

Removal of the En-Route Dependency from the Bovingdon (BNN), Biggin (BIG), Midhurst (MID), DVORs and the Westcott (WCO) and Woodley (WOD) NDBs.

Airspace Change Decision

CAP 1954

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Chapter 1

Executive summary

Objective of the Proposal

1. In line with the agreed European Navigation Strategy, NATS En-Route Ltd (NERL) has submitted plans for the progressive rationalisation of elements of the UK's ground-based navigation infrastructure for which it is responsible under the terms of its operating licence. One element of this rationalisation is the phased reduction of the network of "Doppler VHF Omni Range" (DVOR) ground-based radio navigation aids¹ from 46 to 19.
2. The CAA supports the overall concept of navigation infrastructure rationalisation and is content that a reasonable reduction in the number of DVORs will have no significant effect on safe and efficient ATM operations in the UK. Such rationalisation is now technically possible due to the increasing use of space-based navigation systems and wider transitioning to a Performance Based Navigation (PBN) environment, using "Area Navigation" (RNAV) capabilities onboard aircraft. However, before a navigation aid can be switched off, all the published flight procedures which depend on that navigation aid must be replaced, amended or withdrawn so as to remove the dependencies.
3. NATS currently operates 46 DVOR navigation aids around the UK. These were installed between 1982 and 1991 and are now operating significantly beyond their 15 year design life. The requirement for all aircraft flying in the en-route airways system to carry "RNAV 5"² avionics as from April 2011 means that NATS is no longer required to operate all 46 DVORs to support en-route operations.
4. A National Air Traffic Management Advisory Committee (NATMAC) consultation on the rationalisation of the DVOR infrastructure from 46 to 19 sites was undertaken in 2008. To accommodate the concerns raised about specific impacts on particular aircraft operators, it was agreed that NATS would undertake an impact assessment prior to the withdrawal of each individual navigation aid. The target date for the physical withdrawal

¹ A DVOR navigation aid is multi-antenna installation which enables equipment on board aircraft to determine both how far they are from the navigation aid and at what compass bearing. They are relatively large pieces of equipment, consisting of a ring of antennas (around 13m diameter) together with a "counterpoise" or "ground plane" of around 30m and a cabin to house the electronic equipment. The photograph in Appendix B shows an example of a DVOR navigation aid.

² The "RNAV" capability is defined with different levels of navigation precision, suitable for different types of operation. RNAV 5 is appropriate for aircraft flying in the en-route phase. Nearer to the ground, the more precise RNAV 1 standard may be more appropriate.

of the navigation aids has also been deferred to allow stakeholders more time to take appropriate action as in many cases individual airport operators will need to submit ACPs to change/remove any remaining airport-specific procedures reliant on those navigation aids which have been identified for withdrawal.

5. This rationalisation strategy is consistent with the UK Airspace Modernisation Strategy and UK-Ireland PBN Policy. The reduced DVOR infrastructure of 19 sites will be maintained for contingency purposes.
6. A rationalised Distance Measuring Equipment (DME) infrastructure will remain as part of the PBN implementation. This means that in some cases all the navigation equipment may be removed from a site while in others only the DVOR will be removed.
7. This proposal concerns the amendment and withdrawal of the en-route flight procedures managed by NATS which will enable the future removal of the Bovingdon (BNN), Biggin (BIG) and Midhurst (MID) DVORs along with en-route procedures that utilise the Westcott (WCO) and Woodley (WOD) non-directional (radio) beacons³ (NDBs). It does not include the removal of individual airports' flight procedures or the removal of the physical navigational aids themselves.
8. Additionally, NATS has proposed to implement a number of administrative changes to route names and descriptions as part of the ongoing maintenance of the UK Aeronautical Information Publication (AIP). These changes will have no impact on the actual routes flown by aircraft as they are purely about updating terminology to match current best practice.

Summary of the decision made

9. The CAA has decided to approve the proposed changes to remove the specific en-route dependencies from the BNN, BIG, MID DVORs and the WCO, WOD NDBs.
10. The CAA has also approved the technical amendments and administrative changes to route names and descriptions included within this proposal as part of the ongoing maintenance of the UK Aeronautical Information Publication (AIP).
11. None of the changes described within this document will have any impact on the tracks currently flown by aircraft within the UK.

³ An NDB is a ground based low frequency radio transmitter, based at a known location and used for aviation navigation.

Next steps

12. Implementation of the revised procedures, technical amendments and administrative changes will be notified through a single AIRAC cycle (AIRAC 13/2020) and will become effective on 3 December 2020.
13. The CAA's Post Implementation Review (PIR)⁴ 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. In due course, the sponsor will be advised of the specific data sets and analysis required, and the dates by when this information must be provided. There is an update, to the CAA's PIR requirements in response to COVID-19, on the CAA website.

⁴ PIR is the seventh stage of the CAA's airspace change proposal process

Chapter 2

Decision Process and Analysis

Chronology of Proposal Process

Statement of Need and Assessment Meeting

14. NATS submitted an initial Statement of Need (SoN) on 11 July 2019. Four further updates to this were submitted, with Version 4.1 (20 August 2019) being the version used as the definitive version. An Assessment Meeting was held on 4 September 2019 at which NATS outlined the following drivers for the ACP:
 - Reduce reliance on ground-based DVOR navigation aids, in line with agreed UK and international policies.
 - Undertake administrative changes to route names and descriptions as part of ongoing maintenance of the UK AIP.
15. The CAA determined that the proposal was in scope of the ACP process and assessed the proposal as Level 2C based on the following criteria; no changes below 7000ft; no new Controlled Airspace and no changes to aircraft tracks over the ground.
16. The Minutes of the Assessment Meeting together with a copy of the slide presentation and detail of provisional scaling were published on the CAA Website.

Development of Design Principles

17. The fundamental aim of the en-route phase DVOR Rationalisation Programme is to remove the en-route dependencies on the DVORs while having no material impact on aircraft operations, including both safety and the tracks of aircraft across the ground.
18. As this aim has been long-established at strategic level, NATS proposed a set of Design Principles for the DVOR Rationalisation Programme as a whole, on the basis that it would be most efficient to develop a “toolbox” of options at the start and then select those tools which are relevant to each individual proposal. Since these Design Principles are purely technical in nature, they were agreed between NATS and CAA without further formal consultation.

19. The final set of Design Principles considered appropriate to this ACP were submitted to the CAA in the Stage 1 document submission and subsequently published on the CAA website.
20. Due to the simple nature of the proposal and the lack of any material safety, operational, environmental or economic impact, CAA agreed that NATS could submit the material for Stages 2 and 3 Gateways at once as a single “Multi-Gateway” Document, however, Stage 1 would remain as a single submission.

Define Gateway

21. NATS Submitted three versions of the Design Principle Document, due to errors and clarification points, with Version 1.2 being submitted and accepted 27 September 2019. The Define Gateway Assessment for ACP 2019-07 DVOR Rationalisation was successfully completed on 27 September 2019 and the CAA website updated accordingly. The CAA was content that the Design Principles were developed through appropriate engagement and took account of the six criteria laid down in CAP1616, Appendix D.

Options Development and Appraisal

22. NATS submitted four versions of the Stage 2/3 Multi-Gateway document, with [Version 1.3](#) being submitted 21 October 2019. The four iterations addressed errors, inconsistencies and provided clarity in a number of areas. The sponsor developed four options ranging from “do nothing” to “withdraw everything”, with more detailed alternatives in between. The Stage 2 section of the Multi-Gateway document explained these options and identified the benefits and disbenefits of each, how they supported the Design Principles, and how they aligned to the overarching strategy of removing ground-based navigation aids.

Develop and Assess Gateway

23. The Develop and Assess Gateway Assessment was successfully completed on 25 October 2019 and the CAA website updated accordingly. The CAA was content that the ACP options were appropriate and that option down-select to one preferred option was justified.

Development of Consultation Strategy

24. The NATS consultation strategy for this ACP has been explicitly defined as “consultation is not required, by design”. This is stated and explained in the Stage 3 section of the Multi-Gateway Document.

25. An initial aviation community consultation on the strategy for the DVOR Rationalisation Programme as a whole was undertaken via the National Air Traffic Management Advisory Committee (NATMAC) in 2008, and NATMAC has been repeatedly informed of progress since then, in 2010 and 2018.
26. Although there has been some slippage to the timescales originally anticipated in 2008, the aims of the DVOR Rationalisation Programme have not changed and remain fully aligned with agreed UK, European and Global policies and equipage mandates to reduce reliance on outdated ground-based navigation aids as the primary navigation tool. As such, the aviation industry has not needed to be consulted on specific cases to remove en-route procedures.
27. There will be no impacts below 7,000ft or otherwise discernible to people on the ground. As such, NATS has argued that there is no requirement for a full public consultation on this ACP.

Consult Gateway

28. The Consult Gateway Assessment was successfully completed on 25 October 2019 and the CAA website updated accordingly. The CAA was satisfied that the content and level of the ACP were compatible with the declared consultation strategy of “consultation is not required by design”, given that the proposal is above 7000ft and includes no changes to Controlled Airspace or aircraft tracks over the ground. However, an allowance was made in order for the lack of detail provided in the version 1.0 of the submission document to be addressed, as the engagement with Birmingham Airport which had taken place, had not been articulated or recorded clearly⁵. The changes proposed in this ACP are fundamentally of an administrative or technical nature, with no impact in terms of changing the use of airspace, the numbers or type of aircraft, or the tracks flown by them. The CAA is therefore satisfied that there has been no requirement for a full public consultation under CAP 1616 since there will be no impact detectable by persons on the ground.

Proposal update and submission to CAA

29. Following the successful completion of all three Gateway Assessments by 25 October 2019, NATS submitted version 1.0 of the formal ACP on 31 January 2020 (uploaded to the CAA Portal 3rd Feb 2020).

⁵ See v1.1-v1.3 of Stage 2/3 Document on the CAA Portal

30. A number of errors and inconsistencies were noted in the first submission. As a result of this NATS were requested to re-consider the submission prior to the completion of the document check. As a result of this a v1.2 was received 7 February 2020, which although still requiring further clarification, did contain the complete data set required for an assessment to commence. The DfT Call in window was opened on the CAA website 12 February 2020 for public review until 11 March 2020; there were no responses received.
31. Further clarifications were sought from NATS, such as ensuring correct referencing from the earlier submissions, ensuring that the proposed AIP changes matched those in the ACP submission document, the provision of engagement evidence in the form of emails and the addition of ADQ data elements.
32. During the regulatory assessment of the procedure designs some inconsistencies between the documents was discovered, also the use of DCTs was questioned on the grounds of their presentation in the draft charts and a lack of supporting evidence for their inclusion. These issues were rectified through seeking clarification from the Sponsor and the production of updated draft charts.
33. This finally led to the submission of version 1.7 of the Stage 4 ACP document, together with its supporting technical material. Version 1.7 was used as the basis for the formal CAA decision and is available on the [CAA Portal](#) (published 3rd August 2020).

CAA Analysis of the Material provided

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

Stage 5 – Economic Assessment (Final Options Appraisal Assessment)

Stage 5 - Environmental Assessment

Stage 5 - Operational Assessment

These assessments have been published on the CAA portal.

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

Explanation of statutory duties

35. The CAA's statutory duties are laid down in Section 70 of the Transport Act 2000.

Conclusions in respect of safety

36. 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.⁶
37. 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 ACP does not involve changes to airspace size or shape.
 - b. The ACP supports the continued evolution to a more accurate PBN environment, with flight procedures published as the aircraft will fly them now, rather than as aircraft would have flown them 20 or 30 years ago.
 - c. The revised name changes bring more parts of the UK route network into line with current international best practice, reducing the potential for confusion.
 - d. Where a procedure has changed, such as new hold levels, the extant mitigations to a risk such as radar failure, remain satisfactory.

Conclusions in respect of securing the most efficient use of airspace

38. 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.⁷
39. The CAA considers that the most efficient use of airspace is defined as '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'.
40. The move towards Performance Based Navigation (PBN) and away from conventional ground-based navigation aids will increase the navigation accuracy which can be assumed when designing UK airspace and procedures. Being able to rely on this increased navigational capability will allow designers to create airspace structures which make more efficient use of this limited resource.

⁶ Transport Act 2000, Section 70(1).

⁷ 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

41. In performing the statutory duties, the CAA is obliged to take account of the extant guidance provided by the Secretary of State,⁸ namely the 2017 Guidance to the CAA on Environmental Objectives.
42. In this respect, the CAA is satisfied that there are no material benefits or disbenefits to anyone as a result of this proposal.

Conclusions in respect of aircraft operators and owners

43. The CAA is required to satisfy the requirements of operators and owners of all classes of aircraft.⁹
44. In this respect, the CAA is content that there will be no alteration to the current traffic flows or access to airspace resulting from this ACP.

Conclusions in respect of the interests of any other person

45. 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.
46. In this respect, the CAA considers that the impact of the proposal will not be discernible to other persons.

Integrated operation of ATS

47. 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
48. In this respect, the CAA is content that the technical and administrative changes resulting from this ACP will not impact the operational requirements of the MoD and that the impact on other Air Traffic Service Providers will be positive or undiscernible.

⁸ Transport Act 2000, Section 70(2)(d)

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

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

Interests of national security

49. The CAA is required to take account of the impact any airspace change may have upon matters of national security.¹¹
50. In this respect, the CAA is satisfied that the proposal has no impact on national security.

International obligations

51. The CAA is required to take account of any international obligations entered into by the UK and notified by the Secretary of State.
52. In this respect, the CAA is satisfied that the proposal has no impact on international obligations.

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

Chapter 3

CAA's Regulatory Decision

53. Considering the alignment of this proposal with agreed national policy and the lack of material impact to either aircraft operations or persons on the ground, the CAA has decided to approve the removal of the identified en-route dependencies from the BNN, BIG, MID DVORs, the WCO, WOD NDBs and the other proposed administrative changes to the UK Aeronautical Information Publication (AIP).

Conditions

54. The CAA requests that NATS provide the relevant CAA ATS Inspector with the Hazard Analysis conducted, prior to implementation.

Period Regulatory Decision Remains Valid for Implementation

55. The ACP is to be implemented in accordance with the target AIRAC date (13/2020).

Implementation

56. The revised airspace will become effective on 3rd December 2020. Any queries are to be directed to the SARG Project Leader via airspace.policy@caa.co.uk.

Post Implementation Review

57. In accordance with the CAA standard procedures, the implications of the change will be reviewed after one full year of operation, at which point, CAA staff will engage with interested parties to obtain feedback and data to contribute to the analysis.
58. Table H1 in CAP 1616 Appendix H references the information that will be required as part of the PIR for this ACP, this will include; safety data, service provision/resource issues, operational stakeholder feedback and utilisation data. The collection of this data is subject to guidance on the CAA website in response to COVID-19.

Civil Aviation Authority

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Appendix A – Amendments to Published Procedures

Diagrams of the procedures to be amended can be found in the Presentation at Stage 1a on the CAA Portal via this [link](#).

The following are the new STARs that are replacing withdrawn procedures or replicating some procedures in all or part, as required: for EGBB there will be the **SILVA 1B**, **HEMEL 1B**. For EGLC, the **SILVA 1C**. For EGKK, the **MID 1X**, **KIDLI 1G** and **DISIT 1G**. For EGLL, the **NUGRA 1H**, **BEDEK 1Z**, **LAM 1Z** and **HON 1H**. For EGGW and EGSS the **SILVA 1L**. For EGMC, the **SILVA 1S**.

The following procedures will be withdrawn and/or replaced: For EGBB, the **GROVE 1A**, **GROVE 1B**, **GROVE 1C**, **OLIVE 1B**. For EGLC, the **JACKO 1A**. For EGKK, the **TIMA 1D**, **WILLO 3B**, **ASTRA 2B**. For EGLL, the **BNN 1B**, **BNN 1C**, **BNN 1D**, **BNN 1E**, **BNN 4A**, **BOVVA 1B**, **BOVVA 1C**, **BOVVA 1D**, **BOVVA 1E**, **BOVVA 4A**. For EGGW and EGSS the, **LOREL 1B**, **LOREL 2L**, **LOREL 5A**, **ASKEY 5A**, **ASKEY 1B**, **ASKEY 2L**. For EGMC, the **SPEAR 1A**.

The following Holds will be withdrawn or RNAV replicated as required: **DELBO** (EGKK, replicate). **HON** (EGLL, replicate and make LH only). **OKESI** (EGLL, replicate for BEDEK 1Z and BEDEL 1H). **WCO** (EGLL, replicate and withdraw LH turn). **DTY** (EGLL, withdraw). **BOVVA** (EGLL, withdraw). **BOMBO** (EGGW, EGSS and EGMC, replicate). **SPEAR** (EGMC, replicate).

The **DTY** Hold is referenced as being removed from the enroute section of the AIP as part of this ACP; it is also referenced as being removed as part of ACP 2019-56. This is acknowledged as a duplication.

The following ATS routes will be re-designated and amended accordingly: **N89** and **L16**.

Appendix B – Example of a DVOR Navigation Aid

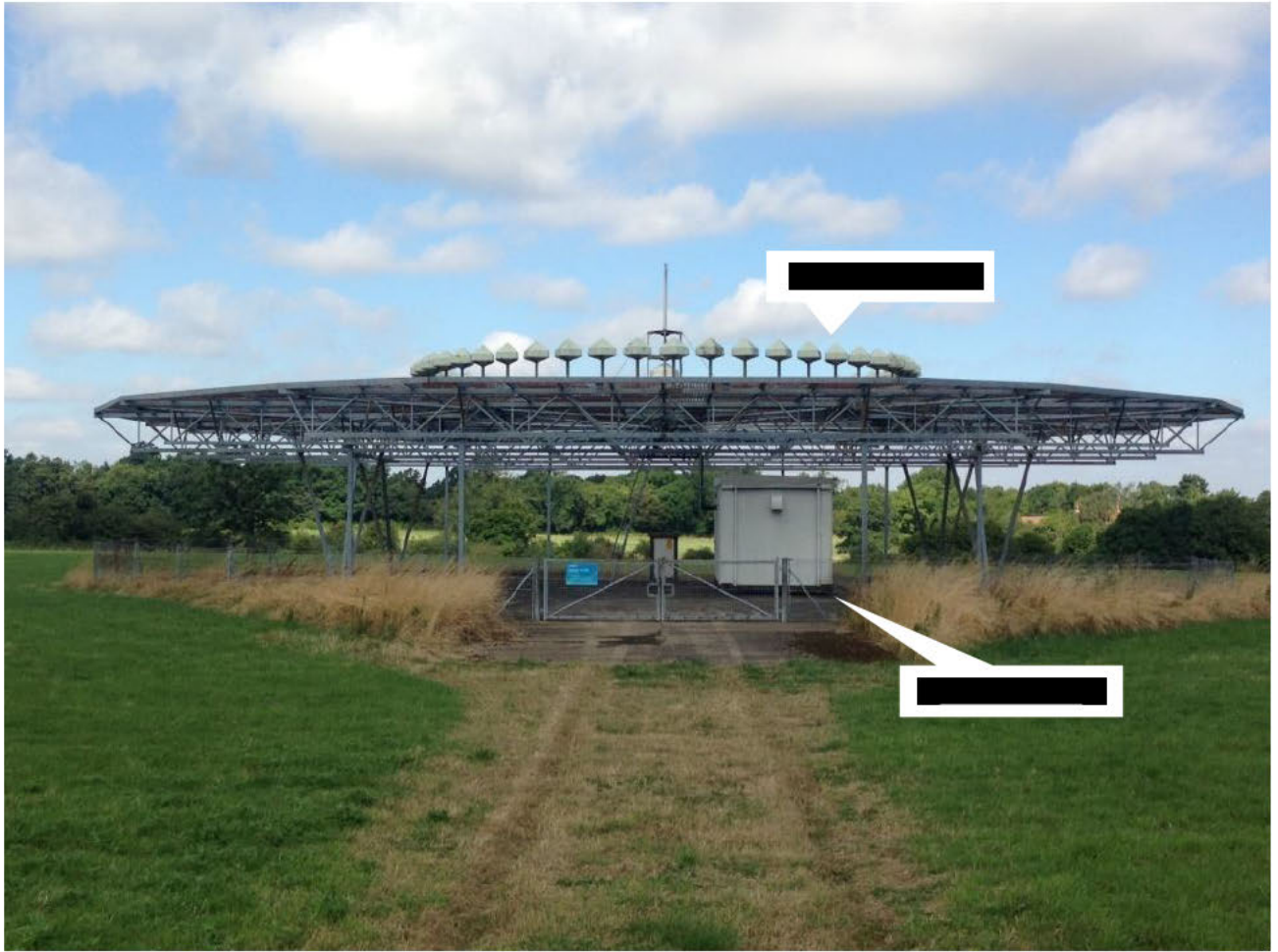


Photo Courtesy of NATS