Safety and Airspace Regulation Group

Doncaster Sheffield Airport Proposal to introduce RNAV Standard Instrument Departure and Instrument Approach Procedures

CAP 1865

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Chapter 1

Executive summary

Objective of the Proposal

1. The NATS VOR rationalisation programme, which will require the removal of some of the navigation infrastructure used by aircraft flying Doncaster Sheffield Airport's current departure procedures, has led the sponsor to propose replacing the current conventional Standard Instrument Departures routes (SIDs) and Preferred Departure Routes (PDRs) with five RNAV 1 SIDs and Omni Directional Departure routes (ODDs). These proposed procedures do not rely on the ground-based navigation infrastructure that is being withdrawn from service.

2. In order to provide protection to aircraft flying on these procedures, the sponsor has also proposed additional controlled airspace in the form of an additional control area (CTA-13) as well as the lowering of the base of an existing airway.

3. To provide redundancy to the primary means of instrument approach, the sponsor has also proposed the introduction of RNAV GNSS Instrument Approach Procedures (IAPs), which replicate as far as possible the existing Instrument Landing System (ILS) procedures. These would mainly be used in the unlikely event that the ILS is unavailable.

Summary of the decision made

4. The CAA has decided to approve the following changes to the structure of UK airspace:

5. The CAA approves the five proposed RNAV 1 SIDs, two RNAV GNSS IAPs and two ODDs.

6. The CAA approves CTA-13 as Class E + TMZ/RMZ airspace from FL85-105 as proposed.

7. The CAA approves the lowering of a portion of airways L60/L603 to FL125 as proposed.

Next steps

8. The CAA's Post Implementation Review (PIR) of the changes approved by the CAA in this decision will commence approximately one year after implementation of those changes. It is a requirement of the CAA's approval that the sponsor provides data required by the CAA throughout the year following implementation to carry out that PIR.

9. The sponsor is required to:

    a. Provide detail on the volume of traffic utilising the new procedures

    b. Provide detail on the number and type of aircraft movements within CTA 13, broken down by month.

    c. Provide detail on the number of aircraft refused permission to enter CTA 13 and the reasons for the refusal.

    d. Provide all feedback received from airspace users

    e. Collate related stakeholder observations (enquiry/complaint data) and present it to the CAA. Any location/area from where more than 10 individuals have made enquiries/complaints must be plotted on separate maps displaying a representative sample of:

        i. aircraft track data plots; and

        ii. traffic density plots

    The plots should include a typical days-worth of movements from the last month of each standard calendar quarter (March, June, September, December) from each of the years directly preceding and following implementation of the airspace change proposal.

10. The PIR is the seventh stage of the CAA's airspace change proposal process (set out in CAP 725, the Guidance on the Application of the Airspace Change Process) and will consider whether *"the anticipated impacts and benefits, set out in the Airspace Change Proposal, have actually been delivered"*. The policy states that if those impacts and benefits have not been delivered then the review should *"ascertain why and … determine the most appropriate course of action"*. (See Annex C paragraph 22 for more information.)

Chapter 2

Decision Process and Analysis

CAA's Role

The CAA's role in airspace change decisions, the legal framework, the policy background and relevant UK international obligations

11. It is necessary to understand the CAA's role in airspace change decisions, the legal framework, the policy background and relevant UK international obligations in order to understand the decision[s] the CAA has taken.

12. This information is set out in Annex C.

Aims and Objectives of the proposed change – CAA decision on objective

13. Introduce departure procedures to allow aircraft to depart from Doncaster Sheffield Airport once the Gamston VOR navigation aid has been withdrawn from service.

14. Introduce RNAV GNSS IAPs to provide redundancy to the existing ILS IAPs.

15. Design procedures which aim to replicate the areas overflown currently where design criteria permits.

16. Take advantage of the improved navigation performance that RNAV SIDs provide over conventional departure procedures to limit the number of people overflown.

17. Introduce the minimum additional controlled airspace necessary to safely contain the proposed procedures.

18. In this part of the record of the CAA's decision, the CAA formally records that these aims and objectives of the change proposed are objectives which it endorses and, subject to the terms of the regulatory and policy framework set out in Annex C, the CAA will seek to approve changes to the UK airspace structure that meet the aims and objectives of this proposal.

Chronology of Proposal Process

Framework Briefing

19. The Framework Briefing took place on 01 February 2017 at CAA House in London.

20. The sponsor set out the airspace issues which need to be resolved and how they intended to engage and consult with stakeholders to establish the most effective solution to the identified issue. The sponsor explained their desire to replicate as far as practicable, the existing procedures.

21. It was agreed that the proposal would be assessed against the guidance as set out in CAP 725.

22. The initial schedule of activities was agreed by the sponsor and the CAA.

Consultation

23. The sponsor published their initial consultation materials on their website.

24. The initial consultation began on 25 September 2017. The consultation period was extended by one week from the original planned duration to allow for further community engagement and to take into account the festive period. The consultation concluded on 22 December 2017.

25. 174 stakeholders were directly invited to respond to the consultation. Audiences covered both the aviation community as well as the local communities through various groups.

Submission of Airspace Change Proposal

26. The CAA received the sponsor's Airspace Change Proposal on 01 May 2018 along with the supporting documentation.

27. Notwithstanding that the CAA introduced a new airspace change process on 2 January 2018 (known as CAP 1616) this ACP has been developed and is assessed in accordance with the CAA's airspace change process known as CAP 725. This is in accordance with a transition policy developed with the Department for Transport and consulted on in 2016 and confirmed in 2017.

Additional Consultation

28. Having assessed the documentation the CAA indicated to the sponsor that the proposed classification for CTA-13 was disproportionate to the anticipated use of the airspace. The CAA requested that the sponsor reconsider the options for utilising a less restrictive airspace classification. The sponsor indicated that

they would re-consult on the classification of CTA-13 and the CAA wrote to the DfT to confirm they were content for the proposal to remain on the CAP 725 process, given that further consultation was taking place. The CAA wrote to the DfT on 27 March 2019 and received the response from the DfT on 01 April 2019 confirming that the proposal could remain on the CAP 725 process.

29. The sponsor undertook the additional consultation between 10 May 2019 and 7 June 2019. The options considered in the consultation were: Classes D (as per the original proposal), E, E+RMZ, E+TMZ and E+RMZ/TMZ. As the original consultation had covered the establishment of CTA-13, Class G was not included as an option (i.e. the effective removal of CTA-13). The CAA again confirmed with the DfT in November 2019 that the proposal could remain on the CAP 725 process now that the sponsor had indicated their proposed selection for the classification of CTA-13.

Submission of Amended Airspace Change Proposal

30. Having The revised airspace change proposal was received by the CAA on 09 September 2019, which included an amended proposal for the classification of CTA-13 as Class E + TMZ/RMZ.

Documents considered by the CAA

31. In assessing the proposal and making this decision, the CAA has taken account of:

    a. ACP Part A Executive Summary

    b. ACP Part B Operational Report

    c. ACP Part C Environmental Review

    d. ACP Part D Overview of Stakeholder Consultations

    e. ACP Part E Summary

    f. ANSPs and Operators Focus Group Report

    g. Hazard Identification (HAZID) Brief Presentation

    h. Hazard Identification (HAZID) Report

    i. Other Airspace Users Focus Group Report

    j. RNAV Departure and Approach Procedures Focus Group Presentation

    k. Original Consultation Document

    l. Original Consultation Responses

m. Original Consultation Report

n. Supplementary Airspace Consultation Brief

o. Supplementary Consultation Responses

p. Framework Brief

q. Equipage and capability survey report

r. MoD LoA Meeting Report

s. Noise Assessment

t. ACP Emissions results

u. DEMETER Study

v. Doncaster Undertaking to Promulgate Access Arrangements

CAA Analysis of the Material provided

32. As a record of our analysis of this material the CAA has produced:

- An **Operational Assessment** which is designed to brief the decision maker whether the proposal is fit for purpose. This assessment contains:
- The CAA's assessment of the airspace change proposal justification and options considered.
- The CAA's assessment of the proposed airspace design and its associated operational arrangements. An assessment of the design proposal is produced to illustrate whether it meets CAA regulatory requirements regarding international and national airspace and procedure design requirements and whether any mitigations were required to overcome design issues.
- The CAA's assessment of whether adequate resource exists to deliver the change and whether adequate communications, navigation and surveillance infrastructure exists to enable the change to take place.
- The CAA's assessment of whether maps and diagrams explain clearly the nature of the proposal.
- The CAA's assessment of the operational impacts to all airspace users, airfields and on traffic levels and whether potential impacts have been mitigated appropriately.
- The CAA's conclusions are arrived at after a CAA Case Study. An Operational Assessment is completed for all airspace change proposals

and forms a key part in the CAA's decision-making process as to whether a proposal is approved or rejected. The Operational Assessment will also include any recommendations for implementation such as conditions that should be attached to an approval, if given.

- An **Environmental Assessment** which reviews the Environmental Assessment provided by the sponsor requesting the change. The review assesses whether the sponsor has provided the data and information that had been agreed at the Framework Briefing or in subsequent correspondence, and must be provided as part of the proposal. The requirements are based on the guidance in CAP 725 (see [3]). Those requirements have been designed to facilitate the assessments that the CAA must make when considering the environmental impact of the change. The CAA reviews the assessments made by the sponsor as part of the proposal to determine if they have been undertaken properly and the conclusions are reasonable. The CAA will check a sample of the sponsor's results and may, in some cases, undertake its own analysis. The CAA then prepares a report summarising the environmental impacts of the proposal outlining the anticipated impacts of the change if it were to be implemented, for consideration along with all the other material by the CAA decision maker.
- **Consultation Assessments of both the original and additional consultations** designed to brief the CAA decision maker on whether the proposal has been adequately consulted upon in accordance with the CAA's regulatory requirements, the Government's guidance principles for consultation and the Secretary of State for Transport's Air Navigation Guidance. The assessments will confirm whether the change sponsor has correctly identified the issues arising from the consultation and has responded to those issues appropriately. The assessments will rely, in part, on a comparison of the sponsor's consultation feedback report against the actual responses provided by consultees.

CAA assessment and decision in respect of Consultation

33. DSA planned to carry out their initial Consultation between 25 September 2017 and 15 December 2017. However, the consultation was extended by an additional week to allow for further community engagement and to take into account the festive period. The Consultation therefore began on 25 September 2017 and ended on 22 December 2017 allowing for a continuous 13-week consultation period.

34. Having cross-checked the raw response data with the conclusions drawn in the Sponsor's post consultation feedback report, the analysis published by the

Sponsor is an accurate summary of the result of the consultation. Of the stakeholders who formed part of the consultee list encouraged to respond to the consultation, the majority supported the proposal.

35. As a result of our assessment of the consultation associated with this ACP, it can be concluded that the consultation exercise has:

- Taken place when the proposal was at a formative stage
- Presented the consultation material clearly and outlined the potential impacts that needed to be considered (including an explanation about the impacts of R-NAV)
- Provided a sufficient timeframe to allow considered responses (25 September 2017 – 22 December 2017, a period of 13-weeks)
- Taken into account the product of the consultation – two 'objection' themes can be identified from responses indicating that they 'object' to the proposal; these are community noise concerns and objections against the additional portion of Controlled Airspace (CAS). The justifications put forward by the Sponsor for not modifying the final proposal as a result of the two themes was partly accepted. The rationale for not modifying the procedures in light of feedback on noise impact was accepted but the CAA did not agree with the originally proposed Class D classification of the additional CTA.

36. The CAA's full assessment of the initial consultation is contained in the CAA's Consultation Assessment referred to above and published on the CAA's website. In summary the CAA has concluded that the quality of the sponsor's consultation and response to consultation feedback was sufficient for the CAA to proceed to consider whether to approve the change requested.

37. The sponsor also carried out an addendum consultation concerning CTA-13 after the CAA indicated that the Class D classification in the original proposal was disproportionate to the use of the airspace.

38. The addendum consultation ran for 4 weeks from 10 May to 7 June 2019 and was limited to aviation stakeholders. Two focus groups were held during the period. Those that responded typically fell into 2 camps: Commercial aviation stakeholders felt strongly that the original classification (D) should be retained to protect CAT movements and simplify the airspace classifications within the overall airspace structure, whilst GA stakeholders generally favoured lower classifications and continued to question the need for CTA-13 (arguing that Class G was the most appropriate classification). The consultation did, however, ask stakeholders to rank the various options in order of preference and the chosen option (Class E+TMZ/RMZ) is, necessarily, a compromise to satisfy the needs of all aviation stakeholders to the greatest extent possible.

Further mitigation for non-transponding aircraft could be pursued through local procedures and agreements.

39. The consultation satisfied CAA requirements and was well run; the sponsor was proactive in engaging with stakeholder as evidenced by the documentation submitted.

CAA Consideration of Factors material to our decision whether to approve the change

Explanation of statutory duties

40. Pursuant to the Civil Aviation (Air Navigation Directions) 2017 Direction 5, it is one of the CAA's air navigation functions to decide whether to approve a proposal for a permanent change to airspace design. By Direction 5(2) the CAA may make its approval subject to such modification and conditions as the CAA considers necessary. The CAA's statutory duties when carrying out its functions under Direction 5 are contained in Section 70 of the Transport Act 2000 (the Transport Act). Those duties include taking account of Guidance to the CAA on Environmental Objectives relating to the exercise of its air navigation functions. In accordance with guidance given to the CAA by the Secretary of State, the version of Guidance on Environmental Objectives relevant to consideration of this proposal is the 2014 Guidance (the 2014 Guidance).

41. These functions, the law and policy framework in which they are carried out are set out in more detail in [3]. In summary, the CAA's primary duty under Section 70(1) of the Transport Act requires that the CAA exercises its air navigation functions so as to maintain a high standard of safety in the provision of air traffic services. This duty takes priority over the material considerations set out in Section 70(2).

42. Where an airspace change proposal satisfies all of the material considerations identified in Section 70(2) and where there is no conflict between those material considerations, the CAA will, subject to exceptional circumstances, approve the airspace change proposal.

43. Where an airspace change proposal satisfies some of the material considerations in Section 70(2) but not others, this is referred to as a conflict within the meaning of Section 70(3).

44. In the event of a conflict, the CAA will apply the material considerations in the manner it thinks is reasonable having regard to them as a whole. The CAA will give greater weight to material considerations that require it to "secure" something than to those that require it to "satisfy" or "facilitate".

45. The CAA regards the term to "take account of" as meaning that the material considerations in question may or may not be applicable in a particular case and the weight the CAA will place on such material considerations will depend heavily on the circumstances of the individual case. The analysis of the application of the CAA's statutory duties in this airspace change proposal is set out below.

Conclusions in respect of safety

46. The CAA's primary duty is to maintain a high standard of safety in the provision of air traffic services and this takes priority over all other duties.[1] In this respect, with due regard to safety in the provision of air traffic services, the CAA is satisfied that the proposals maintain a high standard of safety for the following reasons:

    a. The proposed procedures have been designed in accordance with ICAO and CAA standards and have been approved by the CAA's Instrument Flight Procedure Regulator.

    b. The proposed procedures are safely contained within controlled airspace.

    c. The proposed Instrument Flight Procedures have been co-ordinated with NATS Prestwick Centre and ATC procedures have been developed to ensure that the proposed procedures safely integrate with the enroute network.

    d. The relevant ANSPs operate a Safety Management System which meets the requirements specified by the CAA in CAP 670 - ATS Safety Requirements.

    e. In developing the ACP, the proposals were subject to a hazard identification process.

    f. The ROGAG SIDs are designed to take into account the requirement to avoid Restricted Area EG-R313.

    g. The Class E CTA-13 includes a TMZ and RMZ which provides air traffic controllers with a higher level of awareness of what traffic is in that volume of airspace.

    h. The additional controlled airspace is all above FL85 where the traffic density of non-Doncaster aircraft is low, limiting any funnelling effect. By allowing access to suitably equipped aircraft without an air traffic control clearance, this limits further any funnelling effect.

[1] Transport Act 2000, Section 70(1).

47. CAA's Safety and Airspace Regulation Group's Instrument Flight Procedure (SARG IFP) regulator's analysis reached the view that all Instrument Flight Procedure designs, in the final form proposed, were compliant with extant regulations.

Conclusions in respect of securing the most efficient use of airspace

48. The CAA is required to secure the most efficient use of the airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.[2]

49. The CAA considers that the most efficient use of airspace means the use of airspace that secures the greatest number of movements of aircraft through a specific volume of airspace over a period of time so that the best use is made of the limited resource of UK airspace. It is therefore concerned with the operation of the airspace system as a whole.

50. The CAA considers the expeditious flow of air traffic to involve each aircraft taking the shortest amount of time for its flight. It is concerned with individual flights.

51. The volume of controlled airspace proposed is appropriate as it gives controllers sufficient lateral airspace to direct traffic where necessary. The vertical extent of the additional airspace is the minimum required to safely contain the SIDs.

52. The airspace classification is appropriate as it takes into consideration the requirements of all airspace users and results in a solution which balances those requirements with the ANSP's ability to safely integrate traffic in the area. The sponsor has provided a written undertaking to the CAA to promulgate access arrangements for non-radio and/or non-transponder equipped aircraft into the TMZ/RMZ ahead of the implementation of the airspace.

53. It is the CAA's view that the introduction of RNAV-1 procedures and technology is necessary in order to ensure the most efficient use of UK airspace. This is reflected in more detail in the CAA's Airspace Modernisation Strategy (the AMS), which has replaced the Future Airspace Strategy. The AMS reflects the UK's relevant international obligations in this area. These are set out in detail in Annex D.

[2] Transport Act 2000, Section 70(2)(a).

Conclusions in respect of taking into account the Secretary of State's guidance to the CAA on environmental objectives

54. As set out in more detail in Annex C, the CAA has a duty to consider a number of material considerations when deciding whether or not to approve a change to the structure of UK airspace including the anticipated impact of the change proposed on the environment.

55. We need to assess the anticipated environmental impact of the proposed change that we have been asked to decide on, in order to take it into account together with the other material considerations, such as making the most efficient use of airspace, the requirements of operators and owners or the interests of others in relation to the use of airspace and so on.

56. With regard to the environmental assessment, the CAA sets out its analysis of the environmental impact of the proposed change below (and in more detail in the Environmental Assessment Report). The CAA has made the following assessment with respect to the anticipated environmental impact of the proposal:

57. With regard to CO^2 there is a track distance increase to the proposed SIDs when compared to the current procedures which results in a forecast net increase in annual CO^2e of 13.4 tonnes. This is due to procedure design criteria limitations as well as choices by the sponsor in selecting designs that aim to reduce noise impact when aircraft are below 7,000 feet amsl.

58. With regard to Local Air Quality, as the proposed changes are outside any Air Quality Management Area, no assessment of the Local Air Quality was required.

59. With regard to AONBs and National Parks, they are unlikely to be impacted by this change.

60. The CAA's ERCD has assessed the anticipated impact of aircraft noise that results from the changes proposed and in so doing had regard to the altitude-based priorities as given to the CAA by the Secretary of State in the 2014 Air Navigation Guidance to CAA on Environmental Objectives and also the guidance in respect of the environmental impact of new technology of the type that is the subject of this proposal as follows:

"With PBN, the overall level of aircraft track-keeping is greatly improved for both approach and departure tracks, meaning aircraft will be more concentrated around the published route. This will mean noise impacts are concentrated on a smaller area, thereby exposing fewer people to noise than occurs with equivalent conventional procedures.

…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.

…The move to PBN will require the updating of existing route structures such as Standard Instrument Departures (SIDs), Standard Terminal Arrival Routes (STARs) and Initial Approach Procedures (IAPs). Updating individual routes in terminal areas can fall into one of two categories: "replication" where the existing route alignment is preserved as much as possible whilst catering for the greater navigational accuracy of PBN, or "redesign" where seeking to optimise the introduction of PBN will require consideration of a different alignment."

61. The proposed UPTON SID from Runway 02 will move traffic away from, Armthorpe, Edenthorpe and Kirk Sandall to align more closely with the centreline of the current procedure. This means that there will be a noise impact on the area of Dunsville, due to concentration of traffic. This route also directs traffic further away from the north and east of Doncaster.

62. The proposed ROGAG SID from Runway 02 will move traffic away from where they currently fly, as RNAV design criteria meant that a replication was not possible. The proposed design aims to take aircraft between conurbations and will provide some noise benefit to Blaxton and Finningley but increase impact in Wroot and Westwoodside. Further along the procedure, the proposed SID will have a similar impact as it does today. This SID will not be used frequently and sees traffic levels of approximately 6 per day.

63. The proposed UPTON B SID from Runway 20 will take traffic slightly closer to Bircotes but further from Bawtry. This SID will not be used frequently.

64. The first parts of the proposed UPTON A SID and ROGAG SID from Runway 20 both turn right earlier than current aircraft to avoid overflight of Bawtry and Harworth to the extent possible. There will be concentration of aircraft tracks to the north of Harworth.

65. The mid-section of the proposed UPTON A SID from Runway 20 follows closely where the current traffic flies, but some concentration is likely to occur.

66. The mid-section of the proposed ROGAG SID from Runway 20 will overfly Oldcotes more directly but take traffic away from Langold and Costhorpe. The track over the ground of current traffic could not be replicated fully due to design criteria.

67. The introduction of ODDs will see very little noise impact as they are likely to only be used very rarely by aircraft not equipped to fly the RNAV procedures and the number of non-equipped operators is likely to reduce over time.

68. The introduction of RNAV IAPs as redundancy for the ILS will have little impact as they will be used so infrequently and the areas where the procedures are proposed (in line with the runway) are already overflown by current traffic.

69. In line with the Air Navigation Guidance 2014, the CAA has considered the potential for 'respite' options[3]. The CAA has considered the potential for respite but the objectives of the ACP to replicate SIDs and to avoid overflying conurbations where possible, meant that options for respite were not considered to be feasible.

Conclusions in respect of environmental impact

70. For the reasons set out in this decision, the CAA acknowledges the anticipated environmental impacts and benefits of the proposed change and has taken these into account when weighing the factors that the CAA is required by statute to consider when making its decision whether to agree to the change proposed.

Conclusions in respect of aircraft operators and owners

71. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.[4]

72. The introduction of the proposed procedures at the airport means that there will continue to be enroute connectivity once the relevant navigational aid has been removed from service.

73. Omni-Directional Departure routes are proposed to enable those operators not equipped to fly the RNAV procedures.

74. There is additional controlled airspace proposed including a Class E CTA FL85-105 including TMZ and RMZ and the lowering of the base of L60/L603 Class A airspace from FL155 to FL125. This will impact the access to that airspace for some users.

75. There will be some fuel burn disbenefit overall for operators using the departure routes. This is due to the design which aims to minimise the size of the

[3] Respite is planned and predictable alleviation from aircraft noise. One example of respite is having SIDs taking different routes to the same UK exit point which are used at different times. Respite can be designed into airspace structures more easily once aircraft tracks are predictably concentrated on to safely separated routings, enabling the use of them to be alternated or varied. There is currently no agreed minimum distance between routes such that alternating their use would result in acceptable respite.

[4] Transport Act 2000, Section 70(2)(b).

additional controlled airspace as well as to provide noise benefit to communities close to the airport.

76. Class E TMZ/RMZ has been proposed to allow easier access to CTA 13 for suitably equipped aircraft, rather than Class D.

Conclusions in respect of the interests of any other person

77. The CAA considers the words "any person (other than an operator or owner of an aircraft)" to include airport operators, air navigation service providers, members of the public on the ground, owners of cargo being transported by air, and anyone else potentially affected by an airspace change proposal.

78. The CAA is required to take account of the interests of any person (other than an owner or operator of an aircraft) in relation to the use of any particular airspace or the use of airspace generally. The CAA examined a number of anticipated impacts, some of which attracted feedback during the consultation process outlined above. Feedback from airport operators and ANSPs towards the proposed changes was positive. The proposed procedures allow the airport operator to continue to efficiently link their departing aircraft to the enroute network while limiting the workload on both Liverpool ATC who provide an ATC service for the airport and NERL.

79. This decision document deals above with consideration of the anticipated environmental impact on the public on the ground in the paragraphs relating to the environmental impact of the proposed change.

Integrated operation of ATS

80. The CAA is required to facilitate the integrated operation of air traffic services provided by or on behalf of the armed forces of the Crown and other air traffic services.[5]

Interests of national security

81. The CAA is required to take into account the impact any airspace change may have upon matters of national security.[6] There are no impacts for national security.

International obligations

82. The CAA is required to take into account any international obligations entered into by the UK and notified by the Secretary of State.[7] The UK's international

[5] Transport Act 2000, Section 70(2)(e).
[6] Transport Act 2000, Section 70(2)(f).
[7] Transport Act 2000, Section 70(2)(g).

obligations that relate to the introduction of RNAV-1 or performance-based navigation are set out in Annex D. With regard to replication procedures, all foreign operators will be able to fly the new procedures providing the crews and aircraft are certified and approved to fly RNAV-1 procedures in accordance with their own States' national regulations.

Chapter 3

CAA's Regulatory Decision

83. Noting the anticipated impacts on the material factors we are bound to take into account described in Chapter 2 (see [CAA Consideration of Factors material to our decision whether to approve the change]), we have decided to approve the five proposed SIDs, two RNAV GNSS IAPs, two ODD routes, CTA-13 as Class E + TMZ/RMZ airspace from FL85-105 as proposed, and the lowering of a portion of airways L60/L603 to FL125 as proposed.

84. The RNAV SIDs provide mitigation to the removal of the navigation aid upon which the current departure routes depend.

85. The CAA's primary duty is to maintain a high standard of safety. The proposal introduces new controlled airspace to contain the ROGAG SIDs and to provide additional protection to passenger carrying aircraft while balancing the needs of other airspace users.

86. The proposal includes provision for those small number of aircraft which operate from the airport that are not RNAV 1 capable.

87. The sponsor has provided a written undertaking to the CAA to promulgate access arrangements for non-radio and/or non-transponder equipped aircraft into the TMZ/RMZ ahead of the implementation of the airspace change.

88. As set out above, the CAA acknowledges the adverse environmental impact on some local communities but is of the view that the noise benefits to local communities overall outweigh the adverse impact, which is also in part due to the design criteria that need to be met to ensure that the procedures are safe.

89. We have noted with some regret that the sponsor did not take the opportunity to reconsider options for classification of the remaining CTAs (other than CTAs 1 and 2) as part of their proposal, in line with CAA views expressed in the Robin Hood Airport Doncaster Sheffield (RHADS) Post Implementation Review document, published 14 June 2017.

Civil Aviation Authority

22 November 2019

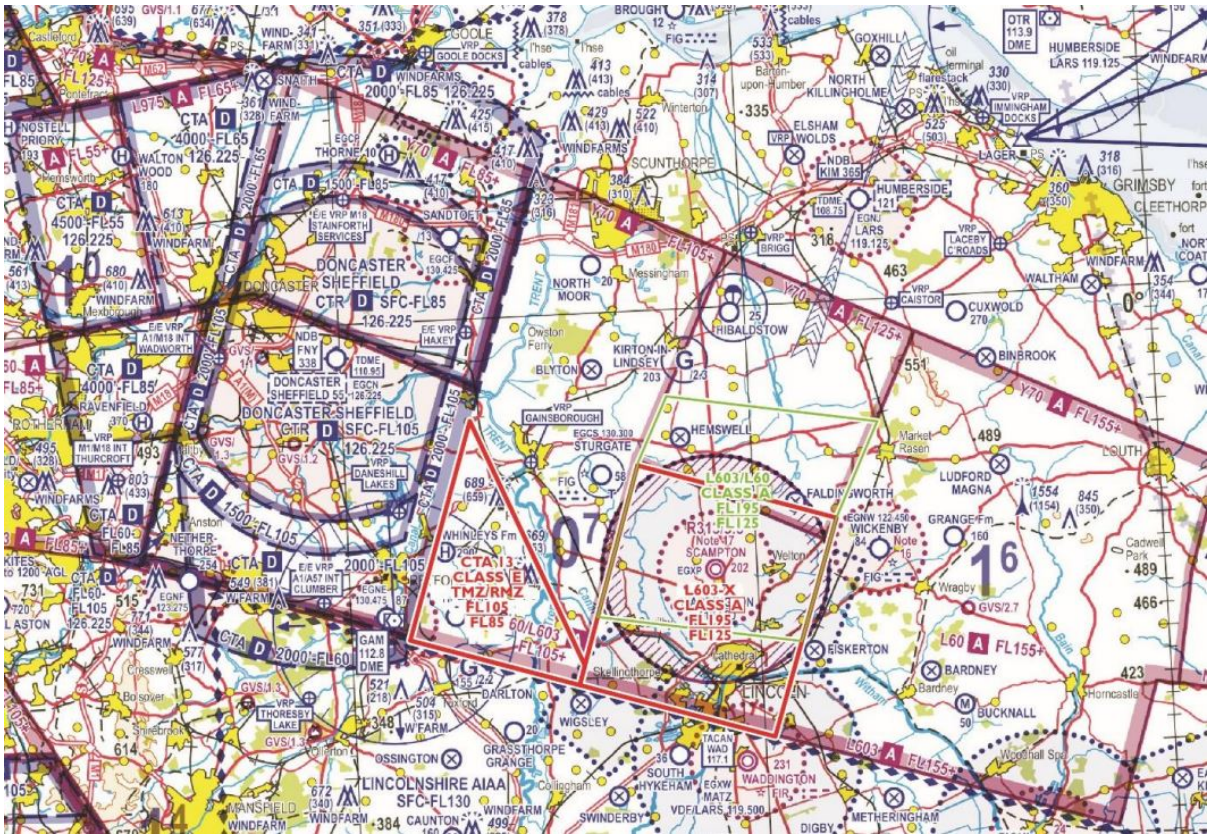
Annex A

Conditions

No conditions have been included as part of this decision.

Annex B

Diagrams relating to change



Annex C

The CAA's role in airspace change decisions, the legal framework, the policy background and relevant UK international obligations

C1. The Secretary of State has given the CAA functions that relate to airspace. The current Directions are dated 2017 and came into force on 1 January 2018. Pursuant to these directions the CAA must "prepare and maintain a coordinated strategy and plan for the use of UK airspace…" (Direction 3(e)). The previous version of the Directions is dated 2001 (amended in 2004). These Directions required the CAA to develop and enforce a policy for the sustainable use of UK airspace. By virtue of this function the CAA developed its Future Airspace Strategy (known as FAS) which is an initiative started by the CAA to create a joined-up UK airspace and air traffic management (ATM)_ modernisation programme across the many different stakeholder grounds involved. The goal of FAS is to modernise the UK airspace and ATM infrastructure through significant technological improvements by 2030, to make a more efficient use of airspace (thereby providing airspace capacity benefits), as well as secure environmental (noise and emissions) and safety benefits.

C2. We believe the requirements of the strategy and plan required by the Direction 2017 3(e) cannot be fully met by the FAS.

C3. Therefore we have prepared a new Airspace Modernisation Strategy (the AMS) which was published on 17 December 2018. Much of the UK and European law that underpins the strategy remains the same, so many of the technical aspects of FAS have been incorporated into the new strategy. But while parts of FAS remain relevant, the strategy has needed to be rearticulated in the context of potential government policy changes (e.g. Airports National Policy Statement) and technological developments (e.g. drones, commercial spaceflight).

C4. The CAA via its statutory air navigation function is required to consider proposals to permanently change the structure of UK airspace design in accordance with the AMS.

C5. By Section 70 of the Transport Act 2000 (the Transport Act), the CAA is under a general duty in relation to air navigation to exercise its functions so as to maintain a high standard of safety in the provision of air traffic services. That duty is to have priority over the CAA's other duties in this area of work.

C6. Noting that priority, the CAA's duties in relation to air navigation is to exercise its functions in the manner it thinks best so that:

- It secures the most efficient use of airspace consistent with the safe operation of aircraft and the expeditious flow of air traffic.
- It satisfies the requirements of operators and owners of all classes of aircraft.
- It takes account of the interests of any person (other than an operator or owner) in relation to the use of any particular airspace or airspace generally.
- It takes account of any guidance on environmental objectives given to the CAA by the Secretary of State.
- It facilitates the integrated operation of air traffic services provided by or on behalf of the armed forces and other air traffic services.
- It takes account of the interests of national security.
- It takes account of any international obligations of the UK notified to the CAA by the Secretary of State.

C7. Where there is a conflict of these material considerations (other than safety, which must always take priority), the CAA must apply them as it thinks reasonable having regard to them as a whole.

C8. The CAA must exercise its functions in this area so as to impose on providers of air traffic services the minimum restrictions consistent with the exercise of those functions.

C9. The CAA will approve an airspace change proposal that best satisfies all of the material considerations (where safety is not in issue), or all the material considerations that are engaged. Where a change would satisfy some of the material considerations, but would be contrary to the fulfilment of others, then there is a conflict within the meaning of Section 70 of the Transport Act. In reaching a decision in such circumstances, the CAA will apply its expertise to all the relevant information before it and use its judgement to apply them in the manner it thinks reasonable having regard to them as a whole.

C10. In striking that balance the CAA relies on the wording of Section 70 which indicates the relative importance of any given factor.

C11. In the instance of conflict, the CAA will usually offer suggestions to the sponsor of a proposal as to how the conflict might be mitigated or resolved, including encouraging the sponsor to engage with affected stakeholders in determining how the desired outcome might be achieved.

C12. The CAA considers the most efficient use of airspace to be that use of airspace that secures the greatest number of movements of aircraft through a specific volume of airspace over a period of time so that the best use is made of the limited resource of UK airspace. It is therefore concerned with the operation of the airspace system as a whole.

C13. The CAA considers the expeditious flow of air traffic to involve each aircraft taking the shortest amount of time for its flight. It is concerned with individual flights.

C14. The CAA considers the words "any person (other than an operator or owner of an aircraft)" to include airport operators, air navigation service providers, members of the public on the ground, owners of cargo being transported by air, and anyone else potentially affected by an airspace proposal.

C15. The Secretary of State has given the CAA specific guidance on environmental objectives within the meaning of Section 70 of the Transport Act.[8]

C16. The 2014 Guidance includes the following:

> 90. The CAA's primary objective is to develop a "safe, efficient airspace that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment".
>
> 91. …
>
> 92. In December 2012, the industry-led FAS Industry Implementation Group launched its plan for delivering Phase 1 of the FAS up to c2025. A considerable component of the plan is the need to redesign UK's terminal airspace to make it more efficient by using new procedures such as Performance-Based Navigation (PBN) and better queue management techniques.

C17. The 2014 Guidance states the need to balance environmental factors against other factors:

> 93. The purpose of the Guidance is to provide the CAA and the aviation community with additional clarity on the Government's environmental objectives relating to air navigation in the UK. However, when considering airspace changes, there may be other legitimate operational objectives, such as the overriding need to maintain an acceptable level of air safety, the desire for sustainable development, or to enhance the overall efficiency of the UK airspace network, which need to be considered alongside these environmental objectives. We

[8] https://www.gov.uk/government/publications/air-navigation-guidance

look to the CAA to determine the most appropriate balance between these competing characteristics.

C18. The need to strike a balance specifically in relation to noise is stated as follows:

> 94. The Government has made it clear therefore that it wants to strike a fair balance between the negative impacts of noise and the economic benefits derived from the aviation industry.

C19. The 2014 Guidance also states the Government's overall policy to limit the number of people significantly affected by aircraft noise.

C20. The 2014 Guidance states that the CAA should keep in mind the following altitude-based priorities:

- In the airspace from the ground to 4000ft AMSL the Government's environmental priority is to minimise the noise impact of aircraft and the number of people on the ground significantly affected by it;
- where options for route design below 4000ft AMSL are similar in terms of impact on densely populated areas the value of maintaining legacy arrangements should be taken into consideration;
- in the airspace from 4000ft AMSL to 7000ft AMSL, the focus should continue to be minimising the impact of aviation noise on densely populated areas, but the CAA may also balance this requirement by taking into account the need for an efficient and expeditious flow of traffic that minimises emissions;
- in the airspace above 7000ft AMSL, the CAA should promote the most efficient use of airspace with a view to minimising aircraft emissions and mitigating the impact of noise is no longer a priority;
- where practicable, and without a significant detrimental impact on efficient aircraft operations or noise impact on populated areas, airspace routes below 7000ft AMSL should, where possible, be avoided over Areas of Outstanding Natural Beauty and National Parks as per Chapter 8.1 of the 2014 Guidance; and
- all changes below 7000ft AMSL should take into account local circumstances in the development of airspace structures:

> 95. The concept of altitude-based priorities reflects the Government's desire that only significant environmental impacts should be taken into account when considering the overall environmental impact of airspace changes. Any environmental impacts that are not priorities based on the

above altitude-based criteria do not need to be assessed since the assumption is that they would not be significant.

C21. Subject to Section 70 of the Transport Act, the CAA is directed by the Secretary of State to perform its air navigation functions in the manner that it thinks best calculated to take into account the following:

- The Secretary of State's guidance on the Government's policies 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.
- 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.
- 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.

C22. Any airspace change that a sponsor asks the CAA to approve follows a seven-stage process known as the CAA's airspace change process. A summary of that process is available on the CAA's website[9] and is also shown here.

The seven-stage process of an airspace change

Stage 1 – framework briefing

We meet with the organisation that is considering proposing an airspace change to discuss their plans, the operational, environmental and consultation requirements for proposing a change and set out the how the CAA process will run.

Stage 2 – proposal development

The organisation that is considering proposing the airspace change begins to develop design options and researches who needs to be consulted. They will also conduct an initial environmental assessment of the proposals which will need to be more detailed if, and by the time, the organisation proceeds with its proposal and prepares for consultation. It is recommended that the organisation invites a cross-section of parties

[9] http://www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Airspace-Change/

who may be affected by the change to form a Focus Group to help with the development of the design options.

Stage 3 – preparing for consultation

The organisation that is considering proposing the airspace change decides on the most appropriate consultation method needed to reach all consultees. This could include a written consultation, questionnaires or surveys, using representative groups and open/public meetings. We will provide advice to the organisation on the scope and conduct of the consultation but it remains their responsibility to ensure that the appropriate level of consultation is undertaken. Consultations should normally last for at least 12 weeks with consideration given to longer timescales where feasible and sensible. Consultation documents should be clear about the objectives of the proposal, what is being proposed, how the change would affect various stakeholders, the expected advantages and disadvantages of the proposals to all stakeholders, the consultation process and the scope to influence. If a single design option is being consulted upon, the document should state what other options were considered and why these were discarded.

Stage 4 – consultation and formal proposal submission

When the consultation is launched the organisation that is considering proposing the airspace change should make every effort to bring it to the attention of all interested parties. The organisation must ensure that accurate and complete records of all responses are kept. Following the consultation, the organisation collates and analyses all responses to identify the key issues and themes. There may be airspace design modifications in light of the consultation responses which results in the need for further consultation. The organisation is required to publish feedback to consultees. If the organisation decides it will submit a formal airspace change proposal to us to then its feedback document must include information on how the final decision on the option selected was reached. In addition to publishing the feedback report the organisation sends all the consultation responses to the CAA within its formal proposal submission.

Stage 5 – our decision

We undertake a detailed assessment of the proposal and may ask for clarification or supplementary information from the organisation requesting the change. Our assessment covers:

1. the operational need for, objectives and feasibility of the changes proposed;

2. our analysis of the anticipated environmental benefits and impacts if the change were made; and

3. an assessment of the consultation carried out by the organisation proposing the change and of the responses received to that consultation.

Our conclusions in these three areas inform our decision whether to approve or reject the proposal. When making our decision the law requires us to give priority to safety but then to balance the need for the most efficient use of airspace with the needs of operators of aircraft and the environmental effect of aviation (including noise and CO_2 emissions). The means by which we assess and balance the environmental impact within our decision making process is set out in government policy which we implement. We normally aim to make our decision within 16 weeks of having all the information we need.

Stage 6 – implementation

If a change is approved then changes to airspace procedures and structures are timed to start on internationally specified dates which occur every 28 days on so called AIRAC-dates.[10] This ensures that the aviation community, as a whole, is aware of the changes and can prepare. In addition, the organisation that proposed the change should publicise the airspace change to members of the local community and other stakeholder groups who were consulted earlier in the process.

Stage 7 – operational review

Around 12 months after a change is implemented we will start a review of the change to assess whether the anticipated impacts and benefits, set out in the original airspace change proposal and decision, have been delivered and if not to ascertain why and to determine the most appropriate course of action. Once complete we will publish the review on our website.

[10] An internationally agreed system for the regulated co-ordination of aeronautical information updates and publication that occurs every 28-days on specified dates which apply globally.

Annex D

UK's International Obligations relating to Performance-Based Navigation

In 2010, the International Civil Aviation Organisation (ICAO) Assembly agreed Resolution A37-11 on PBN Global Goals. The Assembly Resolution required States to complete a PBN implementation plan to achieve:

• the implementation of RNAV 1 and RNP operations (where required) for en-route and terminal areas according to established timelines and intermediate milestones; and

• the implementation of approach procedures with vertical guidance for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016.

The Assembly Resolution was not a mandate and the UK acknowledged that whilst making every effort to meet the 2016 date, the implementation of approach procedures at all instrument runway ends may take longer.

The European Commission Implementing Regulation (EU) No 716/2014 on the Establishment of the Pilot Common Project (PCP) supporting the implementation of the European Air Traffic Management Master Plan sets out six air traffic management functionalities to be deployed in pursuance of the Single European Air Traffic Management Research programme. In the UK, the RNP 1 PBN specification is mandated for terminal airspace and the RNP APCH PBN specification for approaches at London Heathrow, London Gatwick, London Stansted and Manchester Airports from 1 January 2024. This implementation must be coordinated and synchronised to ensure that performance objectives are met.

Outside of the PCP, the European Commission has also published Commission Implementing Regulation (EU) 2018/1048 laying down airspace usage requirements and operating procedures concerning performance-based navigation. Providers of ATM/ANS are required by the PBN IR to develop a Transition Plan for the implementation of PBN in their operations with intermediate steps for PBN approaches at all non-precision Instrument Runway Ends by 03 December 2020, all precision Instrument Runway Ends by 25 January 2024, at least one Standard Instrument Departure (SID) or Standard Arrival (STAR) by the same date. PBN shall be

implemented in en-route above FL150 by 03 December 2020 and below FL150 by 25 January 2024. In support of the PBN IR, EASA has published Acceptable Means of Compliance and Guidance Material in Part-AUR. The PBN IR also envisages the "exclusive use" of PBN by 06 June 2030 with the removal of conventional navigation infrastructure and procedures commensurate with the transition to that environment.

Notwithstanding the European Commission regulations, the UK supports the more widespread use of PBN in implementing a systemised route structure in terminal airspace. This is currently described in the UK Airspace Modernisation Strategy (AMS) CAP 1711 and is consistent with European regulation timelines and may be supported by further regulatory intervention (local mandates), where justified.

In summary, the UK is under an obligation to ICAO and the European Commission to transition to PBN-based procedures in all flight phases. At a national level, the Airspace Modernisation Strategy is seen as bringing additional capacity, improved efficiency, enhanced safety and environmental benefits to UK airports out to beyond 2030. The PBN building-blocks of RNAV 1 and RNP APCH are seen as the first step and will not preclude the use of more advanced PBN specifications as they become more widely available in the operating fleet.