London Airspace Management Programme 2, Deployment 1.1

Gateway Documentation
Stage 4: Submit

Step 4A: Update Design:
Consultation Response Document

Roles

Action	Role	Date
Produced	Airspace Change Specialist Airspace and Future Operations	05/2022
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References

Ref No	Description	Hyperlinks
1	ACP-2019-12 Free Route Airspace, Deployment 2	CAA portal
2	LD1.1 3D Collate and Review Responses document	Step 3D document
3	ACP-2020-101 Renaming & Removing Outstanding Enroute IFP dependencies on ground-based NAVAIDs	CAA portal
4	ACP-2018-65 Swanwick Airspace Improvement Programme - Airspace Deployment 6	CAA portal
5	ACP-2020-020 Removal of the en-route dependencies from Trent (TNT) DVOR	CAA portal
6	ACP-2021-091 OSEP: Truncation of EGLC CLN 1A/1H, CPT 1A/1H & EKNIV 1A/1H SIDs	CAA portal

Contents

1. Introduction

1.1 This Airspace Change Proposal (ACP) is sponsored by NATS. Today's air traffic services (ATS) route network has evolved over time and does not exploit modern navigation technology. The objective of this project is to update the route network in accordance with the CAA's Airspace Modernisation Strategy (AMS) using Performance Based Navigation (PBN). This will provide benefits in capacity while minimising environmental impacts. The airspace affected is between 7,000-24,500ft.

1.2 The London Airspace Modernisation Programme 2 Deployment 1.1 (LD1.1) ACP is the first stage of modernising the UK's airspace route network above 7,000ft across Wales and southwest England. LD1.1 supports the Future Airspace Strategy Implementation - South (FASI-S) programme of changes and is part of a simpler, safer and more fuel-efficient future for air travel.

1.3 The desired outcome is for "Optimal alignment and connectivity of the ATS route network with each airport's airspace structures, such that the network capacity should not be a significant constraint on airport capacity and environmental impacts are minimised." (LD1.1 Statement of Need).

1.4 In a separate ACP (ACP-2019-12, Ref 1), NATS is also proposing to implement Free Route Airspace (FRA) in the South-West area of the UK Upper Information Region (UIR) (airspace from 24,500ft – 66,000ft). This is Deployment 2 of the UK FRA programme.

1.5 These ACPs are interdependent and cover a common geographic region. Consultation has been conducted concurrently and the airspace changes will be implemented simultaneously.

1.6 This document forms part of the document set required in accordance with the requirements of the CAP1616 airspace change process.

1.7 This document aims to provide adequate evidence to satisfy: Stage 4, Step 4A Update Design, for the LD1.1 deployment.

2. Consultation Responses

2.1 NATS completed a consultation on the proposed airspace changes in the LD1.1 Deployment area. This was focused on the level at which these changes are implemented – systemised routes with Free Route Airspace (FRA) above FL305; or systemised routes with FRA above FL245. The consultation closed on 29 November 2021 and received thirty-five responses overall. A summary of all responses can be found in the Consultation Responses Report (Ref 2).

2.2 As shown in that document, the consultation responses are in support of modernising the airspace. A clear preference was made by stakeholders for Option 6, the implementation of the proposed LD1.1 change, with FRA DFL at FL245. NATS will therefore progress this option as the final design.

2.3 The responses have been reviewed and key themes have been derived. These are described in the 3D Consultation Responses Report. There are 14 responses which have been categorised as having the potential to impact the final design, as presented in Table 1 below.

2.4 These responses have been reviewed and aggregated into 7 topics. This document will demonstrate how NATS has considered the merits and practical possibilities of amending the airspace design to address these and outline any proposed changes as a result.

Table 1: The following 14 responses have been categorised as may impact on the proposed design:

No.	Response & ID	Summary of comments	Themes of comment	Potential impact on the proposal	Outcome and final NATS response
1	Brest ACC (post consultation engagement)	Brest ACC wish NATS to introduce the new COPs 'SALCO Sud' and 'SALCO Nord' as part of this project, and not with a delayed implementation date as proposed in the consultation material.	Airspace structures (COPs)	This would introduce the COPs at implementation, revise existing COPs, and provides the opportunity to reduce complexity in this airspace.	This has resulted in a revision to the proposed design. See Section 4 Topic 1 (4.1) below.
2	Ports of Jersey (online portal) LD1_12	BHD CTA 5_2 base: propose retain current base of FL85 rather than proposed raising to FL105 similar to BHD CTA 5_1 to allow seamless connectivity wholly within controlled airspace from CIA to BHD and beyond for some non-oxygen/pressurised aircraft at FL90(southbound) and FL100(northbound).	Airspace structures (CAS)	This could retain the current base level at FL85. This would impact on the amount of CAS required.	This feedback from multiple stakeholders has resulted in a revision to the proposed design. See Section 4 Topic 2 (4.2) below.
3	Anonymous individual (online portal) LD1_28	Requests the base of BHD CTA 5 remains at FL85 and is not increased to FL105. Remaining in CAS enables light unpressurised aircraft to fly IFR, and to remain entirely in controlled airspace between Jersey and London control.	Airspace structures (CAS)	This could retain the current base level at FL85. This would impact on the amount of CAS required.	
4	British Gliding Association (BGA) (online portal) LD1_24	Agree proposed changes release more airspace than they take - to the benefit of gliding in this area. Although the changes result in multiple changes in the base levels of airspace this is greatly preferable to a more uniform but lower base level.	Airspace structures (CAS)	Potential to remove multiple changes in base levels.	
5	DAATM (uploaded document) LD1_20	Stepped base levels at BHD CTA introduce additional complexity for controllers and aircrew, but the MoD accept NATS is required to minimise CAS where possible.	Airspace structures (CAS)	This could retain the current base level at FL85. This would impact on the amount of CAS required.	
6	DAATM (uploaded document)	Propose a revised option for the D201 segment 'K', across current F and G segments. This would ensure lower-level activity can be used in this area with less of an impact to the route network. Provides the most flexible use of the area for both NATS and the MoD.	Airspace structures (MDA)	This could amend the dimensions of the proposed new danger area segment.	This has resulted in a revision to the proposed design. See Section 4 Topic 3 (4.3) below.

7	DAATM (direct engagement)	Approval from MoD for the northern boundary of the Boscombe ARA to align with the new planned boundary of the airway and TRA (TRA002).	Airspace structures (TRA)	This will ensure the BOS ARA remains aligned with TRA002. Co-ordinate changes would need to be added to AIP.	Minor design change – co-ordinates to be added to AIP.
8	DAATM (uploaded document) LD1_20	Proposed network connectivity changes will impact Brize Norton. Further engagement requested.	Airspace modernisation (FASI-S) network connectivity	Engagement with Brize Norton may impact the design.	No design changes. NATS has undertaken engagement with Brize Norton to assess potential impacts. See Engagement Evidence Annex A.
9	DAATM (uploaded document) LD1_20	Significant engagement has been undertaken between MoD and NATS on buffer policy for Danger Areas and Restricted Areas. The use of internal lateral and vertical buffers within DAs is not supported by the MoD, however, the MoD is open to other solutions and will work with NATS to achieve them.	Buffer Policy	This will inform the NATS safety management process to determine tolerably safe flight planning buffers for each SUA within the region.	No design changes. In the consultation we asked for views on alternative options should the CAA be minded not to agree with our proposal. This can only be determined on completion of Stage 5 of the ACP process, and therefore cannot influence the final design submitted at Stage 4.
10	Irish Aviation Authority (ANSP) (online portal) LD1_7	IAA ANSP is concerned that historical data will not reflect actual performance, particularly for Dublin departures having the capability to reach higher flight levels, currently restricted through level capping. In a true FRA environment, the airspace should allow for optimal user-preferred trajectories.	FRA connectivity	This could affect the methodology used to assign FRA arrival and departure points.	These comments all relate to the specific question asked on the methodology used to assign FRA arrival and departure points. It should be noted that overall stakeholders agreed with the assumptions made on climb and descent gradients (15 responses) or have no opinion (15 responses). 2 stakeholders disagreed. NATS has reviewed the methodology used to determine FRA arrival and departure points as a result of the feedback given.
11	British Airways (online portal) LD1_26	BA disagree with making assumptions based purely on BADA modelling. Climb gradients are difficult to achieve precisely, especially with modern aircraft engine climb de-rates. BADA 4 modelling only considers average climb gradients, not what is actually achieved. Descent gradients are much easier to achieve though. We recommend talking to individual operators about how different aircraft perform in different operating environments.	FRA connectivity	This could affect the methodology used to assign FRA arrival and departure points.	

12	KLM Royal Dutch Airlines (online portal) LD1_27	Although agreed on the basic principle, if based on experience vertical profiles are limiting the optimal profile the airline can achieve, the location should be open for future improvement.	FRA connectivity	This could affect the methodology used to assign FRA arrival and departure points.	The methodology used is a combination of 2019 traffic levels and standing agreed levels, not just BADA. Calculations were made using flight plan data and actuals. The design allows flexibility for future review as aircraft performance changes in the future – it is assumed that any future changes can be made to FRA designation through a Level 0 ACP in accordance with CAP1616 guidance in Table A2. No change to design made as result of this feedback.
13	Cardiff Airport (online portal) LD1_31	The modelling sources are excellent methods for creating arrival and departure points. However, everything referred to is based on historic performance; there may be an opportunity to consider performance of future aircraft capabilities.	FRA connectivity	This could affect the methodology used to assign FRA arrival and departure points.	
14	American Airlines (online portal) LD1_35	Agree with calculations for FRA Arrival and Dep points but more outreach may be needed to research, determine, calculate, design and accommodate new aircraft types expected in the near future.	FRA connectivity	This could affect the methodology used to assign FRA arrival and departure points.	

3. Technical Amendments

3.1 At Step 3D we stated that we will also consider additional refinement and technical amendments which have come to light as part of NATS' policy of continually seeking airspace improvement. Additionally, some technical amendments have been required to satisfy the outcome of the validation simulations and safety assessments.

3.2 Now adjustments have been made to finalise the design post-consultation, we are able to definitively calculate the containment requirements, now routes are clarified as to exact positioning and flight level requirements calculated.

3.3 This leads to some minor amendments in the proposed CAS which have been identified since consultation, they have been included in this document to ensure transparency. This is in line with the feedback from both the MoD and the BGA which makes reference to minimising the amount of CAS required to deliver a safe airspace design, and the potential impact on complexity of stepped base levels. These are described in Section 4 Topic 4 (4.4).

3.4 Some of the detail of the preferred option presented at Stage 3 has been refined, for example, working waypoint names have been changed to reserved or confirmed waypoint names. There are a number of minor technical amendments which have developed since consultation.

3.5 These do not result in significant design changes and are largely nomenclature changes. These are described in Section 4 Topic 5 (4.5).

4. Design Change Log

4.1 Topic 1: Impact of new COPs on UK/DSNA border and associated network connectivity.

Summary of Feedback

In the consultation material we proposed the introduction of two new high-level COPs (one for north bound traffic and one for south bound traffic). Existing COPs SALCO and MANIG would remain, as Brest ACC changes which were required to implement the new COPs were due later than LD1.1 implementation.

Consultation with Brest ACC now facilitates the implementation of these COPs with the LD1.1/FRA D2 implementation in March 2023 (Ref 2).

Potential Impact on the Proposal

Allocating/implementing new unidirectional COPs provides the opportunity to reduce complexity for both London Airspace Control (LAC) and Brest, by enabling an improved traffic flow around this busy southern interface.

This involves a revision of the arrival/departure routes from Severn Group airports[1] to reduce complexity. No changes are proposed below 7,000ft. The impact to CAS requirement is described below.

Revised Design

Implement new COP NOZHU (west of SALCO on FIR boundary) for northbound traffic only and designate SALCO for southbound only traffic.

Reorientate arrival/departure routes from Severn Group airports, as shown in **Error! Reference source not found.** below. This requires amendments for the Bristol and Cardiff arrival procedures (STARs) from the south.

- Departure flow is southbound from EXMOR via N864, instead of P16.
- Arrival flow maximises FRA to SHIRI/TOJAQ, tracking the same profile as P16 (to COXPE).
- Introduce a new STAR for Bristol and Cardiff RNAV1 traffic, commencing at TOJAQ (TOJAQ 1B & TOJAQ 1C). Tracks P16 to COXPE, where it joins IZLAW.
- Retain current DAWLY 1B and 1C STARs for RNAV5 only traffic (Figure 2).

Reduce the amount of Controlled Airspace (CAS) required, due to the re-orientation of traffic.

- The reorientation of the Severn Group arrivals onto the westernmost route (P16) means that when the aircraft turn right at COXPE, to route to IZLAW, this brings the aircraft further into the airspace structure. Therefore, the continuation of CAS for route containment at the western edge is no longer required. Figure 3 shows the new design and amended levels, with new CTA no longer required to the west of CTA1, and higher base level for the new CTA west of CTA 3.

To facilitate the descent of Severn Group inbound traffic routing up P16, the boundary of TRA001 needs to be amended, resulting in a very small reduction in the size of the TRA, which is an amendment to the design consulted upon (see Figure 4).

No amendments to departure procedures, EXMOR SIDs will remain, and network connectivity is via EXMOR.

No change to weekend departure procedures. From EXMOR traffic routes via SIDHO, see Figure 1.

1 Cardiff Airport, Bristol Airport, Exeter Airport

Figure 1 Arrival and Departure procedures for Severn Group: Proposed and Revised Designs

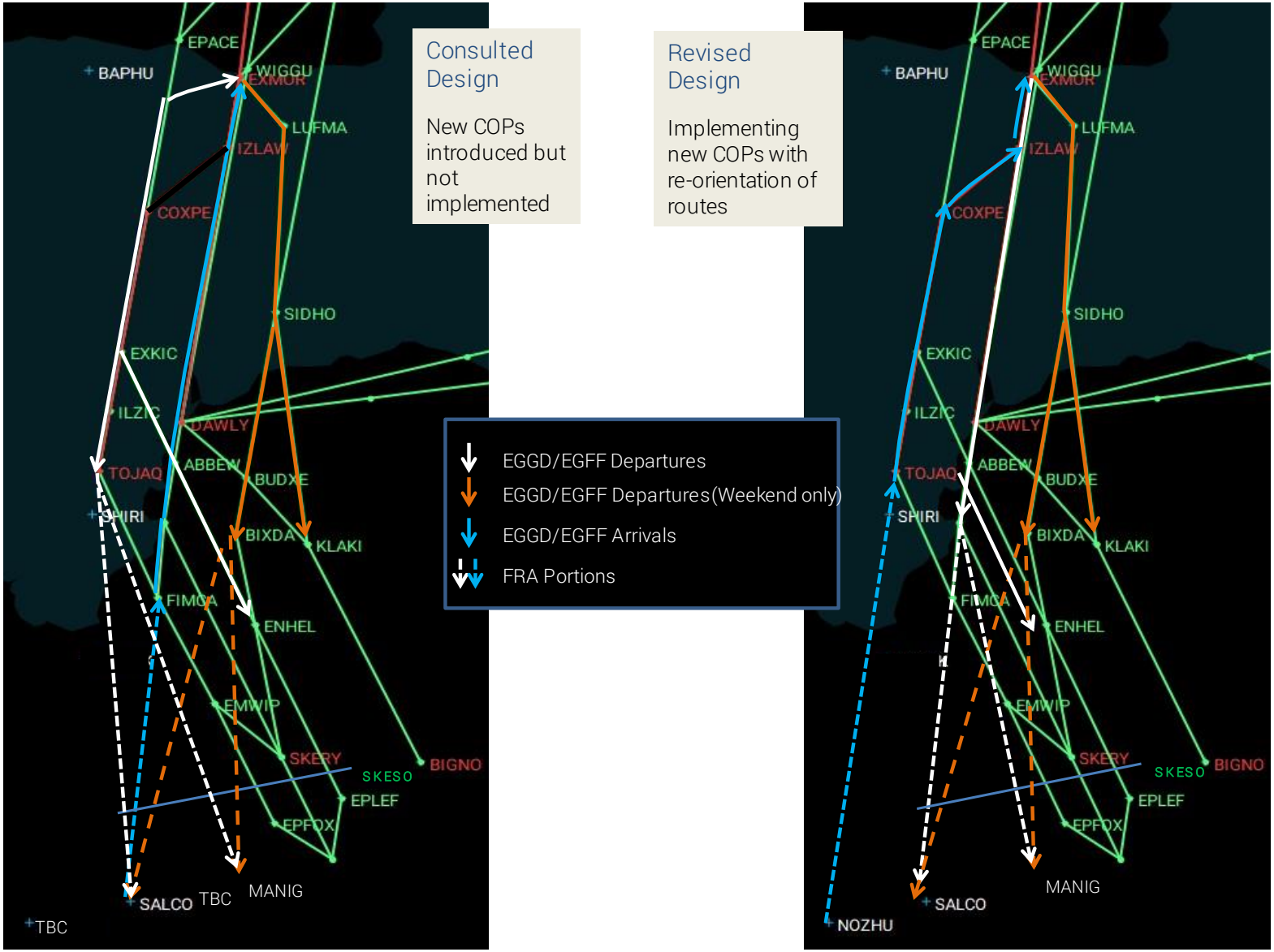


Figure 2 Arrival procedures from the south for Bristol and Cardiff, proposed and revised STARs

Consulted Design

Traffic from the south arrives via current DAWLY1B & DAWLY 1C RNAV5 STARs

Via Route 'X'– BHD - DAWLY – TINAN – TIVER – IZLAW – EXMOR – BRI/CDF

Revised Design

Maximise FRA to SHIRI/TOJAQ. New RNAV1 STARs (TOJAQ 1C/TOJAQ 1B) track P16 to COXPE.

TOJAQ – COXPE – IZLAW – EXMOR – CDF/BRI

DAWLY 1B & 1C STARS remain ascurrent (RNAV5 traffic only) routing SKESO – BHD – DAWLY).

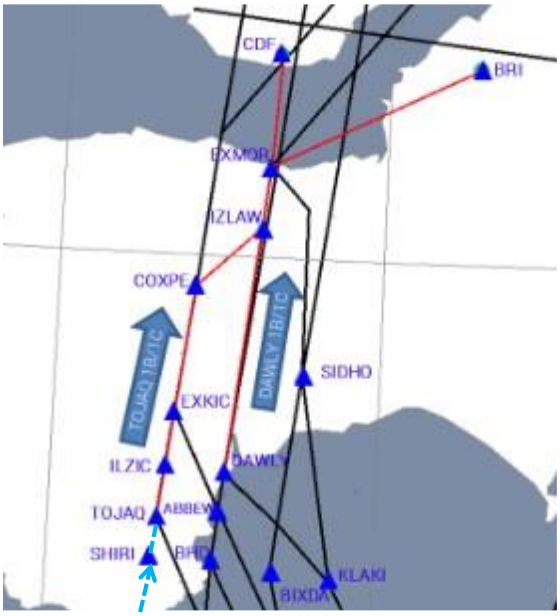
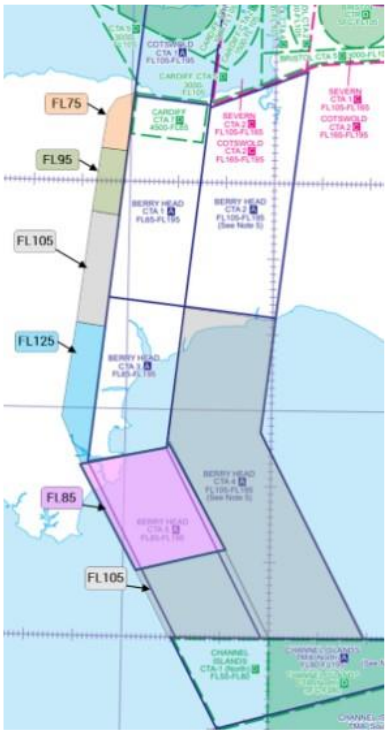


Figure 3 Re-orientating the traffic flows reduces the amount of controlled airspace required



Consulted Design

- New BHD CTA base FL75.
- Revised BHD CTA 5 base FL85, increase in lateral size.
- New BHD CTA base FL95.
- Revised BHD CTA 4 and 5. CTA 5 southern portion base raise from FL85 to FL105. Increase in lateral size. revised hours – additionally active Mon-Thu 1600-0745 winter (1hr earlier in summer).
- New BHD CTA base FL125.

Revised Design

- Revised BHD CTA 5 base FL85*, increase in lateral size.
- New BHD CTA base FL145.
- Revised BHD CTA4 (reduction in lateral size) and new CTA west of BHD CTA1.

* The base level of the southern section has been reviewed separately based on consultation feedback – see Topic 2 below.

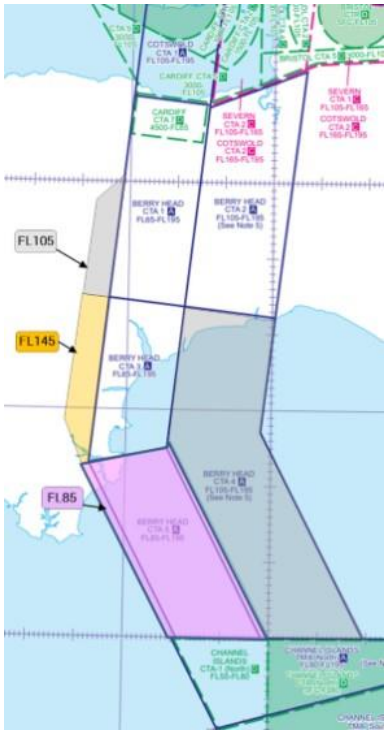
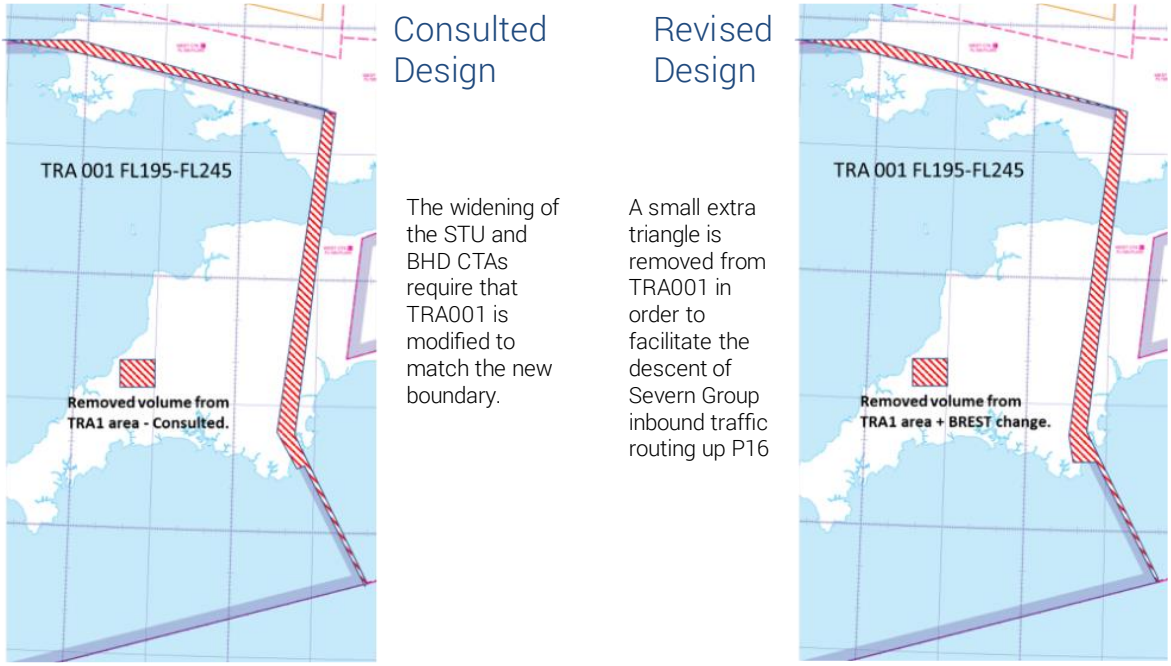


Figure 4 Revision to TRA001 proposed design



Stakeholder Engagement

NATS has engaged with affected stakeholders to inform them of the proposed design change, as described below. Evidence of this engagement is supplied in Annex A Engagement Evidence.

Bristol, Cardiff and Exeter Airports – a post-consultation engagement meeting was held on 07 January 2022 via Microsoft TEAMS, to brief these key stakeholders on the proposed design changes and potential impacts. All stakeholders were in support of the proposed changes. See Annex A.

DAATM – an email was sent to DAATM describing the proposed changes and a follow-up engagement meeting held on 21/01/2022. The MoD are in support of all the proposed changes and confirm this via email, see Annex A.

An email was sent to the British Gliding Association (BGA) and the General Aviation Alliance (GAA) to inform them of the amendments and the impact on the controlled airspace and offering a meeting should they wish to discuss. The BGA responded via email confirming they were supportive of these changes. See Annex A. No response was received from the GAA.

Outcome and final NATS response

The re-orientation of arrival and departure flows would optimize the flow of traffic between Severn Group airfields and the network south of EXMOR and enable us to:

- Reduce complexity (minimise crossovers of Severn group traffic)
- Provide opportunities for tactical environmental gains
- Further reduce the lateral and horizontal CAS required for LD1.1
- Align the arrival and departure flows with that of the orientation of associated ATS route (P16 northbound and N864 southbound), simplifying the network

Engagement with stakeholders has been positive, so NATS proposes to progress this design change at Step 4B.

4.2 Topic 2: Proposed change to base levels of controlled airspace in Berry Head CTA.

Summary of Feedback

In the consultation material we proposed to raise the southern portion of CTA 5 from FL85 to FL105. Consultation feedback requests that the base of BHD CTA 5 remains at FL85 and is not increased to FL105, to retain connectivity for unpressurised aircraft active in this area.

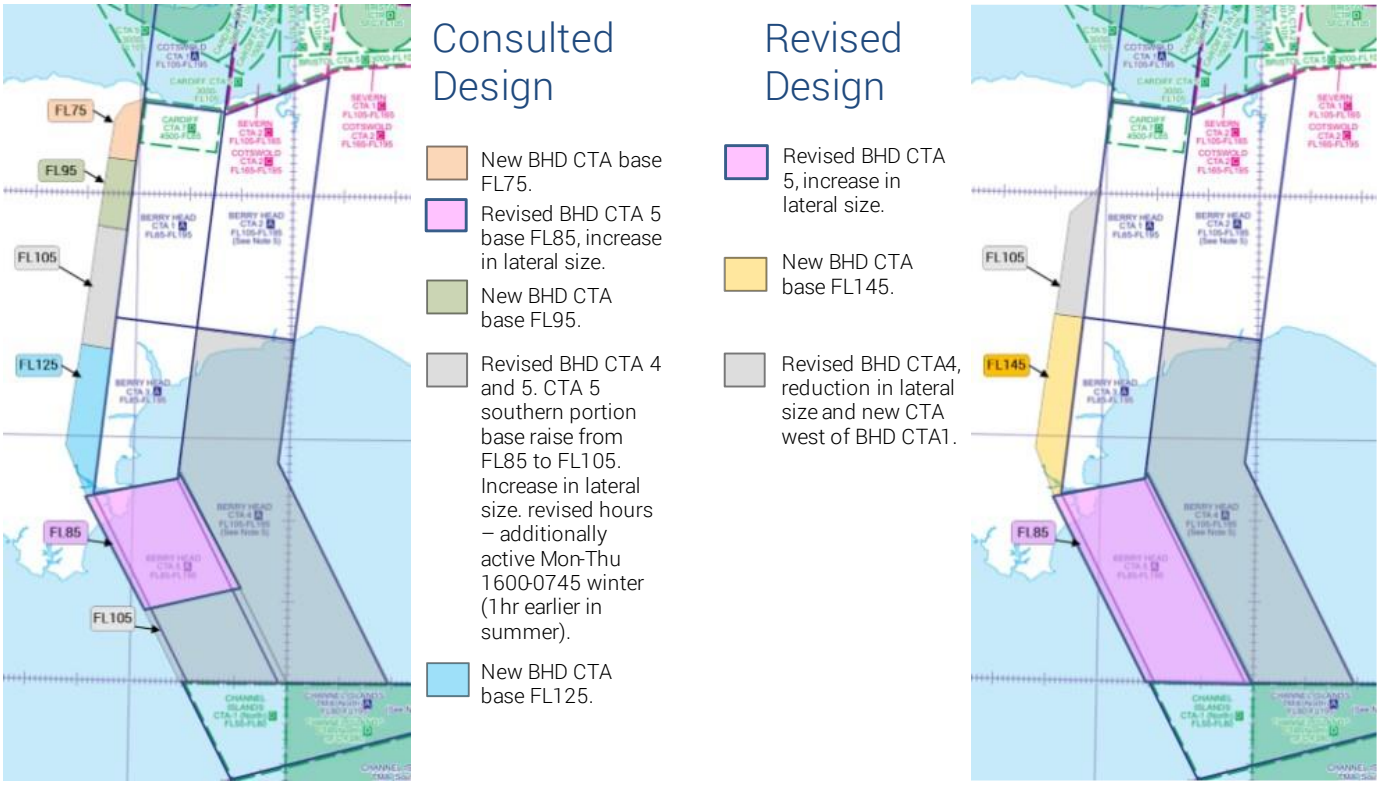
Potential Impact on the Proposal

Amending the base of BHD CTA 5 so it remains at FL85 would create a small reduction in the total amount of CAS being released by the proposal. There are no other impacts on the proposal.

Revised Design

Base of BHD CTA 5 remains at FL85, as shown in Figure 5 below, and as per current day.

Figure 5 Revised design for BHD CTA showing amendments to CTA 5 base levels



Outcome and final NATS response

We have considered the feedback of our stakeholders and have amended the proposed design to retain the base level of CTA 5 at FL85, in order to facilitate better connectivity for unpressurised aircraft operating in this area.

4.3 Topic 3: Proposed revised option for the EG D201 Danger Area Complex

Summary of Feedback

The MoD considers that both Options I-4 and I-6 proposed in the consultation introduce a change to the lateral and/or vertical dimensions of D201 that will have operational impacts on the MoD. Analysis of safety traces, current trials and future capabilities suggest that Option I-6 has the biggest impact on operations, with Option I-4 having a lesser impact. An alternative option for segment 'K' was proposed by the MoD.

Calculated by QinetiQ, the dimensions of the external boundaries of D201 remain in place for future capabilities, as well as increasing usage of that area by lower altitude activity. It provides a segment to allow GAT to file and fly over during the times that D201F and G require to be activated above FL145. Creation of 'Kilo' would ensure that the current Trial Control System and existing safety traces can still be utilised in D201 F and G with no impact to operational output whilst an altitude cap on the new segment would ensure lower-level activity could be used with less impact to the route network.

Potential Impact on the Proposal

Optimises the traffic flows available for en-route traffic as proposed, with minimal impact on the MoD.

The proposed design had 2 options for the redefinition of D201 to incorporate new segment 'K' with a maximum upper level of FL145. Option 4 was a smaller segment K, which minimised impact on MoD/QinetiQ. Option 6 was a slightly larger segment, which offered marginally greater environmental benefits as it offered a 0.5nm shorter routing.

It is possible to incorporate the MoD feedback and revise the design of segment K which would be preferable to the MoD. Given the negligible difference in track mileage between the 2 options (0.5nm) and the infrequent predicted use this amendment does not have a significant effect on the overall assessed environmental impacts of the proposal.

Revised Design

Figure 6 presents the proposed and revised designs for EG D201K, with the indicative area shown in blue. This would have a maximum upper level of FL145. This is necessary to ensure that when the aircraft FMS anticipates the turn for the flyby waypoint (EVTOL), the aircraft trajectory remains outside of the SUA.

The available routings to/from Dublin are as proposed in the consultation, with minor amendments made as required, for example where working or reserved waypoint names have been confirmed. Diagrams to illustrate the available routings dependent on Danger Area activations are shown in Appendix A (Diagrams A – E).

When the Danger Area is inactive, Dublin arrivals can flight plan LIPGO or to VATRY to join the existing STARs (Diagram A).

When D201H&J are active, but D201A/F/G are inactive, Dublin arrivals route NICXI-M17-VATRY (<FL245) or if arriving from FRA airspace (>FL245) via PEMOB-VATRY and join to the existing VATRY STAR (Diagram B).

When D201A is active, and D201F&G are inactive, Dublin arrivals route NICXI-Q63-LANPI-Q63-VATRY (<FL245) or PEMOB-LANPI-TIGBA-Q63-VATRY (FRA; >FL245) to join the existing STARs (Diagram C).

When D201G is active above FL145; and D201F is inactive or only active up to FL145, Dublin arrivals route PEMOB - EVTOL - NIRIF and join to the existing VATRY STAR (connectivity to be delivered by the IAA) (Diagram D).

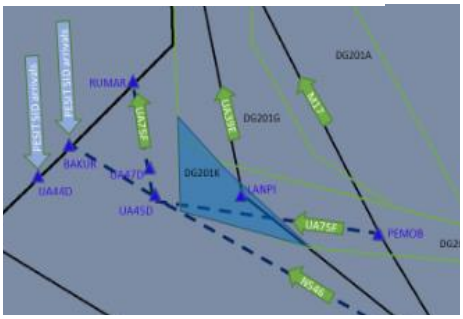
When D201F is active above FL145, Dublin arrivals route NICXI-N546-EVTOL-N12-NIRIF (>FL245) or PEMOB-EVTOL-NIRIF (FRA; <FL245) and join to the existing VATRY STAR (connectivity to be delivered by the IAA) (Diagram E)

When D201F/G are active above FL145, Dublin departures would route via the PESIT SID to a new COP south of BAKUR (RUKOH), to provide a degree of systemisation between Dublin arrivals and departures[2]. (Diagrams D&E)

FRA Arrival Points for Dublin are LEMGU, LANON, TIGBA.

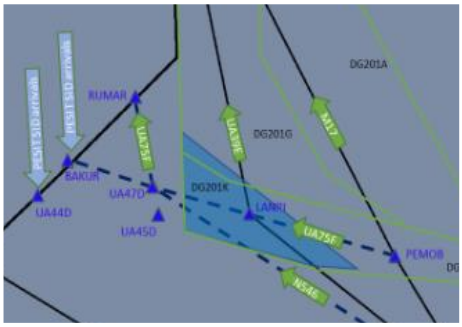
Figure 6 Redesign of DG201K

Consulted Designs



Op 4 – smaller segment

– – proposed Dublin routings with DG201F/G active

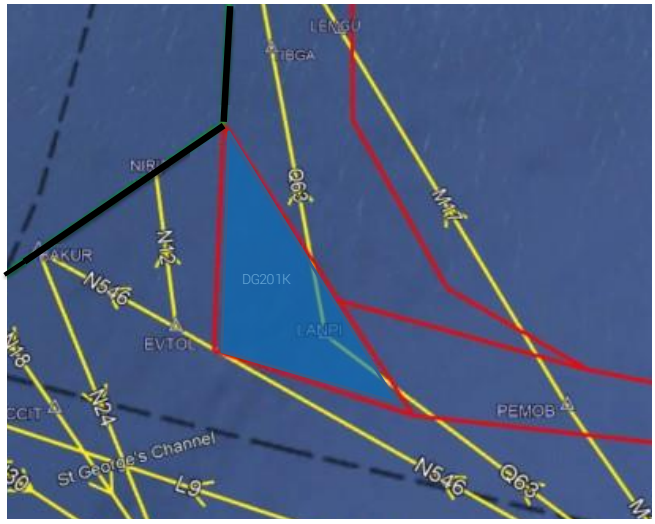


Op 6 – larger segment

– – proposed Dublin routings with DG201F/G active

Revised Design

MoD proposed shape for DG201K



During post-consultation engagement with the MoD and QinetiQ, they agreed to cap non-QinetiQ managed activity within D201F and G to FL145 to minimise the impact a 5nm buffer for these areas would have on the network. This will be reflected in the remarks column of AIP ENR 5.1. See Annex A.

Engagement

NATS, the MoD, and QinetiQ have worked closely to develop this solution.

A post-consultation meeting was held on 13 January 2022 to review the proposal made by the MoD in their consultation response and confirmed the above design as optimal for all stakeholders. See Annex A.

Outcome and final NATS response

The new D201K as presented above will be introduced, permanently capped at FL145 so GAT can always safely flight plan over it. This would ensure lower-level activity can be used in D201K with less impact on the MoD.

This option provides the most flexible use of the area for both NATS and the MoD whilst retaining operational capability now and in the future and will be utilised by NATS in the final design for the LD1.1 ACP.

2 This flight planning option would only be available for Dublin departures and only when D201 F/G are active.

4.4 Topic 4: Revision to CAS requirements post-consultation

Summary of Feedback

In the consultation material we described the requirement to make changes to the volume of controlled airspace (CAS), and outlined that where new CAS is required, this is to facilitate the safe operation of the proposed routes. Usually this involves a lateral expansion of the airspace to accommodate more parallel systemised routes. The improvements in navigational accuracy and aircraft performance allows in other areas for airspace bases to be raised, releasing airspace to be uncontrolled.

Feedback from the MoD and the BGA acknowledged this.

Potential Impact on the Proposal

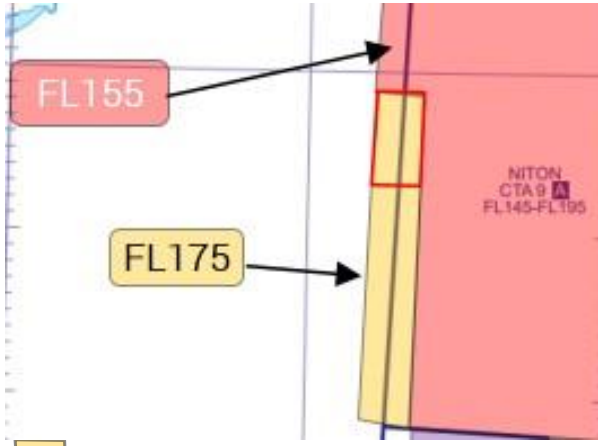
The CAS requirements have been fully reviewed as the design is finalised and some very minor amendments with a negligible impact to those described in the consultation document are required, this includes both the additional release of CAS and the expansion of some CAS.

Revised Design

Table 2 CAS revisions post consultation

	CAS being changed	Consulted change	Amended change and impact
1	NITON CTA 9/ New CTA	Additional FL175 fillets added centrally on the eastern and western sides.	Small lateral extension to FL175 fillet on western side, as shown in Fig 1. Reduces the amount of CAS at FL155.
2	Cotswold CTA 17	No change identified.	Lateral realignment in accordance with increased lateral areas of revised NITON and Cotswold CTAs, as shown in Fig 2.
3	Cotswold CTA 7	Lateral increase north, base lowered to FL95.	Increase in size to northeast by approx. 4nm^2 required for containment of route N14. Leads to small reduction in size of Daventry CTA 15 volume.
	Daventry CTA 15	No change identified.	Small lateral reduction linked to change above, as shown in Fig 3.
4	Cotswold CTA 9	Lateral reduction in width on west side. Base raised from FL95 to FL105.	Small lateral extension (>1nm) to the east, required for containment of route P69. Reduces the size of CTA 11.
	Cotswold CTA 11	Lateral increase in width to the east.	Small lateral reduction to west linked to change above, as shown in Fig 4.

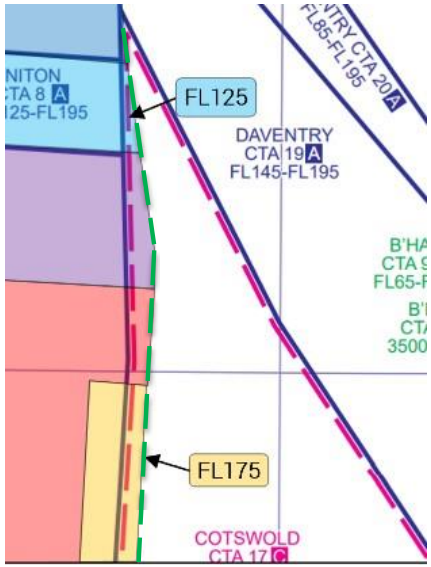
Fig 1.
NITON CTA 9/New CTA



Consulted New CTA boundary

Revised New CTA boundary – additional segment

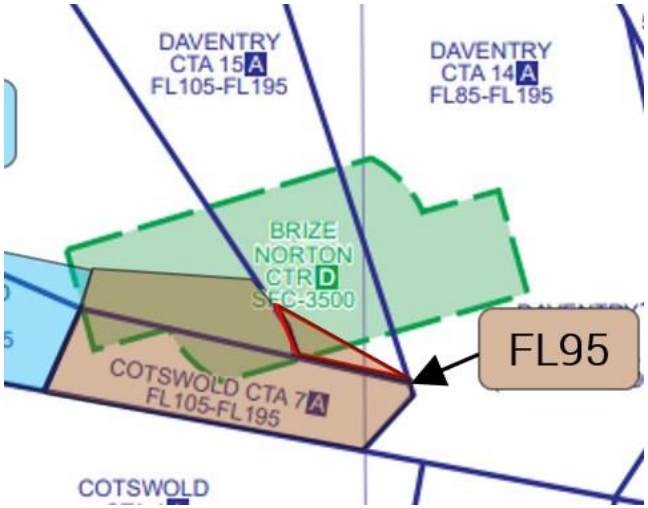
Fig 2.
Cotswold CTA 17



Consulted Cotswold CTA 17 boundary

Revised Cotswold CTA 17 boundary

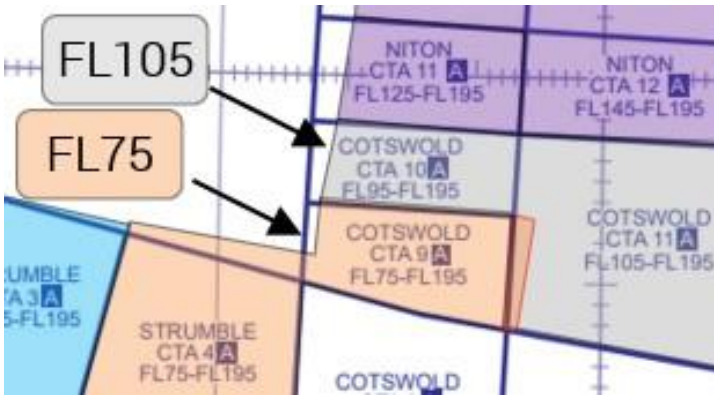
Fig 3.
Cotswold CTA 7



Consulted CTA 7 boundary

Revised CTA 7 boundary – additional segment

Fig 4.
Cotswold CTA 9/11



Consulted Cotswold CTA 9 boundary

Revised Cotswold CTA 9 boundary – additional segment

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4.5 Topic 5: Revisions to design due technical amendments post-consultation

Summary of Feedback

The nature of airspace design process, with engagement, simulations, testing and consultation means that the design evolves significantly as the CAP1616 process is followed. Given the large complex changes proposed in this ACP, there are a number of minor technical amendments which have developed since consultation.

These do not result in significant design changes and are largely nomenclature changes. Prior to consultation, no names were reserved with iCARD for waypoints and route names. As we have progressed through the design process, these are now secured. For transparency and clarity, these are listed in Table 3 below.

Additionally, some other minor amendments have been made to the design for technical reasons, and these are described in this section along with their potential impact.

Technical amendments to Bristol procedures

From the east: In the consultation document (page 39) we described the BRI 1C STAR being withdrawn and replaced with a new STAR. This design has been revised:

- In May 2022, conventional BRI 1C STAR was replaced with RNAV5 STAR CPT 1B under the DVOR Rationalisation programme (ACP-2020-101, Ref 3). This RNAV5 STAR will not be withdrawn but will be amended under LD1.1 to connect with the new network.
- We proposed new STAR UA14Q. The inbound routing would be CPT – Route C – UA16D (new waypoint on Route C) where the UA14Q STAR would start.
- In order to reduce RT complexity, we propose to extend the STARs back to abeam CPT to new point ICTAM. Due to controllers being required to issue full routeings to traffic on first contact this would save an additional three points being stated over the RT.
- Therefore, the proposed STAR for traffic from the east is a realignment of the current STAR CPT 1B STAR to ICTAM 1B.

Engagement with Bristol Airport supports this proposal (see Annex A).

From the west: We stated that FIFAH 1B STAR would connect via a DCT from PETAL (now renamed NICXI). This has been realigned to waypoint KAWGE. This is to improve systemisation of RNAV5 traffic and simplify the routes for adaptation purposes and reduces track mileage. New STAR XERUS 1B has been renamed BAJJA 1B and has additional waypoints FANFE and PEGZA, these have been added as level change point/speed limiting point (SLP). These are on the same tracks as the FIFAH 1B STAR

From the north: We stated that the UMULO 1B STAR would be realigned to start at ZIPPO (now renamed RUMKE). This STAR will now start at ELREW, with a DCT connection from RUMKE. This is for adaptation reasons: the STARS need to be differentiated by different ATS routes, so the initial segment of the STAR has been replaced by a DCT RUMKE-ELREW. The STAR will be renamed RUMKE 1B. No changes to tracks.

The Bristol SIDs have had route and waypoint names updated, and amendments as described in section 4.1.

In consultation, we said the proposed truncation points for the BADIM1X/WOTAN1Z SIDs are coincident with the extant FL80 altitude restriction points on the BADIM1X/WOTAN1Z SIDs. This was incorrect; the proposed truncation point for BADIM is ~1nm and for WOTAN <0.5nm from the extant FL80 altitude restriction point. This has a negligible impact.

Table 3 Technical amendments to Bristol procedures

Current Procedure	Consulted route connectivity/STAR	Revised route connectivity/STAR	Impact of Change
AMRAL 1B STAR (RNAV5)	Route Y (UA54E): COMET – TAPET – INGUR - BRI	Realigned N862 - WEVBE UBCAM INGUR BRI	Route and waypoint names amended, no change to design.
UMOLO 1B STAR (RNAV5)	Route Y (UA54E) ZIPPO – CORSA – BCN - BRI	Realigned N862 -RUMKE DCT ELREW DIZIM BCN PEGZA - BRI	Route and waypoint names amended, start point moved to ELREW with DCT connectivity. Renamed ELREW 1B.
BRI 1C (Conv)/CPT 1B (RNAV5)	BRI 1C: L9: CPT POMAX BRI to be withdrawn Replaced with new STAR UA14Q: Route C (UA49E): UA16D POMAX BRI	Realigned Q63: ICTAM SAWPE ASHUM POMAX BRI.	CPT1B replaced BRI 1C under separate ACP (ACP-2020-101, Ref 3) (May 2022). No new STAR required. CPT 1B revised with realigned start point to connect to realigned route Q63. Rename ICTAM 1B.
	New STAR XERUS 1B: Route C (UA49E): XERUS – BCN - BRI	New STAR BAJJA 1B: Realigned Q63: BAJJA FANFE BCN PEGZA BRI	FANFE and PEGZA added to STAR routing (level change point/SLP). Route and waypoint names amended.
FIFAH 1B (RNAV5)	PETAL DCT FIFAH - BCN - BRI	KAWGE DCT FIFAH - BCN - BRI	No change to STAR, connecting DCT amended to KAWGE from PETAL.
DAWLY 1B (RNAV5)	Route X (UA53E) DAWLY-PORUT-IZLAW-EXMOR – BRI	N864: DAWLY EXMOR BRI	Intermediate points PORUT and IZLAW removed. No change from current day.
BCN 1X SID (Conv)	BRI (west) – BCN n/bound connect with Route X via CORSA; w/bound connect Route B via BAGEL	BRI (west), BCN, w/bound connect with realigned L9 at FELCA via new route P4; n/bound connect with realigned N864 at DIZIM via new route P69	Route and waypoint names amended, no change to design.
BCN 1Z SID (Conv)	BRI (east) – BCN n/bound connect with Route X via CORSA; w/bound connect Route B via BAGEL	BRI (east), BCN, w/bound connect with realigned L9 at FELCA via new route P4; n/bound connect with realigned N864 at DIZIM via new route P69	Route and waypoint names amended, no change to design.
BADIM 1X (Conv)	BRI, west, AZLON, connect with Route D	BRI (west), HAWFA, connect with realigned L607 e/bound	Route and waypoint names amended, no change to design.
WOTAN 1Z (Conv)	BRI, east, INGOT, connect with Route D	BRI (east), YORQI, connect with realigned L607 e/bound	Route and waypoint names amended, no change to design.

EXMOR 1X (Conv)	BRI, west, EXMOR, connect with Route W s/bound via SAVLA	BRI (west) SOMOT, EXMOR, connect with N92 or N40(weekend only) s/bound	Route and waypoint names amended; design changed as described in Topic 1 (4.1) above.
EXMOR 1Z (Conv)	BRI, east, EXMOR, connect with Route W s/bound via SAVLA	BRI (east) SOMOT, EXMOR, connect with N92 or N40(weekend only) s/bound	Route and waypoint names amended; design changed as described in Topic 1 (4.1) above.

Technical amendments to Cardiff procedures

From the east: In the consultation document (page 39) we described the CDF 1C STAR being withdrawn and replaced with a new STAR. This design has been revised:

- In May 2022, conventional CDF 1C STAR was replaced with RNAV5 STAR CPT 1C under the DVOR Rationalisation programme (ACP-2020-101, Ref 3). This RNAV5 STAR will not be withdrawn but will be amended under LD1.1 to connect with the new network.
- We proposed new STAR UA21Q. The inbound routing would be CPT – Route C – UA31D (new waypoint on Route C) where the UA21Q STAR would start.
- In order to reduce RT complexity, we propose to extend the STARs back to abeam CPT to new point ICTAM. Due to controllers being required to issue full routeings to traffic on first contact this would save an additional three points being stated over the RT.
- Therefore, the proposed STAR for traffic from the east is a realignment of the current STAR CPT 1C STAR to ICTAM 1C.

Engagement with Cardiff Airport supports this proposal (see Annex A).

From the west: We stated that FIFAH 1C STAR would connect via DCT to PETAL (now renamed NICXI). This has been realigned to waypoint KAWGE. This is to improve systemisation of RNAV5 traffic and simplify the routes for adaptation purposes and reduces track mileage. New RNAV1 STAR XERUS 1C has been renamed BAJJA 1C and has additional waypoint FANFE, this has been added as a level change point. These are on the same tracks as the FIFAH 1B STAR

From the north: We stated that the UMULO 1C STAR would be realigned to start at ZIPPO (now renamed RUMKE). This STAR will now start at ELREW, with a DCT connection from RUMKE. This is for adaptation reasons: the STARS need to be differentiated by different ATS routes, so the initial segment of the STAR has been replaced by a DCT RUMKE-ELREW. The STAR will be renamed ELREW 1C. No changes to tracks.

Table 4 Technical amendments to Cardiff procedures

Current Procedure	Consulted route connectivity/STAR	Revised route connectivity/STAR	Summary of Change / Impact
AMRAL 1C STAR (RNAV5)	Route Y (UA54E): COMET TAPET WAXEN KUKIS CDF	Realigned N862: WEVBE UBCAM ACBAZ KUKIS CDP	Route and waypoint names amended, no change to design.
UMOLO 1C STAR (RNAV5)	Route Y (UA54E): ZIPPO CORSA BCN CDF	Realigned N862 -RUMKE DCT ELREW DIZIM BCN CDF	Route and waypoint names amended, start point moved to ELREW with DCT connectivity. Renamed ELREW 1C.
CDF 1C (Conv)/CPT 1C (RNAV5)	CDF 1C L9: CPT ABDAL BRI CDF to be withdrawn Replaced with new STAR UA21Q: Route C (UA49E): UA31D UA19D BRI CDF	Realigned Q63: ICTAM SAWPE CONKO OCTIZ CDF. Rename ICTAM 1C	CPT1C replaced CDF 1C under separate ACP (ACP-2021-101, Ref 3) (May 2022). No new STAR required. CPT 1C revised with realigned start point to connect to route Q63.
	New STAR XERUS 1C: Route C (UA49E): XERUS BCN CDF	New STAR BAJJA 1C: Realigned Q63: BAJJA FANFE BCN CDF	FANFE added to STAR routing (level change point). Route and waypoint names amended.
FIFAH 1C (RNAV5)	PETAL DCT FIFAH BCN CDF	KAWGE DCT FIFAH BCN CDF	No change to STAR, connecting DCT amended to KAWGE.
DAWLY 1C (RNAV5)	Route X (UA53E) DAWLY PORUT IZLAW EXMOR CDF	N864: DAWLY IZLAW EXMOR CDF	Intermediate point PORUT removed. No change from current day.
BCN 1A SID (Conv)	CDF (west) BCN n/bound connect with Route X via CORSA; w/bound connect Route B via BAGEL	CDF (west), BCN, w/bound connect with realigned L9 at FELCA via new route P4; n/bound connect with realigned N864 at DIZIM via new route P69	Route and waypoint names amended, no change to design.
BCN 1B SID (Conv)	CDF (east) BCN n/bound connect with Route X via CORSA; w/bound connect Route B via BAGEL	CDF (east), BCN, w/bound connect with realigned L9 at FELCA via new route P4; n/bound connect with realigned N864 at DIZIM via new route P69	Route and waypoint names amended, no change to design.
ALVIN 1B (RNAV1)	CDF (west) SANTO, connect with Route D via AZLON	CDF (west) - LEKCI - P4 to connect with realigned L607 e/bound at HAWFA	Route and waypoint names amended, no change to design.
EXMOR 1A (Conv)	CDF (west) EXMOR, connect with Route W s/bound via SAVLA	CDF (west) EXMOR, connect with N92 or N40(weekend only) s/bound	Route and waypoint names amended; design changed as described in Topic 1 (4.1) above.
EXMOR 1B (Conv)	CDF (east) EXMOR, connect with Route W s/bound via SAVLA	CDF (east) EXMOR, connect with N92 or N40(weekend only) s/bound	Route and waypoint names amended; design changed as described in Topic 1 (4.1) above.

Technical Amendments to the Eastern Interface: Arrivals

EGGW Arrivals: In the consultation, the Luton STAR BEDEK 1L was described. This STAR has since been amended under the implemented AD6 changes (Ref 4) and replaced by BEDEK 1N. BEDEK 1N will be revised under this proposal.

EGLF Arrivals: Route connectivity to the CPT 1V STAR from the west has been amended. In consultation we stated that traffic would route from Route D (now L607) via SKATO (now NUCHU) to start at GOBNU. From there a new STAR GOBNU 1V would replicate the current CPT 1V STAR.

As a result of validation simulation output, the arrival connectivity has been revised from NUCHU. Traffic now routes on new ATS route P73 to GOBNU via new waypoint REFQI. This revision provides a better profile for arrivals descending into EGLF, and aids deconfliction with departing traffic from LTMA airports.

Given that GOBNU is on the CPT 1V STAR, a new STAR is not required. Traffic will join the CPT 1V STAR at GOBNU.

This change and all nomenclature changes (updated route and waypoint names) are shown in Table 5 below.

Table 5 Eastern interface, technical amendments to STARs / connectivity

Airport	Current Procedure	Consulted route connectivity/STAR	Revised route connectivity/STAR	Summary of Change / Impact
EGLL[3]	BEDEK 1H	Route E (UA61E) via TAGMA to: TONIC – NIGIT - LLW03 – OCK (TONIC 1H)	P2: SIRIC NIGIT LLW03 OCK (SIRIC 1H)	Route and waypoint names amended, no change to design.
EGLL	BEDEK 1Z	ATC: TONIC -CPT – BNN (TONIC 1Z)	ATC: SIRIC CPT BNN (SIRIC 1Z)	Route and waypoint names amended, no change to design.
EGKK	BEDEK 1G	Route E (UA61E) via TAGMA to: TONIC – NIGIT - MID – TUFOZ – HOLLY – WILLO (TONIC 1G)	P2: SIRIC NIGIT MID TUFOZ HOLLY WILLO (SIRIC 1G)	Route and waypoint names amended, no change to design.
EGLC/ EGKB	BEDEK 1C	Route E (UA61E) via TAGMA to: TONIC – BIG – UMTUM – GODLU (TONIC 1C)	P2: SIRIC BIG UMTUM GODLU (SIRIC 1C)	Route and waypoint names amended, no change to design.
EGGW	BEDEK 1N[4]	Route E (UA61E) to: TONIC – NIGIT - VATON - BPK - BKY - BUSTA - LOREL	P2: SIRIC NIGIT VATON OZZOT BPK ILLOC OXDUF COCCU JUMZI ZAGZO	The consulted STAR was amended under the AD6 ACP implemented in February 2022 (ACP-2018-65, Ref 4). This project will replicate the implemented STAR, with a realigned start point to SIRIC. We are removing MOREZ.

3 STARs for Heathrow (EGLL) are also used for Northolt (EGWU) and Denham (EGLD).
4 This has been revised subsequent to the AD6 ACP (ACP-2018-65, Ref 4) being approved and implemented.

EGSS[Error! Bookmark not defined.]	BEDEK 1L	Route E (UA61E) via TAGMA to: TONIC NIGIT VATON BPK BKY BUSTA LOREL (TONIC 1L)	P2: SIRIC NIGIT VATON BPK BKY BUSTA LOREL (SIRIC 1L)	Route and waypoint names amended, no change to design.
EGHI	CPT 1S	Route D (UA52E) via SKATO to: NUBRI – PEPIS – SAM (BUGUP 1S)	L18: NUBRI – PEPIS – SAM (BUGUP 1S)	Route and waypoint names amended, no change to design.
EGHH	CPT 1S	Route D (UA52E) via SKATO to: NUBRI – PEPIS – SAM (BUGUP 1S)	L18: NUBRI – PEPIS – SAM (BUGUP 1S)	Route and waypoint names amended, no change to design.
EGLF[5]	CPT 1V	From north: via N859 no change From the east L179 - UGBET - UA67F UA18D UA84F CPT – GOBNU	From north: via N859 no change From east L179: ICTAM Q63 CPT GOBNU INDOX DIXIB LFS02 VEXUB	Route and waypoint names amended.
EGLF	CPT 1V	New STAR GOBNU 1V From west: Route D (UA52E) via SKATO – UA55F- GOBNU – INDOX – DIXIB – LFS02 – VEXUB (as per CPT 1V).	From the west: L607: NUCHU P73 REFQI GOBNU INDOX DIXIB LFS02 VEXUB	Route and waypoint names amended. No new STAR GOBNU 1V. Route connectivity amended, P73 added to connect to CPT 1V STAR at GOBNU. Approx 1nm increase in track mileage; improved descent profile
EGLF	CPT 1P (RNAV5)	From west: Route C (UA49E) – DEVEL CPT From north: via N859 no change From east L179 - UGBET - UA67F UA18D UA84F CPT – GOBNU	From west: Q63 SAWPE CPT From north: N869 no change From east: L179 ICTAM Q63 CPT STAR: CPT HANKY PEPIS	Route and waypoint names amended.
EGVN	N/A (vectored)	Vectored from UA31D/ UA16D on Route C to EGVN	Vectored from CONKO /ASHUM on Q63 to EGVN	Route and waypoint names amended.

5 STARs for Farnborough (EGLF) are also used for Blackbushe (EGLK), Dunsfold (EGTD), Fairoaks (EGTF), Lasham (EGHL), Odiham (EGVO).

Technical Amendments to the Eastern Interface: Departures

EGGW Departures: In consultation, we proposed the EGGW CPT SIDs be truncated to RODNI, and route RODNI-LAGUL –PYREX (now DIDZA) -MILLI (now OKSAW) to Route B (now L9). LAGUL was removed from the design and replaced with ICTAM. This has a negligible impact on track mileage.

EGLC Departures: It was described that the EGLC CPT SIDs would be truncated to RODNI. Under a separate ACP (ACP-2021-091, Ref 6) these are proposed to be truncated to new point SAXBI. As these will be implemented in September 2022, the route connectivity as described has changed.

EGKB Departures: This was described incorrectly in the consultation material. These will route via ICTAM not CPT. This has a negligible impact.

EGSS Departures: We described traffic on the EGSS CPT SIDs would route on realigned M183 SILVA to new waypoint SCOTT and across to PYREX (now DIDZA). M183 is no longer being realigned. Waypoint SCOTT has been removed from the design. Traffic now routes SILVA to DIDZA on new joining route P86, reducing track mileage by 5nm.

EGMC Departures: We proposed these would route from HEN to PYREX (now DIDZA) via RODNI and LAGUL. LAGUL is removed from the design; a new direct ATS route N84 between HEN and DIDZA is added. This reduces the proposed track mileage for this traffic by approx. 4nm.

Table 6 Eastern interface, technical amendments to SIDs / connectivity

Airport	Current Procedure	Consulted route connectivity	Revised route connectivity	Summary of Change / Impact
EGLL	CPT 3F, 3G, 5J, 4K	Route B via CPT – PYREX -UA41F– MILLI (UA50E) RATOS	CPT: L9 DIDZA OKSAW BIBPE	Route and waypoint names amended, no change to design.
EGGW	CPT 4B, 7C	Route B via RODNI –– LAGUL - PYREX – MILLI Y321 no change - via CPT	West: L9 via RODNI N27 ICTAM T421 DIDZA N14 OKSAW RNAV5 traffic: Q63 via RODNI N27 ICTAM L179 SAWPE South: Y321 via ICTAM Q63 CPT	Route and waypoint names amended. LAGUL replaced with ICTAM. Renamed RODNI 1B/1C.
EGLC	CPT 1A/1H	Route B via CPT – PYREX -UA41F– MILLI (UA50E) RATOS	L9: SAXBI N27 HEN N84 DIDZA N14 OKSAW Q63: SAXBI N27 HEN N84 DIDZA P86 SAWPE	EGLC SIDs truncated to new point SAXBI in OSEP Deployment 5 (ACP-2021-091, Ref 6) in September 2022 (proposed). Route and waypoint names amended. Renamed SAXBI 1A/1H.
EGKB	N/A	Route B via CPT – PYREX -UA41F– MILLI (UA50E) RATOS	L9: BPK DCT HEN N27 ICTAM T421 DIDZA N14 OKSAW BIBPE	Routing via ICTAM not CPT Route and waypoint names amended.

EGSS	NUGBO 1R/1S - M183	Route B via M183 – SCOTT - PYREX – MILLI	L9: NUGBO M183 SILVA P86 DIDZA N14 BIBPE	SCOTT removed from design. Revised routing reduces track mileage by c.5nm
EGKK	KENET 3P/3W (Conv)	Route C via KENET – DCT – DEVEL	Q63: KENET DCT SAWPE	Route and waypoint names amended, no change to design.
EGKK	NOVMA 1X	Route B/A via NOVMA - L620 – NIBDA – N14 – VOUGA - re-aligned N14 PYREX UA41F MILLI	N14/L9: NOVMA L620 NIBDA N14 VOUGA N14 DIDZA N14 OKSAW	Route and waypoint names amended, no change to design.
EGKK	IMVUR 1Z	Route B/A via – IMVUR – N63 – VOUGA - re-aligned N14 PYREX UA41F MILLI	N14/L9: IMVUR N63 VOUGA N14 DIDZA N14 OKSAW	Route and waypoint names amended, no change to design.
EGLF	HAZEL	Route C L620 SAM Q41 PEPIS Y321 NUBRI – realigned N14 – UA20D – UA49E – DEVEL	Q63 SAM Q41 PEPIS Y321 NUBRI N14 HEKXA SAWPE Q63 OZZIL	Route and waypoint names amended, no change to design.
EGHI/HH Dep (W/bound)	N/A	Route C via PEPIS Y321 NUBRI realigned N14 – UA20D – UA49E – DEVEL N14	Q63: PEPIS Y321 NUBRI HEKXA SAWPE	Route and waypoint names amended, no change to design.
EGMC Dep	N/A	Route B via HEN DCT RODNI - UA54F LAGUL – PYREX - MILLI	L9: HEN N84 DIDZA OKSAW	Route realignment. Route and waypoint names amended. Revised routing reduces track mileage by c.4nm.
EGVN	N/A (vectored)	Route C via UA31D/UA16D	Q63 via CONKO/ASHUM	Route and waypoint names amended, no change to design.

Technical Amendments to the Northern Interface

EGCC Arrivals: In consultation, we described the proposed amendment of MIRSI 1A to OKTEM 1M under a separate ACP (ACP-2020-101, Ref 3). This was implemented in 05/2022 AIRAC. The OKTEM 1M STAR will be revised under this ACP.

EGGP Arrivals: We described that the TIPOD 1J STAR would be realigned to OKTEM 1L under a separate ACP (ACP-2020-020, Ref 5). That change was implemented in May 2022. The TIPOD 1J STAR was removed; and the KEGUN 1D revised to OKTEM 1L. This ACP proposes to realign the new OKTEM 1L STAR to connect with the proposed LD1.1 network.

Departure procedures are limited to nomenclature changes as described below in Table 7.

Table 7 Northern interface, technical amendments to procedures

Airport	Current Procedure	Consulted route connectivity	Revised route connectivity	Summary of Change / Impact
EGCC	OKTEM 1M (MIRSI 1A)	UA7E UA29D UA7E MONTY REXAM WAL MIRSI	P16: AXCIS MONTY REXAM WAL MIRSI	Route and waypoint names amended, no change to design.
EGGP	OKTEM 1L (KEGUN 1D)	UA7E MONTY KEGUN	P16: PEPZE MONTY GODPA KEGUN	STAR realigned under TNT DVOR ACP (ACP-2020-020, Ref 5) implemented in May 2022. Route and waypoint names amended.
EGGP	TIPOD 1J	UA7E UA29D UA7E MONTY KEGUN WAL	N/A	STAR withdrawn under separate ACP (ACP-2020-020, Ref 5) in May 2022.
EGGP	REXAM 2T, 2V	UA55E (Route Z) via REXAM – TORAN (UA98E)	P17: REXAM N42 MIDJO	Route and waypoint names amended, no change to design.
EGCC	KUXEM 1R/1Y;	P17, NOKIN UA55E (Route Z) via– TORAN	P17: KUXEM NOKIN MIDJO	Route and waypoint names amended, no change to design.
EGCC	ASMIM 1S/1Z	P16, NOKIN UA55E (Route Z) via– TORAN	P17: ASMIM P16 NOKIN P17 MIDJO	Route and waypoint names amended, no change to design.

Technical Amendments to the Southern Interface

Technical amendments to this section are limited to nomenclature changes as described below.

Table 8 Southern interface, technical amendments to procedures

Airport	Current Procedure	Consulted route connectivity	Revised route connectivity	Summary of Change / Impact
EGJJ	OYSTA 2B; SKERY 3A, SKERY 2B	UA7E - UA82F - SKERY N862 via SKERY (RNAV5 route)	SKERY L22 EMWIP P16 RNAV5 traffic: SKERY N864 BHD	Route and waypoint names amended, no change to design.
EGJB	SKERY 3W SKERY 3E	UA7E - UA82F - SKERY N862 via SKERY (RNAV5 route)	SKERY L22 EMWIP P16 RNAV5 traffic: SKERY N864 BHD	Route and waypoint names amended, no change to design.
EGJJ	JW 1F, 1N, 1M	UA73F – SKERY N862 -SKERY (RNAV5)	N862 SKERY RNAV5 traffic: N864 SKERY	Route and waypoint names amended, no change to design.
EGJB	Guernsey 1F	UA73F – SKERY N862 -SKERY (RNAV5)	N862 SKERY RNAV5 traffic: N864 SKERY	Route and waypoint names amended, no change to design.

Technical Amendments to en-route holding

In the consultation document we described proposed changes to en-route holding, with the introduction of two new contingency holds. We described that the current OKESI hold is being removed from service and replaced by the UA19D hold. An additional contingency en-route hold (DURIN) was proposed.

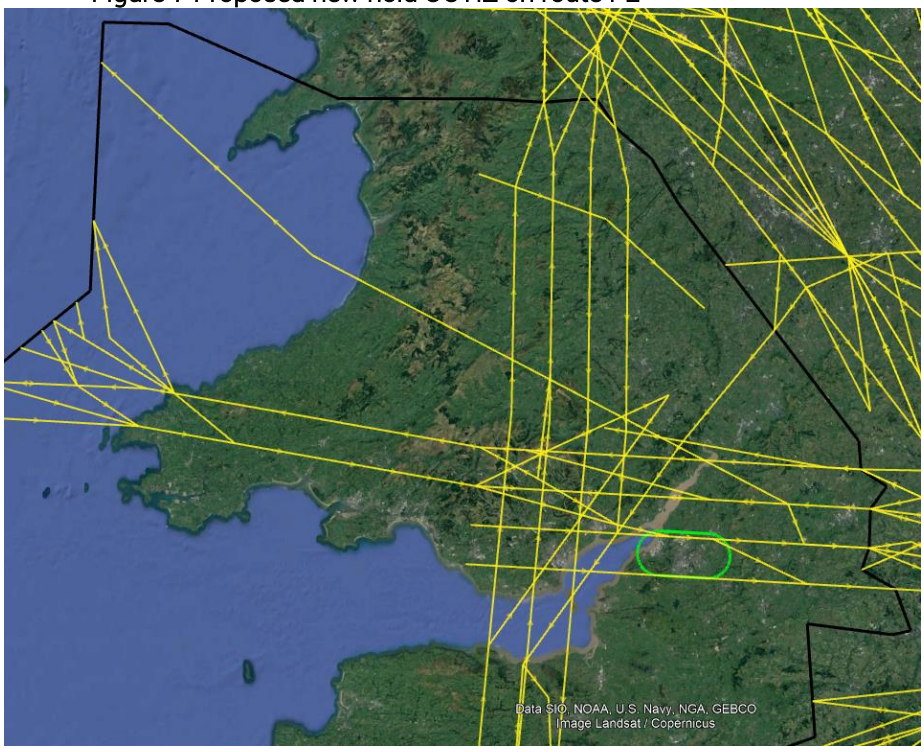
Following validation simulations, the UA19D hold remains but is renamed OCTIZ, is LEFT turn only, and retains the flight levels of the current OKESI hold. There is no longer a requirement to publish a hold at the proposed point DURIN, so this has been removed. Table 9 summarises these amendments; Figure 7 shows the new hold OCTIZ.

Note: In addition to the consulted hold amendments, the validation sims have shown that continency holds MERLY and PLYMO, in operation today, are no longer required, so will both be withdrawn from the AIP.

Table 9 Amendments proposed to the contingency holds since consultation.

Airfield Name	Consulted Hold name	Consulted Turn Direction & Limits	Revised Hold name	Revised Turn Direction & Limits	Summary of change/impact
London Heathrow	UA19D	LEFT turn; FL200/FL250	OCTIZ	LEFT turn, FL160/FL240	Levels amended. Name amended.
London Heathrow	UA19D	RIGHT turn; FL150/FL190	N/A	N/A	Not required. Withdrawn from design.
N/A	DURIN	RIGHT turn; FL270	N/A	N/A	Not required. Withdrawn from design.

Figure 7 Proposed new hold OCTIZ on route P2



5. Conclusion and Next Steps

5.1 This document has evidenced the NATS response to the consultation, which is the "we asked, you said, we did" stage of this airspace change proposal.

5.2 We have shown how we assessed the feedback provided and reviewed the design where appropriate. We have also presented the technical updates which have been required.

5.3 This document shows how we have amended the consulted design to the final design, and why we have made these changes. We have engaged with relevant stakeholders as evidenced within this document.

5.4 There is not a fundamental difference between this Final Airspace Design and that consulted upon; they are substantively similar. The consultation remains valid, and we do not intend to re-consult on the changes presented in this document.

5.5 The impacts of all the changes described in this document are reflected in the Final Options Appraisal.

5.6 The next step will be to write and publish the formal Step 4B Airspace Change Proposal with this final design and submit this to the CAA.

6. Glossary

ACC	Area Control Centre (there are two ACCs in the UK, Swanwick and Prestwick)
ACP	Airspace Change Proposal
AIP	Aeronautical Information Publication (where airspace and route definitions are published)
AMS	Airspace Modernisation Strategy
ANSP	Airspace Navigation Service Provider
ATC	Air Traffic Control
ATS	Air Traffic Services
BADA	Base of Aircraft Data
BGA	British Gliding Association
Borealis Alliance	Alliance amongst north-west European Air Navigation Service Providers to drive better performance for stakeholders through business collaboration. The Alliance includes the ANSPs of Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Norway, Sweden and the UK.
CAA	The UK Civil Aviation Authority
CAP	Civil Aviation Publication (publications produced by the CAA)
CAS	Controlled Airspace
COP	Co-ordination Point
CTA	Control Area
D2	Deployment Two, the second deployment of FRA.
DAATM	Defence Airspace and Air Traffic Management
DCT	(Direct) Waypoint to waypoint routing, which does not use an airway.
DSNA	Direction des Services de la Navigation Aérienne - French ANSP
Eurocontrol	European Organisation for the Safety of Air Navigation; with 41 members it seeks to achieve safe and seamless air traffic management across Europe.
FASI-S	Future Airspace Strategy Implementation - South
FBZ	Flight Plan Buffer Zones – areas for flight planners to avoid, providing separation from Special Use Airspace.
FIR	Flight Information Region
FL:	Flight level, the altitude reference which aircraft use at higher altitudes using standard pressure setting, essentially units of 100ft, i.e., FL255 equates approximately to 25,500ft
FRA	Free Route Airspace
GAA	General Aviation Alliance
GAT	General Air Traffic
IAA	Irish Aviation Authority
ICAO	International Civil Aviation Organisation – an agency of the United Nations.
LAC	London Area Control
LAMP	London Airspace Modernisation Programme; established to redesign the airspace in and around the London TMA region, providing a more efficient airspace design, modernising the route structure and making better use of aircraft and ATC technologies.
MDA	Military Danger Area
MoD	Ministry of Defence
NATMAC	National Air Traffic Management Advisory Committee
PBN	Performance Based Navigation – international requirements which standardise accuracy, safety and integrity for satellite navigation systems.
RAD	Route Availability Document: contains the policies, procedures and descriptions for route and traffic orientation. Includes route network and free route airspace utilisation rules and availability.
RT	Radio Transmissions
SID	Standard Instrument Departure.
SLP	Speed Limiting Point
SRD	Standard Routing Document
STAR	Standard Terminal Arrival Route
SUA	Special Use Airspace – areas designated for operations of a nature that limitations may be imposed on aircraft not participating in those operations (i.e., military training areas)
TRA	Temporary Restricted Area
UIR	Upper Information Region

6.1 Appendix A – Proposed Routings for Dublin Arrivals D201 Activity

D201 Dublin Arrivals – Proposed Routings

KEY: FRA ARRIVAL POINT (EIDW) ATS routing (-FL245) Indicative FRA routing (FL245+) EIDW Dep (via PESIT SID)

When the Danger Area is inactive, Dublin arrivals can route LANON L18-LIPGO or NICKL M17-VATRY to join the existing STARs.

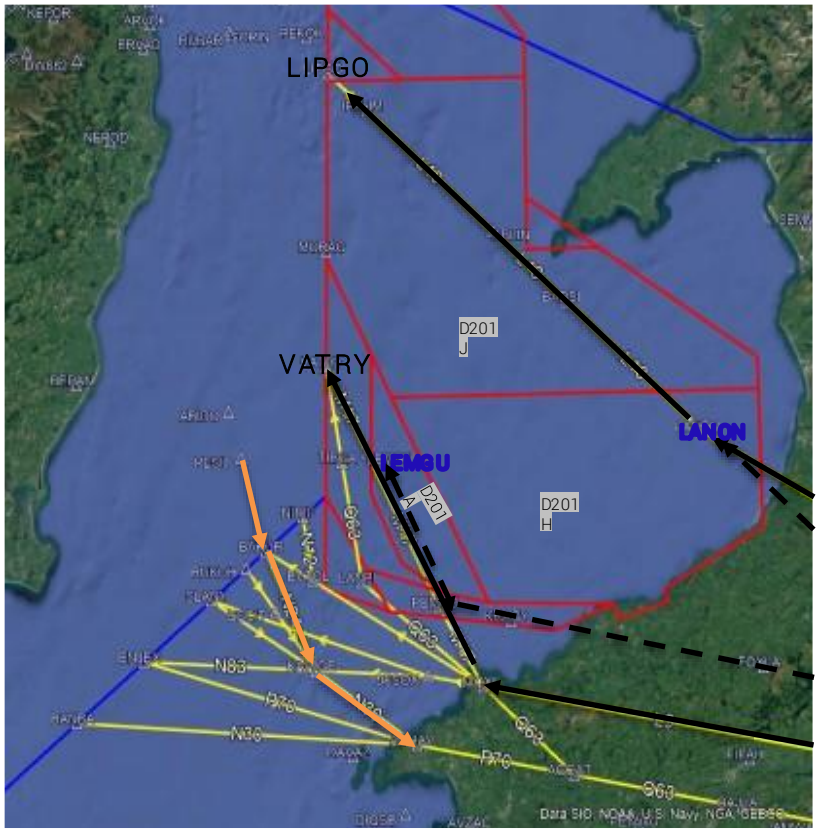


Diagram A

When D201H&J are active, but D201A/F/G are inactive, Dublin arrivals can route NICKL M17-VATRY (<FL245) or PEMOB M17-VATRY (FRA; >FL245) to join the existing STARs.

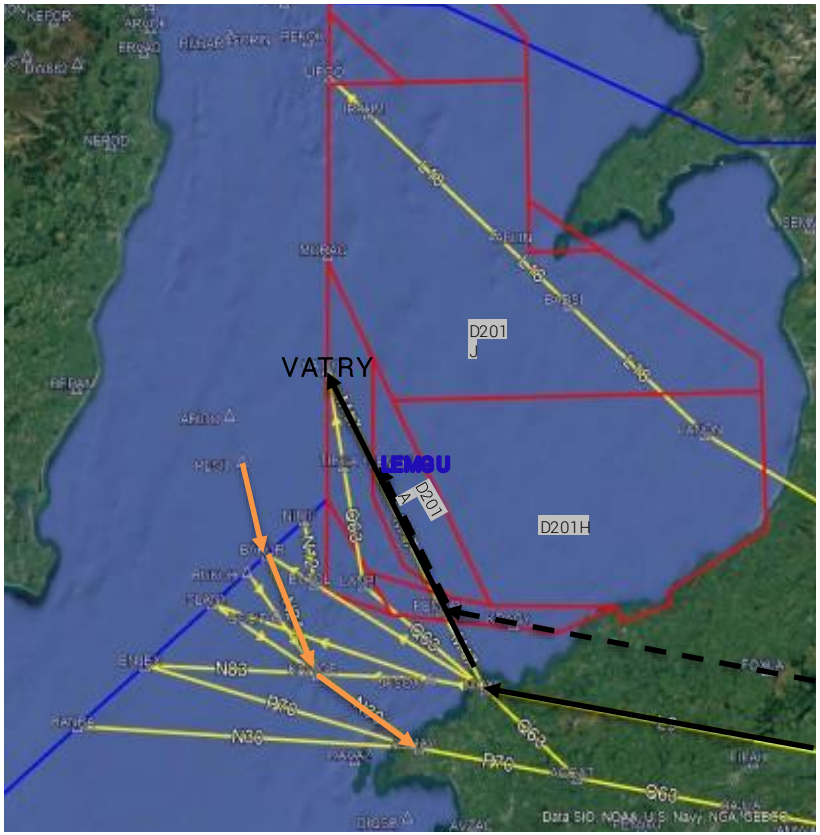


Diagram B

D201 Dublin Arrivals – Proposed Routings

KEY: FRA ARRIVAL POINT (EIDW) ATS routing (-FL245) Indicative FRA routing (FL245+) EIDW Dep (via PESIT SID)

When D201A is active, but D201F&G are inactive, Dublin arrivals can route NICXI-Q63-LANPI-Q63-VATRY (<FL245) or PEMOB-LANPI-TIGBA-Q63-VATRY (FRA; >FL245)to join the existing VATRY STAR.

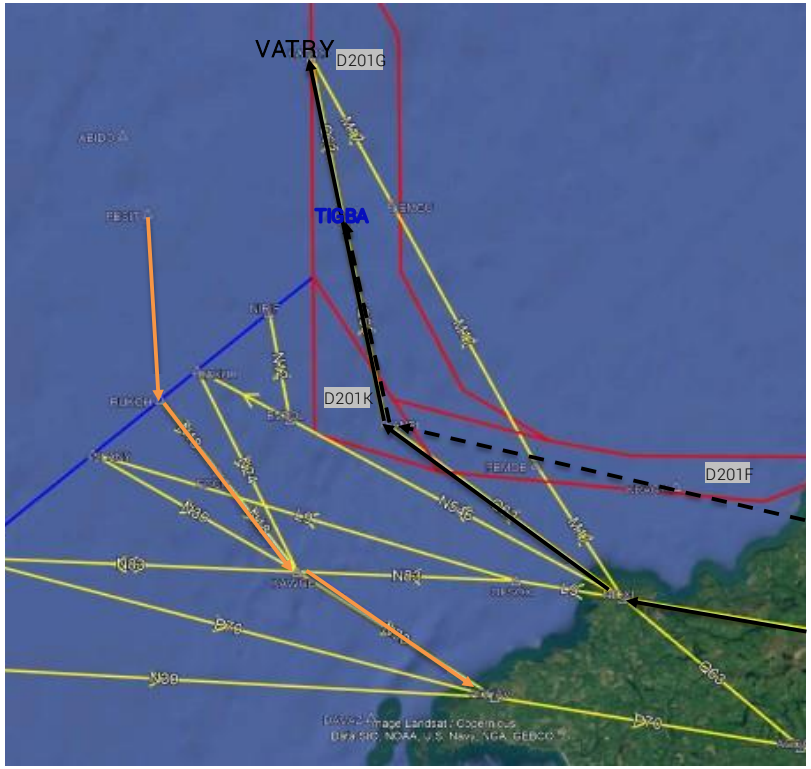


Diagram C

When D201G is active, but D201F is inactive, Dublin arrivals can route NICXI-N546-EVTOL-N12-NIRIF (<FL245) or PEMOB-EVTOL-NIRIF (FRA; <FL245)to join the existing VATRY STAR (connectivity by IAA).

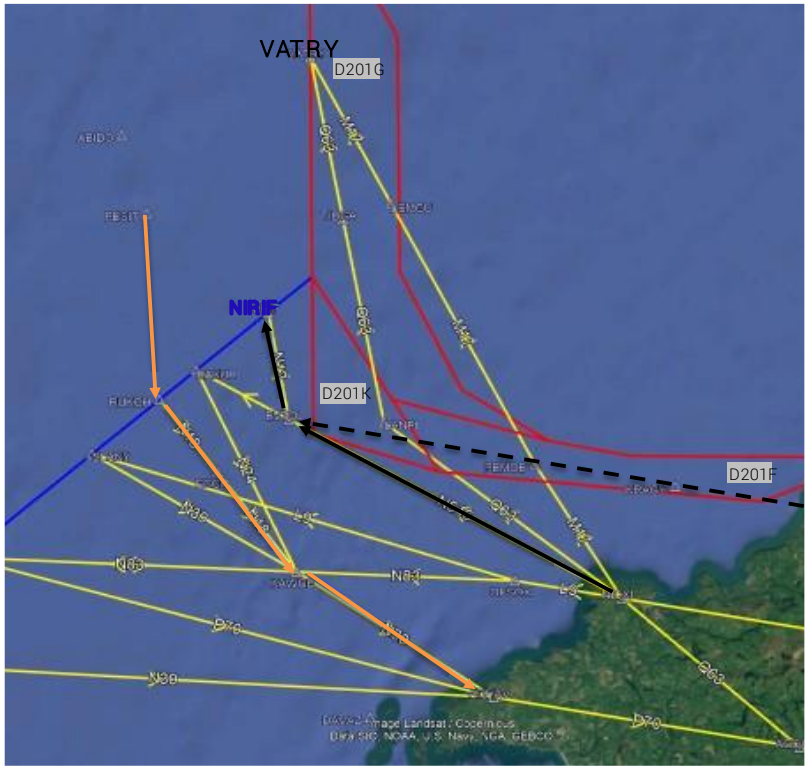


Diagram D

D201 Dublin Arrivals – Proposed Routings

KEY: FRA ARRIVAL POINT (EIDW) ATS routing (-FL245) Indicative FRA routing (FL245+)
EIDW Dep (via PESIT SID)

When D201F is active above FL145, Dublin arrivals can route NIGXI N546-EVTOL-N12-NIRIF to join the existing VATRY STAR (connectivity by IAA). FRA routings would route NICXI -EVTOL - NIRIF

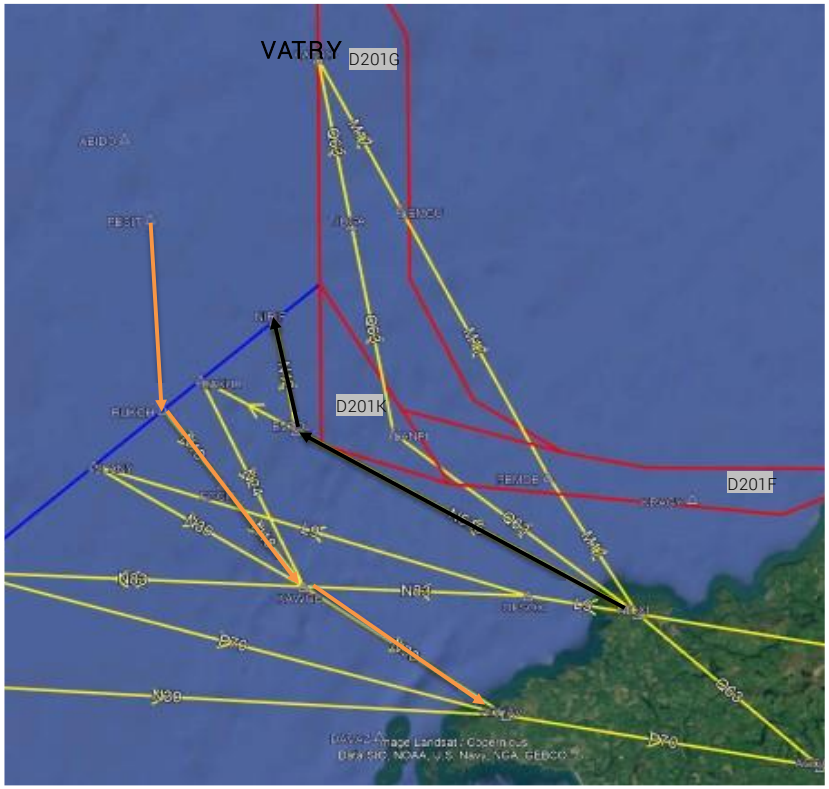


Diagram E