Safety and Airspace Regulation Group

Birmingham International Airport Standard Instrument Departures from Runway 33: CAA decision

CAP 1778

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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 aids used by aircraft flying Birmingham's current departure procedures, has led Birmingham airport to propose replacing the current conventional procedures with RNAV 1 procedures. These proposed procedures do not rely on the ground-based navigation aids that are being withdrawn from service.

2. A NATS project, Future Airspace Strategy Implementation (FASI) North, is redeveloping en-route airspace for which their Prestwick Centre is responsible. Part of this project intends to systemise traffic flows to increase the capacity of the UK's finite airspace resource. As part of this project, NATS have required Birmingham airport to design its northbound departure routes, to terminate at a new waypoint to procedurally separate northbound departures from arriving traffic.

Summary of the decision made

3. Subject to the conditions set out in Annex A the CAA has decided to approve the following changes to the structure of UK airspace:

4. The CAA approves the implementation of the proposed Instrument Flight Procedures – four Standard Instrument Departure routes (SIDs).

Next steps

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

6. The sponsor is required to provide detail on the volume of traffic utilising the new SIDs.

7. The sponsor is required to provide all feedback received from airspace users.

8. The change sponsor is required to 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:

   - aircraft track data plots; and
   - traffic density plots

9. 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[1]) 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

[1] www.caa.co.uk/CAP725

should *"ascertain why and … determine the most appropriate course of action"*.[2]

(See [Annex C] paragraph 22 for more information.)

[2] There are therefore a wide range of possibilities for the conclusions of a PIR; they include a rejection of the proposal, the imposition of further requirements on the proposal, and the making of wider recommendations, albeit that the success of the proposal is not dependent upon them.

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. Design procedures which are safe, flyable by all aircraft and in line with International Civil Aviation Organisation (ICAO) and CAA standards for flight procedure design and using RNAV-1 criteria.
14. Meet the requirements of the Prestwick Lower Airspace Systemisation (PLAS).
15. Design procedures which match as closely as possible the existing arrangements, with priority being given to ensuring that they minimise the number of new people affected by any changes, rather than the total number of people affected.
16. Minimise the environmental impacts as far as possible, with the focus being on minimising the impact of noise on densely populated areas below 7000 feet.

17. 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

18. The Framework Briefing took place on 21 November 2016 at CAA House in London. 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.

Consultation

19. The sponsor undertook a stakeholder consultation which ran from 3 July 2017 to 16 November 2017.

Submission of Airspace Change Proposal

20. The CAA received the sponsor's Airspace Change Proposal on 20 April 2018 along with its associated appendices. Additional information was requested from the sponsor on 10 May. The sponsor provided the requested information on 27 May 2018.
21. 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.

Documents considered by the CAA

22. In assessing the proposal and making this decision, the CAA has taken account of:
    a. Birmingham Airport Airspace Change Proposal: Introduction of new Standard Instrument Departure Procedures from Runway 33
    b. The Consultation Document
    c. Sponsor Consultation Report
    d. Birmingham Airport RNAV SID Procedures Report v5.1
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CAA Analysis of the Material provided

23. 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.

- A **Consultation Assessment** 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 assessment will confirm whether the change sponsor has correctly identified the issues arising from the consultation and has responded to those issues appropriately. The assessment 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

24. The consultation material was clear, written in plain-English and was suitable for all audiences. It included a section titled "Background for the changes to flightpaths" which clearly articulated (for example) the flightpaths in place at the airport, the difference between conventional and RNAV instrument flight procedures and how the proposed flightpaths had been developed. Options were also clearly set out in the consultation material along with the change sponsor's rationale for pursuing their preferred option (replicate the existing published flight paths). The CAA has reviewed the documentation, and the CAA is content that someone reading the consultation would have been able to understand the anticipated impact of the proposal on them and those impacted by the change were given an opportunity to respond and provide feedback.

25. Although an initial oversight by the change sponsor meant that the elected representatives of a number of local council wards were not contacted when the consultation was originally launched, proactive steps were taken to ensure that the consultation was promoted by various means. In addition to direct email contact, the change sponsor made use of Public Notices, Social Media accounts, community roadshows, individual meetings/briefings and local TV and Newspaper coverage to raise awareness of the consultation associated with their airspace change proposal.

26. The change sponsor was able to identify a comprehensive list of key themes as a result of the feedback received during the consultation. Each theme, along with the change sponsors response to them, were documented in the 'Sponsors Consultation Report'. The subsequent amendments made to the design by the change sponsor, after taking into account responses to the consultation, such as the amendment to move the southbound departures in accordance with the request of the residents of Curdworth, demonstrates that this consultation was 'meaningful'. The sponsor also considered an option proposed by the Castle Bromwich Airport Forum which would keep the number of aircraft flying over Castle Bromwich on the route which used to be the TNT SID the same as today. This did not meet with the sponsors design principle to replicate if possible existing SIDs and the option would result in an increase in the number of properties overflown and was rejected by the sponsor.

27. The CAA's full assessment of the consultation is contained in the CAA's Consultation Assessment referred to above and published on the CAA's website.[3] In summary the CAA has concluded that the quality of BAL's consultation and response to consultation feedback was sufficient for the CAA to proceed to consider whether to approve the change requested. The post-consultation amendments to the design consulted upon were not, in the CAA's view, significant enough to require further consultation.

[3] www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Decisions/Birmingham-Airport-Runway-15-departure-routes/

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

Explanation of statutory duties

28. Pursuant to the Civil Aviation Authority (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).[4]

29. 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).

30. 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.

31. 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).

[4] Revised in 2014 by the Department for Transport https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/269527/air-navigation-guidance.pdf

32. 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".

33. 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

34. 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.[5] 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 (except for UMLUX) continue to be contained within controlled airspace. UMLUX SID, which is not contained within controlled airspace from a design perspective, will have the same operational restrictions as the MOSUN departure procedure that it replaces.

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

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

d. The contracted ANSP at the airport operates 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 which highlighted an issue with the original design of the LUVUM SID which ended at FL80. The hazard identification process identified that a difference in the cleared level for the LUVUM SID, different to the other SIDs, increased the risk of level busts (aircraft climbing beyond the altitude to which they had been cleared to do so by an air traffic controller) occurring. Following a redesign to end the procedure at 6,000 feet, the issue was resolved.

f. The CAA ATS Inspector assigned to oversee the ATS operation at Birmingham Airport is content that the introduction of the new procedures and the ATS operation will continue to maintain a high level of safety.

g. The proposal is part of the Future Airspace Strategy Implementation (North) (FASI(N)) programme (formerly Prestwick Lower Airspace Systemisation) which includes an objective for a 7% reduction in conflict alerts and an overall improvement in safety.

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

Conclusions in respect of securing the most efficient use of airspace

36. 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.[6]

37. 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

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

the limited resource of UK airspace. It is therefore concerned with the operation of the airspace system as a whole.

38. 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.

39. The proposed procedures will enable NERL's FASI North airspace design which aims to introduce procedurally separate northbound and southbound traffic in systemised flows which will increase overall efficiency of the enroute network.

40. It is the CAA's view that the introduction of RNAV-1 procedures and technology is necessary in order to secure the most efficient use of UK airspace. This is reflected in more detail in the CAA's Airspace Modernisation Strategy (the AMS), which replaces 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.

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

41. 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

42. 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.

43. 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:

44. With regard to CO^2 the sponsor provided data for a base year (2016) the year of anticipated implementation (2018)[7] and a future scenario (2023). The data showed that there is predicted to be an increase in CO2 emissions between 2016 and 2018. This is directly attributable to the predicted overall increase in air transport movements as the Airport grows, rather than a direct result of this airspace change proposal. In fact, overall there is a modest measurable reduction in CO2 emissions with this airspace change proposal if one assumes the same growth were to occur whether it was implemented or not. This is attributable to the fact that the new flightpaths for the Westcott, TRENT and Whitegate flightpaths are shorter than the existing ones, resulting in a reduction in aircraft track miles flown. In some scenarios they also allow for the aircraft to climb to a higher altitude than the restrictions on the current SIDs. Aircraft operate more efficiently at higher altitudes, burning less fuel and in turn releasing less CO2. In 2023, despite there being an increase in the number of aircraft forecast to operate at the Airport, the total CO2 emissions is predicted to decrease. This is when compared to both the current flightpaths and with the proposed flightpaths, with the latter giving the greatest CO2 decrease.

45. With regard to Local air Quality, the proposal has no impact on flight paths below 1000ft therefore there will be no impact on local air quality.

46. With regard to AONBs and National Parks, the proposed routes do not overfly any National Parks and the number of AONBs impacted is reduced by the proposal.

47. 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 (set out in [3] to this decision) 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:

[7] Implementation is in 2019 but the process requirements for noise assessment have been met as the anticipated implementation was in 2018.

"*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."

48. The noise analysis describing the situation immediately after the introduction of the proposed changes shows that there would be no difference in the number of households, or in the population within noise contours, between 72 and 63 dB(A). In the 60 dB(A) noise contour, the proposed flightpaths result in a slight reduction in the population count of 100, with no changes to the number of households. Results for the 57 to 54 dB(A) noise contour show a population increase of 900 and an increase in the number of households of 500.

49. There is a change in the shape of the noise contours observed towards the North, where there is a marginal shift to the north east of the airfield. This results in a change to the 57 dB(A) noise contour bringing in properties located near to the Old Clock Garage on Newport Road, Castle Bromwich. There is also a change to the 54 dB(A) noise contour, incorporating properties located just to the east of Spitfire Island, at the intersection of the Chester Road, A47 Fort Parkway and the entrance to the Castle Vale estate.

50. The changes anticipated in 2023 are broadly similar other than a reduction in the 54bB(A) contour due to the potential increase in traffic using the MOSUN SID, if the proposal to implement controlled airspace to the west of the airport is approved.

51. It is anticipated that the number of aircraft using the route which currently goes to the Trent VOR will double. Aircraft on this route will fly over the areas of Castle Bromwich, Minworth and the eastern edge of Royal Sutton Coldfield.

52. The use of RNAV procedures will concentrate traffic under the departure routes when compared to the current dispersion, particularly the MOSUN departure.

53. In line with the Air Navigation Guidance 2014, the CAA has considered the potential for 'respite' options[8]. The CAA has considered the potential for respite but the objectives of the ACP to replicate SIDs where possible and not to overfly new populations meant that options for respite were considered not to be feasible.

Conclusions in respect of environmental impact

54. For the reasons set out in this decision, the CAA acknowledges the anticipated environmental impact of the proposed change and has taken this 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

55. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.[9]

[8] 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.

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

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

57. There is no proposed change to the classification or dimensions of controlled airspace and access to the airspace will remain as it is today.

58. A non-standard departure procedure will be available for any operator not equipped and approved for RNAV 1 operations.

Conclusions in respect of the interests of any other person

59. 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.

60. 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.

61. 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

62. 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.[10]

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

Interests of national security

63. The CAA is required to take into account the impact any airspace change may have upon matters of national security.[11] There are no impacts for national security.

International obligations

64. The CAA is required to take into account any international obligations entered into by the UK and notified by the Secretary of State.[12] The UK's international 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.

11 Transport Act 2000, Section 70(2)(f).
12 Transport Act 2000, Section 70(2)(g).

Chapter 3

CAA's Regulatory Decision

65. 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 four proposed RNAV 1 Standard Instrument Departure routes.

66. The RNAV1 SIDS provide mitigation to the removal of navigation aids upon which the current departure routes depend.

67. The CAA's primary duty to is to maintain a high level of safety. The proposal is part of the Future Airspace Strategy Implementation (North) (FASI(N)) programme (formerly Prestwick Lower Airspace Systemisation) which includes an objective for a 7% reduction in conflict alerts and an overall improvement in safety.

68. The proposal is part of a larger programme FASI(N) to redesign the enroute network to increase the capacity and efficiency of UK airspace.

69. The proposed procedures will enable NERL's FASI(N) airspace design which aims to introduce procedurally separate northbound and southbound traffic in systemised flows which will increase overall efficiency of the enroute network. It is the CAA's view that the introduction of R-NAV procedures and technology is necessary in order to secure the most efficient use of airspace. The introduction of the procedures is in accordance with the CAA's Future Airspace Strategy and its replacement, the Airspace Modernisation Strategy as well as the UK's implementation plan concerning the introduction of satellite navigation routes which aim to increase the efficiency of UK airspace.

70. The proposal includes provision for those small numbers of aircraft which operate from the airport that are not RNAV 1 capable. This ensures that owners and operators of all classes of aircraft continue to utilise the airport's facilities once the proposed change has taken place.

71. As set out above the CAA acknowledges the adverse environmental noise impact on some local communities, including the proposal which is anticipated to double the number of flights on what was the TNT SID, which will impact the areas of Castle Bromwich, Minworth and the eastern edge of Royal Sutton Coldfield, in particular.

72. The CAA notes that the proposal removes the WHI SID which will stop departing aircraft from Runway 33 from overflying a heavily populated area to the north of the airport which is also overflown by arriving aircraft. The CAA also notes that the sponsor also amended their proposal in response to concerns of residents in the Curdworth area and agreed to move the nominal track of the southbound procedures closer to Junction 9 of the M42.

73. Taking all of the material factors into account we have decided to approve the four proposed RNAV1 Standard Instrument Departure Routes.

Civil Aviation Authority

19 March 2019

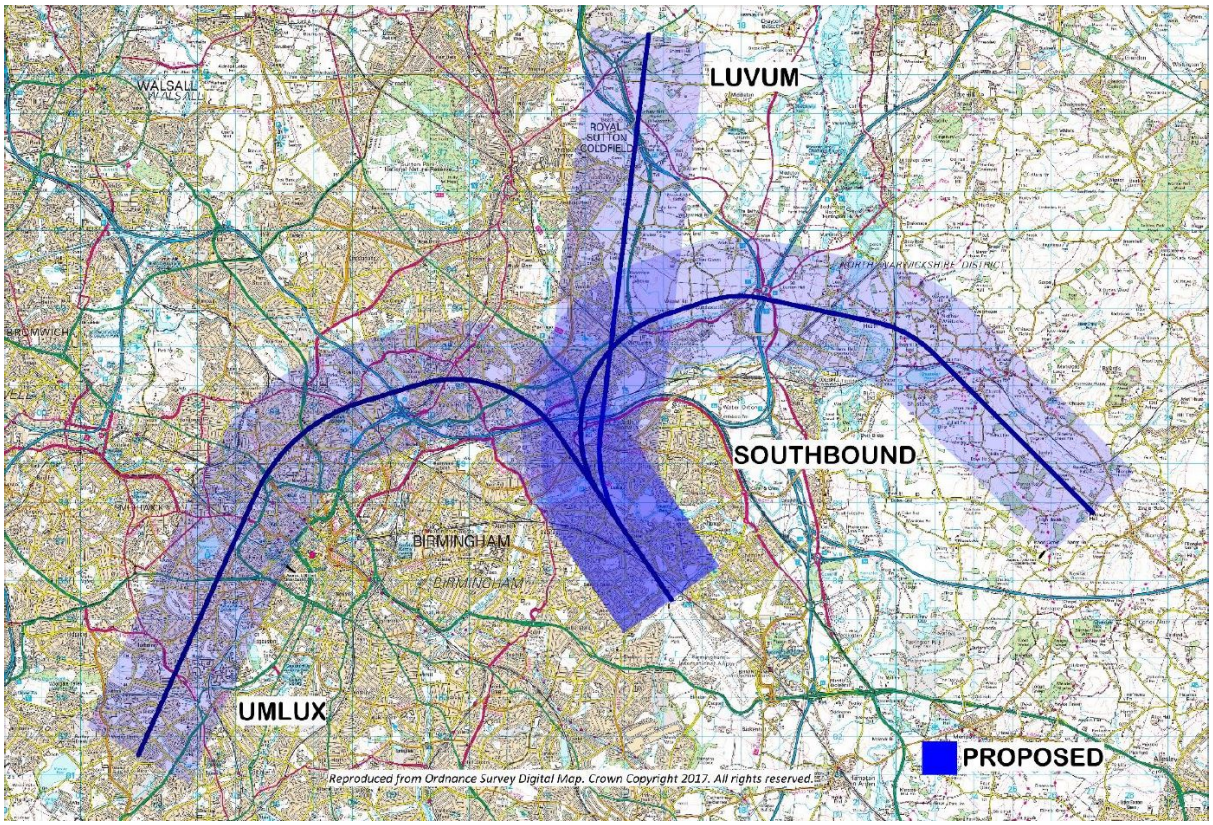
Annex A

Conditions

In addition to the normal requirements of the Post Implementation Review, the sponsor will specifically examine the effects of the changes on both Castle Bromwich and Curdworth, to ascertain that what has been proposed does not adversely affect those communities outside the considerations of the consultation process.

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 co-ordinated 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 current 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 strike a fair balance between the material considerations.

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.[13]

C16. The 2014 Guidance includes the following:

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/269527/air-navigation-guidance.pdf.

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".

…

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) [14] *and better queue management techniques.*

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

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 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:

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.

[14] Of which RNAV-1 is a type.

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:

  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.[15] A summary of that process is available on the CAA's website[16] 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 who may be affected by the change to form a Focus Group to help with the development of the design options.

[15] Published in CAP 724 https://www.caa.co.uk/CAP724 and CAP 725 https://www.caa.co.uk/CAP725

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

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.[17] 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.

[17] 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 (PBN)

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 co-ordinated 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.