

FASI(N) IoM/Antrim Systemisation Airspace Post Implementation Review

CAP 1948



Published by the Civil Aviation Authority, 2020

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Executive Summary

1. The CAA's airspace change process is a seven-stage mechanism that is set out in detail in CAP1616 (formerly CAP 725). Under this process NATS (En-route) plc submitted a proposal to the CAA to modify the Air Traffic Services (ATS) route structure in the Isle of Man (IoM) and Antrim sectors. Operating at capacity the objective was to provide additional capacity to the IoM Sector, reducing the likelihood of delays in the region, and also to modernise this part of the network by taking advantage of the improved Performance Based Navigational (PBN)¹ capabilities available on modern aircraft. Stage 7 of this process is a Post Implementation Review (PIR) that normally begins one year after implementation of the change. The CAA commenced the PIR to review the impact of its decision and the implemented change in October 2019. The content and outcome of that review process by the CAA is discussed in detail in this report.
2. On 02 January 2018, the CAA introduced a new process for making a decision on whether or not to approve proposals to change airspace design. Irrespective of whether the CAA decision to approve the change was made under the previous process (set out in CAP 725), we will conduct all Post Implementation Reviews in accordance with the process requirements of CAP1616. However, when assessing the expected impacts against the actual impacts we will use the methodology adopted at the time of the original CAA decision in order to do so.
3. During the review process, the CAA considered the original Airspace Change Proposal, CAA Decision Documents, sponsor provided PIR document, Air Navigation Service Provider (ANSP) and Ministry of Defence (MoD) feedback. In addition, PIR material was published on the CAA website and notified via SkyWise. This opened a 28 day window during which any other stakeholder could provide feedback or comment they wanted to be taken into consideration in the compilation of this review.
4. As a result, the CAA has reached the following conclusions:
 - a. The implemented change has achieved its aims and objectives, as described in paragraphs 15 to 17 of this document, within an acceptable tolerance level.
 - b. The impacts on safety, environment and airspace efficiency are as anticipated or better. Whilst there has been a minor impact on environmental aspects, there has been a positive effect on both airspace efficiency with increased capacity, and on safety by reducing the complexity of operation in the area.
 - c. Whilst Mandatory Occurrence Reports (MORs) have decreased since the introduction of the proposal, statistical increases in TCAS (RA)² reports over the

¹ Additional information on PBN can be found in ICAO Doc 9613, the PBN Manual.

² Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory (RA)

period were investigated by the CAA and deemed not related to the new systemised ATS route structure.

- d. No other significant issues have arisen from the PIR which would require modifications to be made or would mean the change should not be confirmed as permanent.
- e. The implemented design satisfactorily achieves, within acceptable tolerance limits, the objective and terms of the CAA's decision, and the change is confirmed as permanent.

Scope and Background of the PIR

What is a Post Implementation Review?

5. The CAA's approach to decision-making in relation to proposals to approve changes to airspace is explained in its Guidance on the Application of the Airspace Change Process, CAP 1616³. This detailed Guidance specifies that the seventh and last stage of the process is a review of the implementation of the decision, particularly from an operational perspective, known as a Post Implementation Review (PIR).
6. Irrespective that the CAA decision to approve the IoM/Antrim Systemisation Airspace change was made under the previous process (set out in CAP 725), we will conduct all PIRs in accordance with the process requirements of CAP1616. However, when assessing the expected impacts against the actual impacts we will use the methodology adopted at the time of the original CAA decision in order to do so.
7. The Guidance states that the purpose of a PIR "*is for the change sponsor to carry out a rigorous assessment, and the CAA to evaluate, whether the anticipated impacts and benefits in the original proposal and published decision are as expected, and where there are differences, what steps (if any) are required to be taken*".
8. If the impacts are not as predicted, the CAA will require the change sponsor to investigate why, and consider possible mitigations or modifications for impacts that vary from those which were anticipated to meet the terms of the original decision.

³ CAP 1616 replaced CAP 725 as the CAA Guidance on the Application of the Airspace Change Process on 02 January 2018.

9. A PIR is therefore focused on the effects of a particular airspace change proposal. It is not a review of the decision on the airspace change proposal, and neither is it a re-run of the original decision process.

Background to our conclusions in this PIR Decision

10. On 21 August 2017 the CAA approved the FASI(N)⁴ Isle of Man/Antrim Systemisation Airspace Change Proposal. In our Decision Document for this airspace change proposal, (Reference: ACP-2015-11), we provided factual information and background to the change. We recommend readers of this report read the IoM/Antrim Systemisation Airspace Decision Document ([CAP 1584](#)) in conjunction with this document.

Conditions attached to the CAA's decision to approve the change.

11. The CAA Operational Assessment of the IoM/Antrim Systemisation Airspace Change Proposal recommended that NATS Customer Affairs continue to maintain constructive dialogue with the Dublin based airlines that had raised concerns over the additional westbound flight-plan mileage of 1.7nm per flight when returning to Dublin. Following engagement between NATS and the airlines it was agreed the newly introduced IoM airspace would be considered an Operational Partnership Agreement (OPA) Hotspot. This meant the new airspace would be monitored for efficiency with quarterly reports made to the airlines through the OPA. These reports were also made at the bi-annual Airspace and Flight Efficiency Partnership (AFEP) meetings. At the November 2018 AFEP meeting NATS provided the latest radar density maps and delay benefit analysis which demonstrated that Dublin arrival traffic is still routing direct and only using the longer systemised route structure in busier periods when required. In addition, where actual track mileage increases occurred, these were less than anticipated distances in the ACP. Dublin ACC and the airlines accepted the data and the OPA Hotspot was closed. The CAA accepts this data as compliance with the condition.

Data collected for the purpose of the PIR

12. The CAA requested from the change sponsor the data sets/analysis and stakeholder feedback covering the following questions:
 - a. Have the key objectives been met?

⁴ Future Airspace Strategy Implementation (North) - formally Prestwick Lower Airspace Systemisation.

- b. What have been the ATM requirements in terms of safety, delay, capacity and efficiencies?
 - c. Have there been any areas of contention, including other airspace user concerns?
 - d. Has the stakeholder encountered any issues or challenges in applying or managing the airspace change?
 - e. Has the stated aim of the airspace change been achieved in respect of ATM requirements?
 - f. Have any other benefits been realised aside from those mentioned?
 - g. Has the sponsor sought feedback from other stakeholders?
 - h. Are there any recommendations for refinement to the airspace change?
 - i. Any other pertinent information.
13. On 13 February 2019 the CAA received the document 'Isle of Man/Antrim sectors systemisation and introduction of RNAV1 route structure. Post Implementation Review'. The purpose of this document is to assist the CAA in creating its own PIR.
14. By letter of 24 October 2019 the CAA requested additional information and supporting evidence to assist in the creation of the PIR. On 06 November 2019 the requested information was sent to the CAA. This included, but was not limited to, evidence of engagement with airlines, current Monitor Values for the IoM sector, detailed evidence of events incurred before and after implementation, MoD feedback on the impact on military operations, and clarification on the methodology used for the prediction and calculation of CO2 emissions.
15. On 12 February 2020 all the supporting evidence was incorporated into the NATS document 'Isle of Man/Antrim sectors systemisation and introduction of RNAV1 route structure. Post Implementation Review. Version 1.1'. This supporting document was published on the CAA website on 17 June 2020.

Objectives and Anticipated Impacts

The original proposal and its objectives

16. The original proposal was developed by NATS Prestwick Centre which manages all en-route traffic in the northern half of the UK. Divided into sectors, the Isle of Man Sector which handles much of the air traffic between Dublin and the UK/Europe, and some of

the UK's transatlantic arrivals and departures, adjoins with the Antrim Sector which handles all traffic to/from Northern Ireland and traffic routing from western Scotland/Scandinavia to Ireland.

17. Operating at capacity the overarching objectives were to provide additional capacity to the IoM Sector, thereby reducing the likelihood of delays in the region, and also to modernise this part of the network by taking advantage of the improved Performance Based Navigational (PBN)⁵ capabilities available on modern aircraft. To achieve this the proposal looked to amend existing Air Traffic Services (ATS) routes based on extant ground infrastructure, and introduce new Area Navigation (RNAV)1 ATS routes and link routes, which are based on a much more accurate navigational specification utilising Global Navigational Satellite Systems. RNAV1 routes benefit from increased safety and capacity, reducing the need for ATC intervention, and can be spaced closer together than traditional ATS routes⁶. In addition, the proposal looked to make minor modifications to Manchester, Liverpool, London City, London Luton, London Stansted and Southend standard arrival routes (STARS), and introduce a small volume of Class C controlled airspace (CAS) over the Irish Sea above 7,500 feet.
18. The key objectives were to:
 - a. increase Isle of Man Sector capacity by increasing the sectors Monitor Value (MV)⁷ by 10%, from 43 to 47, enabling fewer air traffic flow restrictions to be applied, thereby reducing delay.
 - b. Maintain or improve the level of safety in the affected and neighbouring sectors.
 - c. Reduce ATC workload per flight.
 - d. Minimise additional controlled airspace required for the changes thereby minimising the impact on General Aviation (GA).
 - e. Have negligible/no impact on military operations.

Anticipated Impacts

19. The anticipated impacts were to deliver significant operational benefits through the systemisation of the Air Traffic Management (ATM) operation, capitalising on these

⁵ Additional information on PBN can be found in ICAO Doc 9613, the PBN Manual.

⁶ Additional information available in CAP 1385 PBN Enhanced Route Spacing Guide.

⁷ Monitor Value (MV) is a guide value to the ATC supervisor. The greater the MV, the greater the hourly throughput of the sector under normal conditions before the supervisor considers taking measures to regulate the anticipated air traffic flow.

benefits by delivering increased predictability and improved flight profiles, thereby reducing air traffic delay. Segregating flows of traffic by establishing RNAV1 ATS routes creates a more efficient use of the airspace whilst maintaining a safe airspace environment, increasing the ATC capacity in the sector. NATS anticipate achieving this whilst minimising the impact on other flying operations, in particular to GA and the military.

CAA Assessment

Operational Assessment

20. The following is a summary of the CAA's conclusions.

Safety

21. Details of Mandatory Occurrence Reports (MORs) in the IoM and Antrim sectors were provided. NATS analysis of these showed a statistical fall in both sectors comparing before and after implementation. However, analysis of the detailed breakdown showed a rise in the number of TCAS (RA)⁸ in both sectors during this time. Whilst statistically insignificant owing to the small number of incidents, the CAA requested all the TCAS reports in full. Each event was investigated individually, and the CAA was satisfied that none of these were related to the new airspace design or any aspect of the airspace change proposal.
22. To date there have been no safety related incidents where the revised systemised ATS route structure in the IoM and Antrim sectors has been a contributory factor. The CAA is content RNAV1 ATS routes are an appropriate construct to ensure the maintenance of a safe airspace environment. To this end the CAA is content that the airspace design is at least as safe as that previously provided.

Operational Feedback

23. Whilst not a process requirement of CAP 725 under which this ACP was originally assessed and approved, with a view to being open and transparent and a requirement of the new ACP process, CAP 1616, the sponsors document '*Isle of Man/Antrim*

⁸ Traffic Alert and Collision Avoidance System (TCAS) Resolution Advisory (RA)

sectors systemisation and introduction of RNAV1 route structure. Post Implementation Review. Version 1.1 was published on the CAA website on 17 June 2020.

24. Publication online of the sponsors collated information for the PIR commences the 28 day window within which any stakeholder may submit evidence or views about the data that they want taken into account during the CAA's PIR. As of 16 July 2020, when the feedback window closed, there had been no comments from any stakeholders.
25. No additional comment was provided by operational airlines since they endorsed the final report of the Airspace & Flight Efficiency Partnership meeting on 14 November 2018. This also satisfies the CAA on the condition attached to the CAA's decision to approve the airspace change.

Air Navigation Service Provision

26. NATS provided feedback from its own controllers, and Manager ATC Airspace Design at Prestwick Centre. All provided positive feedback citing improvements and efficiencies.
27. *BAe Warton are the only other ANSP in the area.* They stated that they have found they are able to continue their operations unhindered.

Utilisation and Track Keeping

28. The systemised ATS route structure is utilised daily by NATS controlling commercial air transport aircraft, and any other operator requiring access to the area. There are no known track keeping issues associated with RNAV1 ATS routes, and any potential issues associated with aircraft equipment malfunction would be mitigated by the aircraft being in receipt of an ATC service.

Traffic

29. The actual operational impacts of the introduction of the RNAV1 ATS routes appear to be as forecast in the original proposal or better. The target capacity improvement for IoM sector was an increase in Monitor Value from 43 to 47; in actuality the change has resulted in this increasing to 48. This is equivalent to one extra aircraft per hour transiting the sector than in the original proposal. The Antrim sector was not capacity constrained and therefore an increase in their Monitor Value was not part of the proposal. Operations at BAe Warton have been able to continue without disruption caused by the change.

30. There has been no negative feedback concerning the revised ATS route structure or its impact on traffic in the area. The only feedback received has been either neutral or positive.

Infringements and Denied Access

31. There has been 1 inadvertent infringement in each of the IoM and Antrim sectors since implementation. For the Antrim sector this is the same as the previous year. For the IoM sector this is an increase but is statistically insignificant. The incidents have been investigated and neither was related to the airspace design. There have been no reports of denied access.

Letters of Agreement (where applicable)

32. The NATS/Irish Aviation Authority LoA regarding delegated ATS procedures was updated to reflect the change.

Environmental Assessment

33. As predicted in the proposal there is a slight fuel uptake disbenefit in exchange for a higher capacity and reduction in delays. However, the actual disbenefits, which were deemed acceptable in the original CAA Decision owing to the offset benefits generated by the change, were 45% lower than anticipated.

Community Stakeholder Observations

34. The CAA opened a 28 day feedback window for any stakeholder comments they may wish to be taken into consideration in the creation of this PIR. The sponsors analysis was published on the CAA website and notification was made via SkyWise on 17 June 2020. No comments were received.

International Obligations

35. The Irish Aviation Authority (IAA) have been a key stakeholder and involved in the development of the proposal from the outset. Feedback from the IAA stated that they *'had already seen significant Air Traffic Management benefit from the...initiative, which is also expected to enable elements of future proofing for airspace arrangements post 2021 to be realised'*.

Ministry of Defence Operations

36. Feedback from the MoD stated that there were '*no noticeable impacts to MoD operations as a result of this change*'.

Any other impacts

37. No issues of significance have been raised in feedback, and no other impacts were identified whilst compiling this PIR.

CAA Conclusion

Conclusion

38. The implemented change has achieved its aims and objectives, as described in paragraphs 15 to 17 of this document, within an acceptable tolerance level.
39. The impacts on safety, environment and airspace efficiency are as anticipated or better. Whilst there has been a minor impact on environmental aspects, there has been a positive effect on both airspace efficiency with increased capacity, and on safety by reducing the complexity of operation in the area.
40. Whilst Mandatory Occurrence Reports have decreased since the introduction of the proposal, statistical increases in TCAS (RA) reports over the period were investigated by the CAA and deemed not related to the new systemised ATS route structure.
41. No other significant issues have arisen from the PIR which would require modifications to be made or would mean the change should not be confirmed as permanent.
42. The implemented design satisfactorily achieves, within acceptable tolerance limits, the objective and terms of the CAA's decision, and the change is confirmed as permanent.

Civil Aviation Authority

01 September 2020
