.84 Many respondents highlighted that specific aircraft types were particularly noisy, with those commonly mentioned including the Bombardier Challenger 350 and the Piaggio Avanti. Some respondents referred to the noise as a high-pitched screaming whistle, or screeching, and said they have measured the noise from these aircraft as above 70 db. A large number of respondents perceived an increase in overflight of these particular aircraft, highlighting concerns regarding the noise and emissions created as a consequence. Many respondents called for the use of these types of aircraft to be eliminated or severely restricted.

CAA comments

3.85 The use of specific aircraft to or from Farnborough is not a consequence of the airspace change process and is not determined by the CAA .

New overflight and noise impacts from low flying GA aircraft

3.86 Feedback was received that GA traffic is now flying lower, and this does not appear to have been anticipated as a consequential impact of the proposal and hasn't been evaluated within the change sponsor's PIR report. Respondents explained that when GA aircraft are transiting controlled airspace, they usually fly at a low altitude which creates more noise on the ground for residents being overflown (especially within areas which are higher in elevation such as South Hay, Wheatley and Wyck). Other respondents said that GA aircraft often continue at the same low altitude out of controlled airspace into uncontrolled airspace, at a lower altitude than they used to fly

before the airspace change was implemented. It has been expressed that the way in which GA are now flying and the noise they are causing is a direct consequence of the airspace change. Many respondents expressed safety concerns in relation to low flying GA aircraft. Some respondents also questioned why the change sponsor has conducted analysis within Annex E of the PIR report of GA overflight of Churt rather than Tilford, which they stated is at the confluence of GA flightpaths. Feedback was also received that many GA pilots would rather re-route around controlled airspace than request ATC clearance to enter and transit. Other respondents said the reasons behind GA taking a longer route or holding is because their clearance request is pending from Farnborough ATC.

CAA comments

3.87 GA activity in the area, both before and after the airspace change, is discussed specifically within Annex E of the change sponsor's PIR report. In summary, the GA heat maps provided demonstrate that there is clear GA use of the Farnborough CTR (Control Zone). While we acknowledge the feedback about aircraft holding, Visual Flight Rules (VFR) traffic would have had to wait for clearance to cross the Farnborough ATZ (air traffic zone) or take a longer route due to Farnborough traffic before the airspace change was implemented.

3.88 As detailed in the environmental assessment, the CAA has undertaken its own analysis to determine whether there has been a significant noise impact as a result of the rerouting of GA traffic. This analysis concluded that the level of noise experienced due the rerouting of GA aircraft is not significant (i.e., not above 57dB LAeq,16h).

Overflight of AONBs / SSSIs / rural areas

3.89 Another theme of feedback was the overflight of Areas of Outstanding Natural Beauty (AONBs), Sites of Specific Scientific Interest (SSSIs) and rural areas more generally. Many respondents stated that these were huge assets to the area and advised that low flying aircraft are disturbing both wildlife and nature lovers alike. Some respondents said that these areas are no longer tranquil and that they are unable to enjoy a peaceful walk. Other respondents advised that increased noise is very disturbing for biodiversity and rare breed animals in the area. Some of the rural areas which residents described as greatly impacted were Churt (within an AONB), Alice Holt Forest, Bourne Woods, Frensham Ponds (an SSSI and a Special Protection Area (SPA)) and the Devil's Punch Bowl. Some respondents noted that Frensham Little Pond in particular is home to many common and rare birds, such as reed bunting, sedge warbler, great crested grebe, nightjar and woodlark. Other residents stated that they had noticed a distinct drop in the volume of birdsong which could be a consequence of the aircraft noise. Many residents citied the Air

Navigation Guidance 2017[14] where it references avoiding the overflight of National Parks and AONBs. They questioned why flightpaths have been directed over an AONB and asked why the flightpaths were not directed towards the A3 and other major roads, where the ambient noise is higher.

CAA comments

3.90 Assessment of the impacts on tranquillity, including the Surrey Hills AONB and South Downs National Park, is covered in the Environmental Assessment above. The CAA concluded that there is no net increase in flights over the AONB and National Park. Traffic is concentrated and redistributed following the airspace change, however, these changes were anticipated as part of the change. The vertical profiles of arriving and departing aircraft are higher, also as anticipated.

Perceived increase in Air Pollution/Emissions/Effects on Climate Change

3.91 A common concern shared by respondents was a perceived increase in emissions and the consequential impact on air quality. Residents referred to the impact of pollution on health and life expectancy. Some residents thought that an increase in air pollution was exacerbating physical health conditions such as asthma. A large number of respondents raised concerns regarding the impact of an increase in flights on climate change.

CAA comments

3.92 Local Air Quality and CO_2 emissions are covered in the Environmental Assessment above. The CAA concluded that that the implementation of the change has not led to a breach of legal air quality limits. It was anticipated that there would be an increase in CO_2 emissions resulting from the introduction of the proposed RNAV routes due to their longer tracks. The actual outcome is set out above and the CAA has concluded that, although it is higher than anticipated, the impact is broadly what was expected given the difference in methodology used in the original proposal and the PIR. The number of flights permitted to/from a particular airport is not a matter for the airspace change process but a matter for the planning authority responsible for Farnborough Airport.

Local topography and low flying aircraft

3.93 Feedback was received that overflight using the southern STAR is at a significantly lower height from the ground over some locations than detailed within the change sponsor's PIR report. Respondents stated that due to the geography of the region, many postcodes are situated in the region of 600ft above mean sea level, resulting in many aircraft flying lower above the ground

[14] The relevant Air Navigation Guidance for this change is the 2014 version https://www.gov.uk/government/publications/air-navigation-guidance, which also contains reference to AONBs

than stated, causing greater impacts to those on the ground. Some residents said they were unaware that altitude is measured from sea level and consequently they were unaware of the height that aircraft would be flying above ground level due to the local topography.

CAA comments

3.94 Due to variations in terrain, the altitudes of flights and airspace are standardised and expressed in feet above mean sea level (AMSL), rather than above the ground. This was explained within the consultation documentation associated with the airspace change and can be found in the glossary (Appendix B) and earlier in the document when referring to the maps which denote an overview of the consultation areas. The document explained, with an example, that when considering the height of aircraft above a particular location then local elevation (height above sea level) should be taken into account.

Concentration of flights using the southern STAR

3.95 A common theme was the concentration of flights down a narrow corridor due to the introduction of a new Standard Arrival Route (STAR) from the south and the introduction of precision area navigation (P-RNAV) as part of the airspace change. Feedback was received that this concentration has resulted in increased noise and visual intrusion over previously quiet areas. Respondents explained that flights previously spread over 14km now pass over villages within a 3km band. Many respondents felt that the impact of intensive overflight of the STAR is more than originally expected and so instead of some aircraft being vectored, residents are being overflown more than they expected. Some respondents referred to the decision document, CAP 1678 paragraph 75, which states that arriving aircraft will continue to be tactically vectored by ATC, which would result in more variation of aircraft tracks than is being experienced. Many residents from Churt advised that there is no respite at all for those overflown and wished for dispersion of flights to lessen the impact of regular overflight. They called for the STAR to be moved further east, preferably over the A3, to mask the noise.

CAA comments

3.96 Aircraft noise impacts are covered in the Environmental Assessment above. It was expected that there would be a greater concentration of flights around the published route, meaning that noise impacts are concentrated on a smaller area, exposing fewer people. It was also anticipated that any areas overflown more often are likely to result in some people experiencing an increase in aircraft noise, but not at the levels that would be considered ‘significant’ (i.e., above 57dB LAeq,16h). The change sponsor’s PIR report acknowledges that there has been less vectoring of aircraft than originally anticipated and therefore more flights are following the programmed arrival

route. The change sponsor explains this in paragraphs 3.3.8 to 3.3.15 of Annex A of its PIR report, noting that during the PIR period departures from Gatwick heading West (via Southampton) were less frequent than expected prior to the COVID-19 pandemic. As there were fewer flightpath interactions requiring controller intervention, a higher-than-expected density of traffic could remain on the programmed arrival route, therefore creating greater concentration of flights.

Traffic from other airports using Farnborough's airspace and new STAR

3.97 Feedback was received that Instrument Flight Rules (IFR) traffic from other airports such as Blackbushe are now required to follow the new Farnborough approach (and departure) routes so far as is practical. This was cited as a positive impact of the ACP by some aviation stakeholders, meaning that aircraft now fly a consistent approach, making it easier for the arrival to be anticipated and planned around circuit traffic. However, community stakeholders expressed that they are experiencing greater noise impacts as a result of the STAR being used by other non-Farnborough aircraft such as those from Blackbushe or Fairoaks airports.

3.98 Many respondents raised concerns that the PIR hasn't properly investigated the impact of all aircraft in the area, citing traffic from Gatwick, Heathrow and Southampton that are 'using Farnborough's airspace' and therefore perceived to be contributing to an increase in noise in different areas, but particularly in the Surrey Hills AONB. Some residents said they believed that Heathrow and Gatwick traffic in the area had increased since the implementation of Farnborough's airspace change and hoped that the cumulative effects of both Farnborough and non-Farnborough aircraft would be considered during the PIR.

CAA comments

3.99 It was expected as part of the airspace change that IFR traffic from nearby airports such as Blackbushe or Fairoaks would follow Farnborough's new STAR. Previously and before the new controlled airspace was established, Blackbushe and Fairoaks IFR inbounds always interacted with Farnborough arrivals. While respondents' concerns that this is contributing to the noise impacts are acknowledged, the CAA notes that such traffic is very limited compared to the volume of Farnborough traffic. While a number of respondents felt that traffic from other airports such as Gatwick and Heathrow were using Farnborough's airspace and therefore perceived an increase in traffic in the area, this traffic has always historically flown above Farnborough's airspace, within the long-established London Terminal Manoeuvring Area controlled airspace structure, and is therefore not a consequence of the change.

Original airspace change consultation

3.100 Feedback was received from some stakeholders who felt that the consultation process prior to the approval of the airspace change was flawed, and many residents advised that they were unaware of, or unable to understand, the likely impacts prior to implementation. Some respondents felt that feedback they raised during the consultation process was not sufficiently taken into account.

CAA comments

3.101 While some respondents challenged the validity of the original consultation process, the purpose of the PIR is to consider whether the anticipated impacts and benefits, as set out in the airspace change proposal and decision, are as expected. It is not a review of the original decision.

Transparency and engagement during the PIR process

3.102 Some responses raised concerns related to stakeholder engagement and transparency. These included how widely the PIR was publicised, that the change sponsor could have engaged community stakeholders through local noise groups, concerns about the length of time stakeholders were given to comment on the change sponsor's analysis and that the 42-day window coincided with local elections. It was also suggested that the PIR analysis should be conducted independently rather than by the change sponsor.

3.103 Some respondents expressed dissatisfaction with the change sponsor's complaint process during the PIR. Concerns raised included the limitations of the information available on WebTrak, one of the main tools used by the public to report complaints, periods when WebTrak was not available, unclear or insufficient responses to complaints from the change sponsor and periods where complaints were not responded to at all.

3.104 Feedback was received from Blackbushe airport that it is receiving some noise complaints from residents of the area south of CTR1 (Farnham and surrounding areas) relating to its traffic that is holding over residential areas, however this is usually because they are waiting for a clearance from Farnborough to transit through the Farnborough CTR (which has been introduced as a result of the airspace change). However, feedback was also received that when residents contacted Farnborough about these aircraft, it advised that because they are not landing or taking off at Farnborough, it has a policy not to investigate them.

CAA comments

3.105 As described earlier within this section, the feedback window within which stakeholders could provide feedback to the CAA was extended from 28 days to 42 days to ensure stakeholders had adequate time to respond. The PIR

required the change sponsor to collate feedback/complaints and provide details of the location of complaints. Any stakeholders could submit a complaint via the change sponsor's existing process at any point which was accessible via their website.

3.106 Blackbushe non-airways arrival aircraft holding outside controlled airspace are not necessarily already in contact with NATS Farnborough, the air traffic service provider. A specialist team at Farnborough Airport handle complaints and communications with the general public as per its complaints policy, not NATS Farnborough ATC. If VFR traffic is operating in uncontrolled (Class G) airspace and is contemplating a transit clearance from ATC to cross the Farnborough CTR, they are not at that point receiving a service from NATS Farnborough. When they call with their intentions and are then identified by the ATC controller, then NATS Farnborough are aware of that aircraft, not before. However, the Farnborough Airport team would not routinely be aware of this or any other VFR Blackbushe arrivals and the associated occasional hold whilst waiting to cross the CTR, due to the different areas of responsibility of Farnborough Airport and NATS Farnborough. Farnborough Airport and NATS Farnborough have agreed to put in place better internal communications to ensure that complaints of this nature can be investigated and handled appropriately.

Data and analysis published by the change sponsor

3.107 Respondents expressed concern about the change sponsor's data, its analysis, and how it was presented. Comments included that the information was too technical, misleading or incomplete, and that a high-level summary or an easy read version should have been included. Feedback was also received that the periods analysed pre and post the implementation of the change were not comparable, that the heat maps in Annex E were poorly presented, that average values (both in relation to traffic volumes and noise levels) are not representative of how the change is experienced by communities and that noise monitoring was insufficient and the PIR should have considered the noise impact of air traffic above 7,000ft.

3.108 Stakeholders also questioned some of the statements made and conclusions reached in the change sponsor's PIR report, such as the number of complaints received from Churt as a percentage of the population, and some respondents felt that the information provided in the PIR report does not address many of the concerns raised by stakeholders.

CAA comments

3.109 The PIR data was provided to enable the CAA to conduct the PIR, and the CAA determined the level of data required from the change sponsor in order to achieve the PIR's objectives. Therefore, the CAA provided the change sponsor with a data request asking for the precise data, operational

information and other evidence that must be collected in preparation for the PIR, in addition to information on the format in which this information is required and how the impacts are to be measured. Appendix 1 of the change sponsor's PIR Main Document details the contents of the CAA PIR Data Request, showing the information that the CAA requested from the change sponsor. Discussion of the data provided to the CAA by the change sponsor is included earlier in this document.

PIR process and scope

3.110 Much of the correspondence addressed to the CAA highlighted concerns with the scope of the PIR process, including the contents and level of data collected during the PIR. Others felt that the PIR should be conducted over a longer period and in a manner that is more scientific in nature to complete a rigorous assessment.

CAA comments

3.111 A PIR analyses the impacts of the implemented airspace change to determine if it has or has not produced the intended outcomes. The PIR is not a review of the decision that was made on the final airspace change proposal, and neither is it a re-run of the decision-making process

International Obligations

3.112 There are no International Obligations associated with this airspace change proposal.

Ministry of Defence Operations

3.113 The MoD provided feedback to both the sponsor and the CAA regarding the RAF Odiham operation's interaction with Farnborough. Although Odiham IFR traffic requirements and access to the Farnborough related controlled airspace CTR and CTAs continues to improve through continued engagement between the units, long holds are sometimes experienced when trying to complete operational TACAN training procedures.

3.114 RAF Odiham reported that due to overseas tasking and commitments, the present flying levels of operation remain relatively low. However, should the strategic output change, the intensity of traffic operating from Odiham could increase and present a higher demand for access to the controlled areas (CTAs). Farnborough recognise this comment from the MoD, and although traffic demand cannot be predicted due to the RAF Odiham nature of operation, any extra demand for access to controlled airspace will be managed on a tactical basis, while working closely with RAF Odiham air traffic control.

4 Conclusion

Overall conclusion

4.1 Overall, the implemented design satisfactorily achieves, within acceptable tolerance limits, the objective and terms of the CAA's decision, and the change is confirmed.

Further mitigations and on-going engagement activity

4.2 Notwithstanding that the airspace change has been found to have satisfactorily achieved the objective(s) expected within acceptable tolerance limits, further mitigations as well as on-going engagement activity relating to the undertakings (given by the airport operator to the CAA at the time of our decision) are required to address the following issues. .

4.3 The sponsor must ensure they have sufficient ATM resource to manage the airspace effectively including providing an effective crossing service.

4.4 The access arrangements for CTA 7 need to be kept under review to better accommodate SDGC activities and enable more autonomous access for SDGC aircraft, thereby providing increased safe and efficient operations without the risk of land aways needing to be considered during flight planning. NATS Farnborough will convene a working group to further discuss the options based on the application of the temporary reserved airspace / temporary segregated airspace (TRA/TSA) policy to CTA 7. Discussion on SDGC access to some of Farnborough's CTAs must continue.

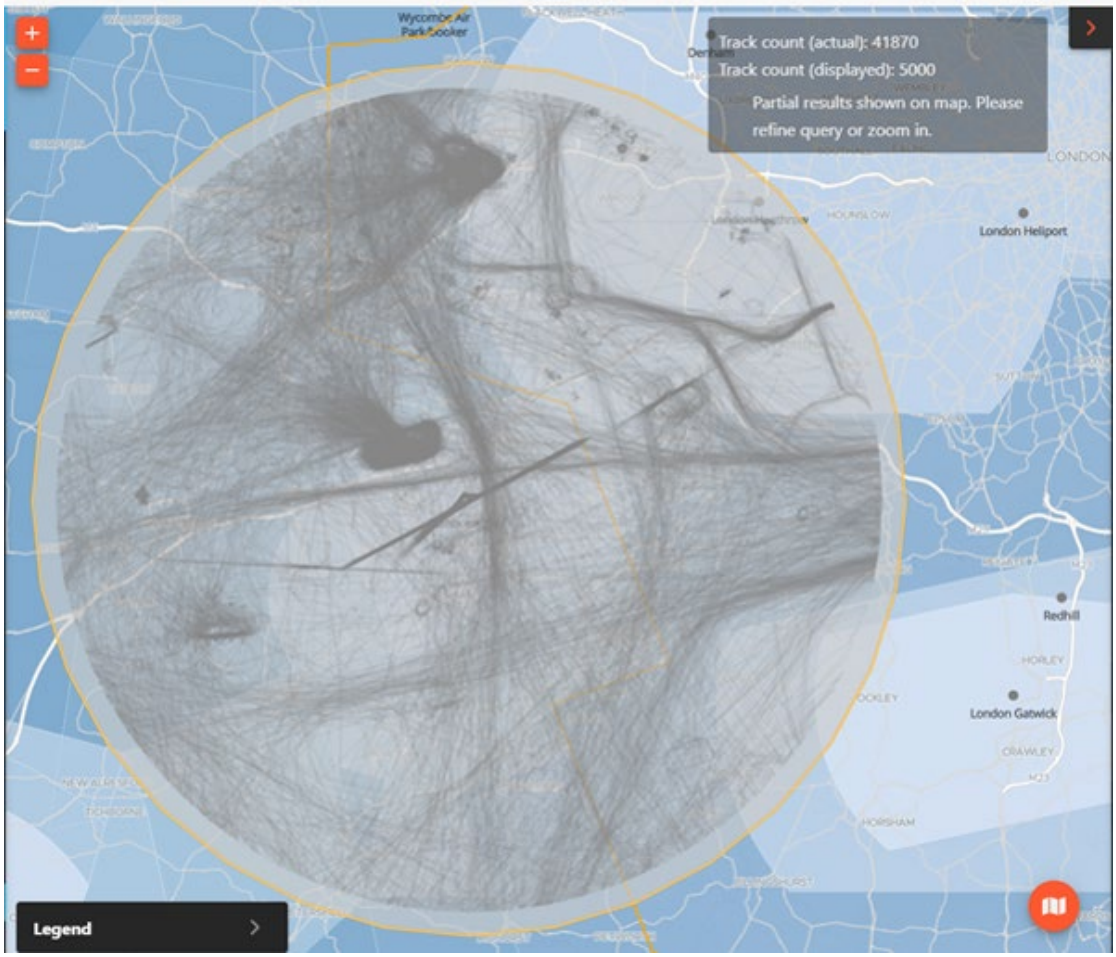
4.5 NATS Farnborough must continue to make progress to better accommodate, where safe to do so, airspace users operating without transponders when requesting access to cross the Farnborough CTR/CTA controlled airspace complex.

4.6 Discussion on whether there continues to be a need for the development of an operational LoA between Farnborough and LGS must continue.

Note on plain language

4.7 The CAA has attempted to write this report as clearly as possible. Our approach has been to include all the relevant technical material but also to provide a summary and of the conclusions the CAA has reached in reliance on it in as understandable a way as possible.

Appendix I: Representative example of output from the CAA Airspace Analyser Tool



Appendix II: Feedback received by the CAA outside the 42-day feedback window

In addition to the feedback noted and considered above, we have reviewed correspondence which the CAA received directly from stakeholders following the implementation of the airspace change. The review focussed on correspondence addressed to the CAA's Chair, Chief Executive and/or Group Director Safety and Airspace Regulation or to the CAA's Parliamentary Relations team, as well as submitted via the 'Use of UK Airspace Report' form (FCS1521) and the airspace.policy@caa.co.uk and enquiries@caa.co.uk mailboxes.

From the date of implementation (27 February 2020) up to the start of this review (15 May 2023), the CAA received a total of 81 pieces of correspondence from 35 individual correspondents concerning the implementation of the airspace change. These individuals included Members of Parliament who wrote to us, sometimes on several occasions, on behalf of their constituents. 41 pieces of correspondence were addressed to the CAA's Chair, Chief Executive and/or Group Director Safety and Airspace Regulation or to the CAA's Parliamentary Relations team, while 31 were submitted via the 'Use of UK Airspace Report' form (FCS1521) or were received as emails as a follow up query regarding an FCS1521 enquiry or a Report of an Alleged Breach of Air Navigation Legislation. The remaining nine pieces of correspondence were submitted via email to either the airspace policy or enquiries mailboxes.

A number of themes were identified when reviewing the contents of this correspondence. No different themes were raised in this correspondence to those identified by the change sponsor within the feedback it received directly, and those that the CAA identified through analysis of the feedback received from stakeholders during the 42-day feedback window.

Appendix III: The Civil Aviation Authority (Air Navigation) Directions 2001 (incorporating Variation Direction 2004)

These directions are hereby given to the Civil Aviation Authority ("the CAA") by the Secretary of State for the Environment, Transport and the Regions in exercise of the powers conferred by Section 66(1) of the Transport Act 2000 ("the Act").

These directions are given in respect of that airspace comprising all airspace of the United Kingdom and all airspace outside the United Kingdom for which the Government of the United Kingdom has assumed responsibility under international arrangements (together "UK airspace").

CAA's Air Navigation Functions

1. It shall be the duty of the CAA to develop, promulgate, monitor and enforce a policy for the sustainable use of UK airspace and for the provision of necessary supporting infrastructure for air navigation**.**

2. In particular the CAA shall:

(a) provide or procure the provision of such advice as the Secretary of State for the Environment, Transport and the Regions and the Secretary of State for Defence, or both, may reasonably require;

(b) discharge the responsibilities of the UK Meteorological Authority –
(i) in accordance with ICAO Annex III and other international obligations; and
(ii) subject to international obligations, in such a manner as the CAA may determine from time to time;

(c) be responsible for the form and content of the UK Aeronautical Information Publication and ensure that an Aeronautical Information Service is provided in accordance with international obligations and any additional requirement the CAA may determine from time to time;

(d) determine and procure the provision of a Lower Airspace Radar Service in UK airspace;

(e) prepare and maintain a co-ordinated strategy and plan for the use of UK airspace for air navigation;

(f) develop national policy for the classification of UK airspace, including design criteria, rules, guidelines and common procedures;

(g) classify UK airspace in accordance with the national policy developed in accordance with (f) above, keep such classification under review and make modifications as necessary;

(h) co-ordinate, determine and promulgate temporary changes in the utilization of UK airspace to meet special air navigation requirements;

(i) provide support for the analysis and categorisation of pilot and controller reported risk-bearing occurrences;

(j) develop, monitor and enforce national policy for the use and assignment of civil aeronautical radio frequencies and Secondary Surveillance Radar codes; and

(k) in relation to international air navigation, contribute to the development thereof and provide such assistance, as the Secretary of State may request, including, subject to section 2(4) of the Civil Aviation Act 1982, international representation.

Organisation of the Directorate of Airspace Policy

3. (a) The CAA shall establish a Directorate of Airspace Policy to carry out its air navigation functions as set out in these directions and this Directorate shall be headed by the person nominated under section 66(3) of the Act.

(b) The CAA shall make such arrangements as it considers appropriate for the role of the Ministry of Defence ("the MOD") in the joint and integrated civil/military provision of air traffic services and will ensure that these arrangements are documented in a Memorandum of Understanding between the CAA and the MOD.

(c) The CAA shall enter into arrangements with the MOD to second and resource an appropriate number of personnel of the appropriate rank and experience from the MOD as the MOD contribution to the functioning of the Directorate and will ensure that these arrangements are documented in a Resource and Interface Arrangement.

Consultation and liaison arrangements

4. The CAA shall establish and operate such institutional arrangements with regard to air navigation as seem to the CAA to be necessary to:

(a) promote safe, effective and efficient, integrated operation of air traffic service providers, particularly between military providers and a licence holder under Part I of the Act;

(b) where the proposed exercise of air navigation functions may affect the requirements imposed on any air traffic service provider, ensure that such air traffic service provider is consulted on the proposed exercise of those functions;

(c) where following consultation referred to at subparagraph (b) above broad consensus is not reached as to either the nature, extent or remuneration of any such service and the matter which has been the subject of consultation would have a material financial impact on an air traffic service provider, ensure that the consideration of the matter by the CAA shall be by its Members if the air traffic service provider so requests; and

(d) without prejudice to section 67 of the Act and if the members of the CAA fail to reach a conclusion, following a request to consider under subparagraph (c) above or if it appears to the Members of the CAA that substantial issues of public policy might arise, ensure that the matter is referred to the Secretary of State.

5. The CAA shall publish details of mechanisms for consultation with representatives of air users, aerodrome operators and providers of air traffic services and other bodies and individuals as appropriate who may be materially affected by any changes proposed by the CAA in UK air navigation arrangements in the Official Record of the Civil Aviation Authority.

The Joint Air Navigation Services Council

6. The CAA shall ensure the continuation of the body known as the Joint Air Navigation Services Council (“the JANSC") and the constitution and functions of the JANSC are set out in the appendix hereto.

Consultation with and Approval of the Secretary of State for Defence.

7. Without prejudice to section 67 of the Act, where it appears to the CAA that there is a need to increase the volume, or alter the classification, of controlled airspace; and that to do so might, in the opinion of either the CAA or MOD, have an adverse effect on the ability of the MOD to maintain its operational capability:

(a) the CAA shall seek the approval of the Secretary of State for Defence before implementing its proposals;

(b) where the Secretary of State for Defence is content, the CAA shall then carry out such further consultation on its proposals as these Directions require under paragraph 4(b) or (c) above

before implementing its proposals subject to any direction given under section 68(3) of the Act;

(c) where the Secretary of State for Defence is not content with the CAA's proposals, the CAA shall not implement such proposals if not in accordance with directions given by the Secretary of State under section 68(3) of the Act.

Environmental impact of air operations

8. Subject to section 70 of the Act the CAA shall perform its air navigation functions in the manner it thinks best calculated to take into account:

(a) the Guidance given by the Secretary of State on the Government's policies both on sustainable development and on reducing, controlling and mitigating the impacts of civil aviation on the environment, and the planning policy guidance it has given to local planning authorities;

(b) the need to reduce, control and mitigate as far as possible the environmental impacts of civil aircraft operations, and in particular the annoyance and disturbance caused to the general public arising from aircraft noise and vibration, and emissions from aircraft engines;

(c) at the local, national and international levels, the need for environmental impacts to be considered from the earliest possible stages of planning and designing, and revising, airspace procedures and arrangements; and

(d) the requirements of directions given under section 39 of the Act to licence holders, an authorised person or authorised persons generally.

9. [15] * [Where changes to the design or to the provision of airspace arrangements, or to the use made of them, are proposed, including changes to air traffic control procedures, or to the provision of navigational aids or the use made of them in air navigation, the CAA shall:

(a) where such changes might have a significantly detrimental effect on the environment, advise the Secretary of State for Transport of the likely impact and of plans to keep that impact to a minimum;

(b) where such changes might have a significant effect on the level or distribution of noise and emissions in the vicinity of a civil aerodrome, ensure that the manager of the aerodrome, users of it, any local authority in the neighbourhood of the aerodrome and any other organisation representing the interests of persons in the locality, have been consulted (which might be undertaken through the consultative committee for the aerodrome where one exists);

[15] * NB: The text in paragraph 9 as amended by the Civil Aviation (Variation) Directions 2004.

(c) where such changes might have a significant effect on the level or distribution of noise and emissions under the arrival tracks and departure routes followed by aircraft using a civil aerodrome but not in its immediate vicinity, or under a holding area set aside for aircraft waiting to land at a civil aerodrome, ensure that the manager of the aerodrome and each local authority in the areas likely to be significantly affected by the proposed changes, have been consulted;

and where such changes might have one or more of the effects specified in paragraphs 9 (a), (b) and (c) of this Direction, the Civil Aviation Authority shall refrain from promulgating the change without first securing the approval of the Secretary of State].

10. The CAA shall advise the Secretary of State on the airspace aspects of any proposal to establish new, modify existing, or reactivate disused, civil or military aerodromes, including their associated traffic patterns.

11. In relation to its air navigation duties, the CAA shall maintain its capability to provide expert technical advice to the Secretary of State on environmental matters.

12. The CAA shall provide a focal point for receiving and responding to aircraft related environmental complaints from the general public.

International relations

13. The CAA shall propose international agreements in relation to air navigation for the approval of the Secretary of State.

14. The CAA shall ensure that close co-operation is maintained in relation to air navigation with international organisations and the civil and military aviation authorities of other States.

Citation and Commencement

15. These Directions may be cited as the Civil Aviation Authority (Air Navigation) Directions 2001 and shall come into force on 1 April 2001.