Safety and Airspace Regulation Group

Airspace Change Process
Post Implementation Review Data Request (Scaled)

ACP Project Reference:	**ACP-2017-77**		
Title of Airspace Change:	Swanwick Airspace Improvement Programme - Airspace Deployment 5		
Change Sponsor:	NATS		
CAA Decision Document:	CAP1820. SAIP AD5 Airspace Change Decision Document		
CAA Decision Date:	7th August 2019	**AIRAC Date(s):**	7th November 2019
PIR Data Submission Requested:		**PIR Data Submission Required by:**	20 Dec 2024

Introduction

1. The CAA's airspace change process is a seven-stage mechanism that is set out in detail in CAP 1616. Stage 7 of this process is a Post Implementation Review (PIR) that normally begins one year after implementation of the change. The PIR is an assessment of whether the anticipated impacts and benefits in the approved change and published decision are as expected and where there are differences, what steps (if any) the CAA requires to be taken.

2. Irrespective of whether the CAA decision to approve the change was made under the previous process (set out in CAP 725), all PIRs should normally be in accordance with the process requirements of CAP 1616. However, when assessing the expected impacts against the actual impacts, the methodology adopted at the time of the original CAA decision should be used.

3. Airspace Change Proposals can vary in size, scale, and complexity, which has led the CAA to scale the PIR process appropriately. A PIR of Level 2 changes will be undertaken when it is proportionate to do so. For some changes, the CAA may proportionately reduce the extent of evidence and data required from the change sponsor or allow more flexibility in the format of the data required[1].

4. This data request form sets out that list of data required for the CAA to complete the assessment for a scaled PIR. On receipt of this data request form, the change sponsor should provide qualitative statements against each of the general observations listed below. The date on which the CAA requires the data to be submitted is stipulated at the top of this document.

[1] CAP 1616f – Para 8.5

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General Observations

1. The following general observations are to enable an overview of the effectiveness of the airspace change.
2. The change sponsor is required to submit a qualitative statement against each data request which supports the conclusion reached in each case.
3. The CAA will review the analysis of the data submitted to ensure the anticipated impacts and benefits in the approved change were as expected.

a) An overview statement on whether, in the change sponsor's view, the original proposal met the intended objectives as described on the CAA's decision to approve the change.
The AD5 change was implemented towards the end of 2019. Early in 2020, global aviation was substantially impacted by the onset of the Covid -19 pandemic. This pandemic drastically reduced the total number of aircraft flying and recovery to pre-pandemic levels is not yet complete across the UK. Subsequently any assessment of the change in the year immediately following implementation was not considered valid. The CAA has stipulated that: *Sponsors of ACPs should commence data collection from 27th March 2022. A phased approach to the commencement of data collection may be taken by sponsors to take account of resourcing requirements. Therefore, the collection of data may be initiated at any point between the 27 March 2022 and 27 September 2022. 12 months of data must be collected.* Subsequently, this PIR is being undertaken using the time period 1 April 2022 until 31 March 2023. It should be noted that within this time period, the LD1.2 (ACP-2017-70) and FRA D2 (ACP-2019-12) were implemented. These ACPs have led to a significant change to the airspace in the Southwest of England, removing some of the routes introduced by AD5, as well as providing new connectivity options affecting the planned route usage of the AD5 routes. Subsequently, the changes made by LD1.1 and FRA D2 will have altered the benefits delivered by this change. This PIR **does not seek to rationalise the LD1.1 and FRA D2 ACPs** but highlights their existence as a rationale for the approach taken herein. It is not considered proportional to fully quantify the impacts of the AD5 ACP due to the complexity of the comparing the implemented changes against a baseline that has been significantly altered. The anticipated benefits were forecast against a baseline airspace that no longer exists and therefore, does not represent a realistic expectation for the AD5 change. Therefore, a qualitative assessment with indicative quantitative values based on the number of flights using the routes and forecast benefit is considered adequate to demonstrate the value of this change. In our view, the implementation of the proposal **has met** the intended objectives listed below: A. Establish appropriate Controlled Airspace (CAS) and Air Traffic Service (ATS) routes for Birmingham Airport (EGBB) arrivals and departures via the MOSUN area. B. Provision of an offload route and appropriate CAS for some traffic inbound to Heathrow. C. Establish or revise a number of high-level ATS routes in the West End Sector Group. D. Amend the boundary of TRA002, in conjunction with the Ministry of Defence (MoD).

Objective A:

Flexible Use Airspace CAS and routes were introduced to provide containment for aircraft arriving and departing Birmingham Airport via the MOSUN area.

Aircraft departing from Birmingham Airport from runway 33 via this new CAS now use the BRUMI 1B SID[2]. The lateral path of this procedure was followed by 998 aircraft. Aircraft departing Birmingham airport runway 15 follow a non-standard departure route via LUXTO. In the assessment period, 257 aircraft departing Birmingham airport overflew LUXTO.

Aircraft arriving at Birmingham Airport via this new CAS now use the FIGZI 1B STAR. This procedure was planned to be flown by 3,782 flights.in the assessment period. The lateral path of this procedure was followed by 2,014 aircraft.

This new CAS has afforded protection to aircraft arriving and departing Birmingham airport as anticipated in the ACP submission.

Extrapolated forecast total movements for Birmingham airport in 2022 was 129,980 flights. Actual Birmingham airport movements for 2022 were 84,405 flights or 65% of the forecast value. The total number of flights was lower in part due to the Covid-19 pandemic. Traffic volume has not yet recovered to pre-pandemic levels and as such the realised benefits will be less than those forecast. Subsequently, it can be concluded that the benefit derived by facilitating arrivals and departures from the MOSUN area was only 65% of that forecast which approximates to a fuel burn benefit of 459 T. This has a calculated CO_2e benefit of c.1.5 kT.

Stratford on Avon Gliding Club requested details of Birmingham CTA10 use to inform their feedback. Following this request NERL provided them with traffic counts and track plots for a 1-year time period. This data was collected between 14 November 2023 to 13 November 2024. The data showed that the Birmingham CTA10 airspace was used by 5,050 aircraft with >45% of the flights at the weekend. This data is shown below:

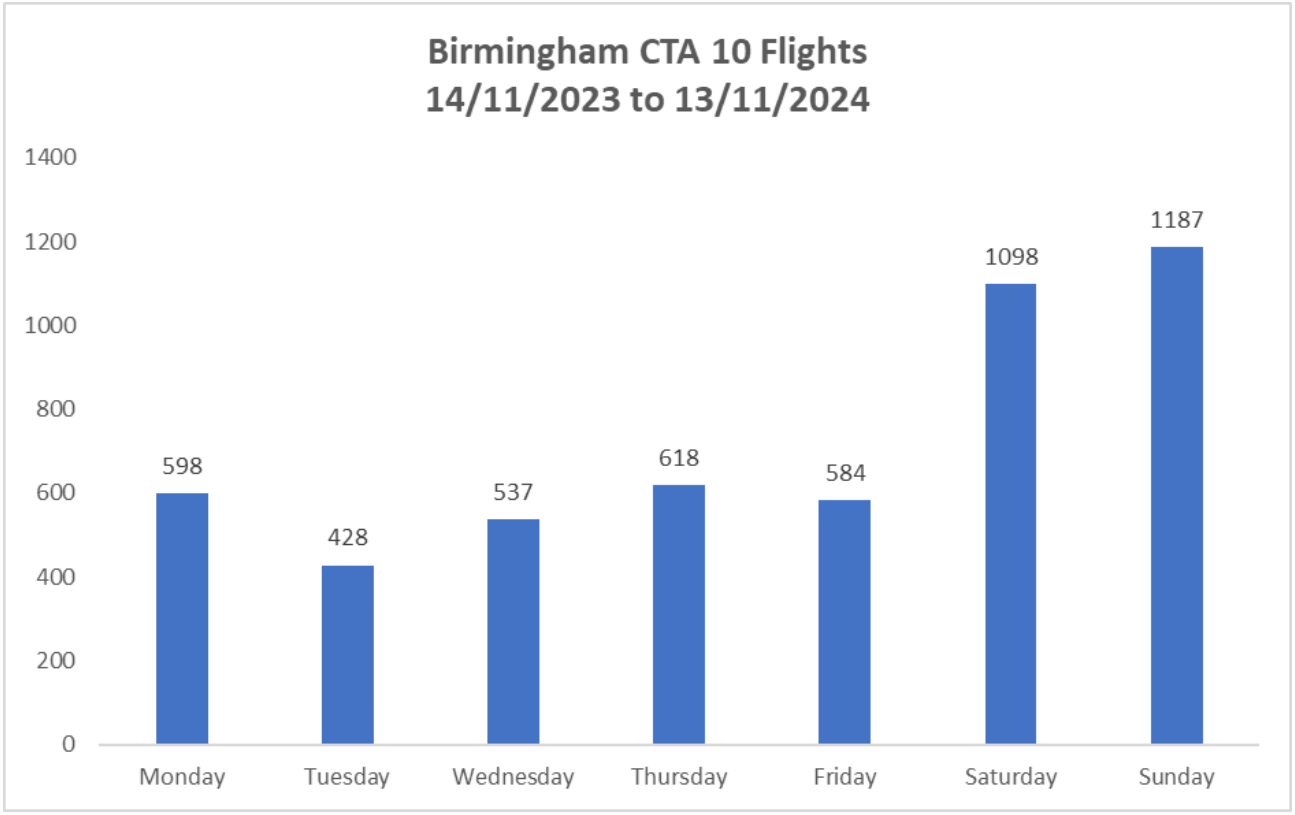

Figure 1: Traffic count of aircraft flying within the confines of Birmingham CTA10 between 14/11/2023 and 13/11/2024.

[2] The UMLUX 1B SID introduced as part of the AD5 change was renamed the BRUMI 1B SID in AIRAC 12/2022 and for this PIR the UMLUX 1B SID will be treated and counted as the BRUMI 1B Departure.

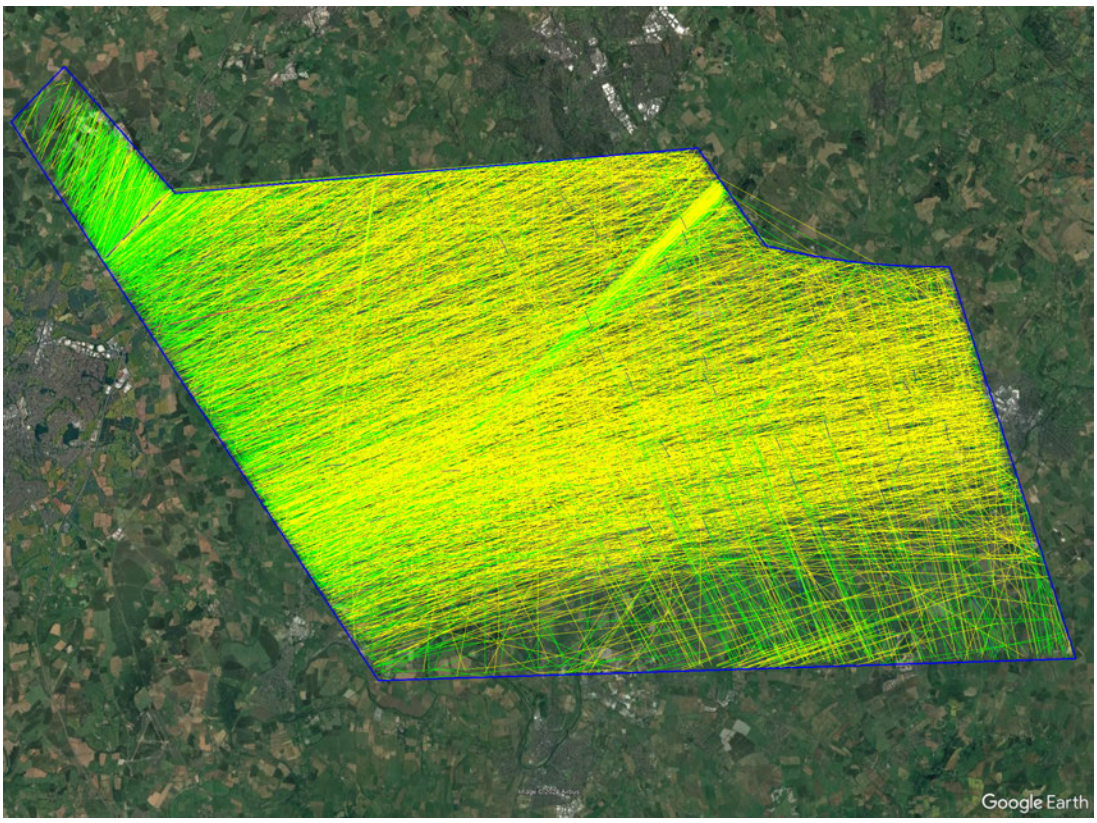

Figure 2: Traffic tracks of aircraft flying within the confines of Birmingham CTA10 (blue polygon) between 14/11/2023 and 13/11/2024.

Tracks between the surface and 6,500 ft would be coloured red. However, there are no flights within this data operating below 6,500 ft within this time period, although a single red line is visible in the northwest. This is due to this track being highlighted within the processing software and subsequently appearing red. This is consistent with EGBB CTA10 providing containment to all flights operating on these routes when open. In addition, this demonstrates that when CTA10 is closed, any traffic electing to operate outside of CAS follows the same vertical profiles.

Tracks between 6,501ft and 8,500 ft are coloured yellow. Most of this traffic is visible from the central area to the east, consistent with a profile arriving/ departing the Birmingham CTR.

Tracks between 8,501 ft and 10,500 ft are coloured green and are predominantly on the western edge consistent with this vertical profile following on from the yellow tracks.

This data (Figure 2) is a comparable quantity of arrivals (3,896) and departures (734) to the figures quoted above for the collection period, 1 April 2022 until 31 March 2023. A different collection period has been used as radar track data for the full 2023 calendar year as there are technical restrictions on radar data sets. There was additional engagement between NERL and Stratford on Avon Gliding club where their proposed modifications were considered. These could not be accommodated and a rationale for this was supplied to Stratford on Avon Gliding Club.

Objective B:

The introduction of an offload route for Heathrow arrivals to swap their stack from Ockham to Bovingdon was achieved through the introduction of the FITBO 1H STAR. This STAR is not flight plannable in advance and can only be issued tactically by ATC in the early morning when the Ockham (OCK) hold is near capacity. Early capture of aircraft requiring to swap their planned stack is beneficial as this is tactically easier to manage when aircraft are further from the airport.

In the assessment period, the new FITBO 1H STAR was flown 157 times. It should be noted that this STAR may have been issued more than this and not flown due to later tactical rerouting.

This STAR was forecast to be used 2,001 times in the assessment period and is expected to have a disbenefit of 36.4 kg per flight leading to a total forecast disbenefit of 72.8 T for the assessment period. As

this STAR was only flown 157 times in this period the fuel disbenefit resulting from this procedure was approximately 5.7 T.

The reduction in ATC workload this contingency procedure offers, when OCK is forecast to be near capacity, through improving planning remains beneficial to the operation. Although flown less than forecast, it is desirable to retain this procedure.

Objective C:

The AD5 change revised a number of high-level ATS routes in the West End Sector Group. As stated above, subsequent airspace changes, LD1.1 and FRA D2 have subsequently amended these routes and they may no longer exist or now serve alternate traffic. The amended routes are listed below, and their remaining impacts are assessed:

Q60 westbound KOPUL UGNUS

The AD5 change introduced new connectivity between KOPUL and UGNUS. In addition, the change provided connectivity to the west for traffic on L179 through the addition of a new point where the routes crossed, UGBET.

This route was forecast to be used by 24,818 flights in the assessment period with an average fuel saving of 27.2 kg per flight or 675 T total fuel saving.

FRA D2 removed the point UGNUS, truncating this route to OKSAW. Subsequently the forecast benefit is no longer valid. However, this remaining route was planned to be used by 13,131 flights and was actually overflown by 7,030 flights. Using the assumed fuel saving of 27.2 kg per flight, this new connectivity is estimated to have saved 191 T fuel throughout the assessment period.

P155 eastbound MORAG HON

The AD5 change introduced the following new connectivity: MORAG – FACTU – HON. This route provided more direct routings for aircraft wishing to overfly the UK from the west to leave via REDFA or SOMVA. Due to its routing, this route is only available when the NWMTA is inactive.

This route was forecast to be by 1,818 flights in the assessment period with an average fuel saving of 178.7 kg per flight or 325 T total fuel saving.

FRA D2 removed the portion of this route between MORAG and FACTU. Subsequently the forecast benefit is no longer valid. However, this remaining route was planned to be used by 641 flights and was actually overflown by 383 flights. Using the assumed fuel saving of 178.72 kg per flight, this new connectivity is estimated to have saved 115 T fuel throughout the assessment period.

Q60 and L18 MORAG/LIPGO to DIKAS/UGNUS

The AD5 change introduced bidirectional connectivity between MORAG/LIPGO to DIKAS/UGNUS. FRA D2 has subsequently removed this connectivity and it will not be assessed as it no longer exists.

Objective D:

AD5 amended the boundary of TRA 002 described in the consultation document (para 4.3.4 page 21) with agreement from the MoD. This has had no reported impacts on the MoD operation.

In our view, the implementation of the AD5 change has met the intended objectives. However, subsequent airspace changes and the global downturn of traffic following the Covid-19 pandemic has impacted the benefits delivered by this change but overall, it is estimated to have saved 1,084 T fuel against a forecasted saving of 4,617 T for the implementation period.

In conclusion NERL is satisfied that the SAIP AD5 change has successfully achieved the objectives described above and the overall change has benefited the UK national airspace infrastructure.

b) An overview statement on whether, in the change sponsor's view, the original proposal met any conditions described on the CAA's decision to approve the change (if applicable).

As part of the approval the following condition was applied:

NERL to bring forward an airspace change proposal, within 18 months of the implementation of the AD-5 airspace change, to address the connectivity issue between the RWY 33 UMLUX 1M SID and ATS Link route (N92).

This condition was introduced to address the vertical disconnect between the published SID endpoint of the UMLUX/ BRUMI departure (6,000 ft) and the base of the ATS route (N92, base FL75) aircraft will be joining. A vertical disconnect between SID endpoints is common within the UK route network as shown by the following examples:

- EGBB ADMEX SIDs climb to 6,000ft and join Y321 (base FL85)
- EGSS NUGBO SIDs climb to 4,000ft and join M183 (base FL85)
- EGLL ULTIB SIDs climb to 6,000ft and join T420 (base FL115)

No flight planning or operational issues have been identified to address the apparent connectivity issue (The SID ends at 6,000 ft, whilst the ATS route base is FL75).

The UMLUX 1M (later became the BRUMI 1M (01/12/2022) was issued 5,102 times between 1 April 2022 and 31 March 2023. Of these 5,102 flights, only 1,094 laterally overflew the SID endpoint and c. 1.8% of these flights were below the base of the ATS route when overflying UMLUX/ BRUMI.

No reports of issues have been identified by NERL or Birmingham airport ATC in relation to the vertical disconnect between the UMLUX/BRUMI departure and the ATS route network. Subsequently NERL SMEs have assessed that an amendment to the airspace in this area would not be proportional or deliver a discernible benefit.

c) Confirm that implementation occurred on the dates identified in the Decision Letter. If no implementation date was specified in the Decision, please state so.

Introduction of this airspace change occurred with AIRAC (Aeronautical Information Regulation and Control) 12/2019 on 7th November 2019 as planned. Subsequently the operation has continued uninterrupted.

d) If there was a significant delay between the planned and actual implementation date, please provide an explanation.

Not required – implementation occurred as planned.

e) Identify whether any other issues of significance have occurred during the period 12 months after date of implementation.

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No significant issues were identified. However, the following issues/ activities were recalled:

- There were minor FDP issues which meant we had to temporarily suspend use of KOPUL Q60 UGNUS, but this was rectified and reintroduced in the 27th February 2020 AIRAC.
- At the beginning of December, we increased the capture of traffic on P155 from MORAG to HON to enable traffic inbound to EHAM and EDDL to also use this ATS route portion. This was due to the RAD restrictions to control traffic on this route was restricting demand.
- There were some initial STARs filed due to aircraft arriving early / late and the N91/N92 routes through the Cotswold FUA being not open yet or just closed. This was not significant.

f) Other than normal promulgation activity (e.g. NOTAM, AIC etc.), identify what steps were undertaken to notify local aviation stakeholders that the airspace change was about to be implemented.

No additional promulgation activity was undertaken.

g) Feedback/complaints received from stakeholders, aviation stakeholders or the Ministry of Defence by the change sponsor in the period between implementation and post-implementation review (including feedback/complaints received via an FCS 1522 Form (UK Airspace Access or Refusal of ATS Report)).

A summary of Stakeholder feedback is provided in the following table (full Stakeholder responses have been sent direct to the CAA).

Stakeholder	**Feedback**
Ministry of Defence	Response received; no unforeseen impacts.
Birmingham Airport ATC	No detrimental impact on the Birmingham airport operation. No issues were raised wrt hold alignment. Further email engagement with Birmingham Airport ATC to address feedback from Stratford on Avon Gliding Club.
Cardiff Airport ATC	No detrimental impact to the Cardiff operation and the procedures have settled in well.
Swanwick ATC	Some minor Flight Data Processing issues early in the change but were quickly resolved. Not considered significant by the operation. No issues were raised wrt hold alignment.
UK AMC	No reported impact on the NWMTA
Stratford on Avon Gliding Club	Requested use of EGBB CTA10 Data to inform their feedback. This was provided and subsequent feedback was received from Stratford on Avon Gliding Club proposing potential modifications. This was considered and rationale for not pursuing the proposed options was provided to Stratford on Avon Gliding Club.
Bidford Gliding Club	No response received

Other information of relevance (if appropriate)

h) Minor ATC System Fixes
• No other issues.
i) Airline flight planning/flight management
No other Flight planning Issues
j) Delegated ATS
No Delegated ATS issues

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In providing a response for each general observation, please ensure that the 'status' column is completed using the following options and that they are colour coded accordingly:

YES • NO • PARTIALLY • N/A

A summary of any issues arising should be provided against each question in the appropriate text box.

General Observations	Status
a) Has the change sponsor indicated that the original proposal met the intended objectives as described on the CAA's decision to approve the change?	**Yes**

The PIR data collection for this ACP was delayed due to the Global impact of Covid-19 on all forms of transport. Consequently, the temporary suspension period meant that the delivery of what was initially intended was not fully realised as two other related en-route ACPs were implemented during the revised period for which the PIR data was requested. These other en-route systemisation-based ACPs delivered efficient routings which involved the removal of some of the anticipated routeings planned for SAIP AD5. As indicated in the sponsor's conclusion, the original baseline deliverables could not be measured as the anticipated outcome of this ACP was changed due to the influence and impact realised by the other two en-route airspace changes, namely LD1.1 and FRA D2.
This PIR does not seek to explain the LD1.1 and FRA D2 ACPs but highlights their existence as a rationale for the approach in assessing the effectiveness of the SAIP AD5 change. Consequently, what has been measured is what has been delivered independent of these other two associated airspace changes.
It is not considered proportional to fully quantify the impacts of the AD5 ACP due to the complexity of the comparing the implemented changes against a model that has been altered, and therefore does not represent a realistic expectation for the AD5 change. Therefore, the qualitative assessment with indicative quantitative values based on the number of flights using the routes and forecast benefit satisfied the requirements to assess the value of this change.

The CAA is also satisfied that the in the sponsor's view, the implementation of the proposal met the fundamental objectives, in that:

- **new controlled airspace and ATS routes were introduced to support Birmingham airport's western arrivals and departures to link up with the exiting ATS network**
- **introduction of a new offload route for Heathrow arrivals allowed dynamic stack swaps for Ockham and Bovingdon, thereby reducing controller workload during busy ATC periods.**
- **Introduce a revised boundary to TRA002, with the support of the MoD.**

However, the revised high-level ATS routes within the West End Sector group didn't fully realise the benefits due to the influence of the LD1.1 and FRA D2 route modifications that introduced further enroute network changes. The initial plan to deconflict these modules was compromised by the impact of Covid 19, which could not have been anticipated.

b) Has the change sponsor indicated that the original proposal met any conditions described on the CAA's decision to approve the change (if applicable)?	**Yes**
The CAA imposed a Condition to resolve a potential disconnect between the UMLUX 1M departure off runway 33 and the connectivity with link route N92. **In line with several other UK examples of top of the SID and a perceived gap with the overlying network, the reality has shown that there are no outstanding flight planning or operational issues that need to be resolved.** **It is therefore concluded that any amendment to airspace and associated procedures is not required.**	
c) Did the implementation occur on the date(s) identified in the Decision Letter?	**Yes**
At AIRAC 12/2019 on 7 November 2019.	

General Observations	**Status**
d) Was there a significant delay between the planned and actual implementation date?	**No**
There was no delay	
e) Has there been any other issues of significance that occurred during the period 12 months after date of implementation?	**No**
A six-month bedding in period identified that routine established RAD restrictions were affecting route efficiencies on some European destinations and a FDP anomaly resulted in part of route Q60 not being utilised until the problem was resolved by the February AIRAC in 2020. The Cotswold CTA timings and route availability initially restricted some early arrivals and alternative STAR FPL had to be resubmitted. These were considered as temporary issues and were therefore not categorised as significant.	
f) Other than normal promulgation activity (e.g. NOTAM, AIC etc.), were there any steps undertaken to notify local aviation stakeholders that the airspace change was about to be implemented?	**N/A**
Standard promulgation procedures were followed	

g) Were there any feedback/complaints received from stakeholders, aviation stakeholders or the Ministry of Defence by the change sponsor in the period between implementation and post-implementation review?	**Yes**
Considering the fundamental change to operation and the potential impact on other airspace users, in line with Section 70 of the Transport Act and the need to consider all other airspace users' needs, both NATS and Birmingham airport had prepared the ground well. Following implementation of the changes, there were no adverse issues raised by any stakeholders other than a request for Birmingham ATC to consider a more flexible management of part of their airspace to accommodate Stratford upon Avon Gliding Club's activities.	

Other information of relevance (if appropriate)	Status
h) ATC system	**Partially**
Minor fixes were required following implementation	
i) Flight planning and flight management	**N/A**
Minor anticipated problems did not materialise, and all went relatively effectively	
j) Delegated ATS	**N/A**
Delegated ATS wasn't a factor	

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General Summary and recommendation	
Based on the above, does the CAA Project Officer recommend that this concludes the PIR assessment for this ACP?	**Yes**

This modular and composite ACP set out to deliver many benefits in efficiency through design and reducing complexity. However, due to the significant impact of Covid 19 on UK transportation across the board and the subsequent delay which then contributed to the simultaneous introduction of other ATS network modifications with the implementation of ACP's LD1.1 and FRA D2, not all benefits were realised for SAIP AD5 ACP. Clearly, the justification for the basic designs and deliverables of the key objectives for this airspace change proposal, which was a part of the large-scale Swanwick Airspace Improvement Programme, were initially considered to be pragmatic and sought to introduce realistic enroute network and terminal link improvements. However, NATS design teams could not anticipate the influence on the demise of aviation in general, of Covid 19. Subsequently, NATS realised that with the related LD1.1 and FRA D2 airspace changes redesigning or absorbing some of the original route designs and associated benefits, SAIP AD5 was not going to deliver fully that which was initially intended. The detailed evidence provided by NATS to support the case for approval of this PIR shows that although the effectiveness of the original design was somewhat compromised by subsequent network airspace redesign, SAIP AD5 did deliver efficiencies in better route connectivity, within tolerance, and the environmental fuel savings benefits were realised even though the baselines were changed due to other airspace and route designs being introduced and the significant impact of Covid 19 could not have been anticipated.
Consequently, I consider that overall, the implemented designs of SAIP AD5 satisfactorily achieves, within acceptable tolerance limits, the objective and terms of the CAA's decision, and recommend that the change is confirmed, and this PIR is approved.

Decision and Sign Off	
Based on the above, does the Decision Maker conclude that the PIR assessment for this ACP complete?	**Yes**

I am satisfied, based on the evaluation above, that this PIR assessment is complete.

Signed: [redacted]

Name: [redacted]

Principal Airspace Regulator

Date: **15/05/2025**