DVOR Rationalisation – MAKUX 1B STAR – RNAV Amendment

CAP1616 Stages 1-3
Multi-Gateway Documentation

V1.1

NATS Uncontrolled

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Issue	Month/Year	Change Requests in this issue
Issue 1.0	March 2021	Submitted to SARG
Issue 1.1	March 2021	Following clarification questions from the CAA the following has been updated: Section 5.6 and 5.7: • DP5 summary- clarifies the realignment of the MAKUX 1B STAR is above FL200 Section 5.13: • communities- clarifies the realignment of the MAKUX 1B STAR is above FL200 and includes the dual designation of the CHASE Hold • wider society- updated to reflect the change is not seeking an increase in capacity although resilience will be enhanced due to the increased safety • General Aviation/ commercial airlines- updated to reflect the change is not seeking an increase in capacity A typo in Annex D has been corrected: • The second MALUD in paragraph 3 has been crossed through and text colour changed to red

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1. Executive Summary

This submission proposes a realignment of the MAKUX 1B Standard Terminal Arrival Route (STAR) to UK Air Traffic Service (ATS) route Q38, following incorrect implementation in AIRAC 13/2020 (3rd December 2020). It is also proposed to change the specification of this STAR to RNAV1 so that it is consistent and compatible with the Isle of Man (IOM) / Antrim sectors systemised airspace. The final change proposed is to dual-designate the CHASE hold as RNAV1/ RNAV5.

2. Introduction

This document continues the CAP1616 process started with a Statement of Need submitted in December 2020 (Ref 13). Following the Assessment meeting on the 24th February 2021 a revised SON was Submitted, V2 (Ref 13). The intent of this document is to summarise and satisfy the requirements of CAP1616 Stages 1-3. The CAA reference is ACP-2020-102, the link to the CAA progress page is here.

Please read this document in conjunction with the redacted version of the Assessment Meeting Slide Pack (Ref 13) already supplied, as references are made to slide numbers in that document. This is the primary reference material for illustrations of the proposed changes in this multi-gateway document.

3. Summary of this Proposal

MAKUX 1B was implemented (AIRAC 13/2020, 3rd December 2020) as part of the DTY DVOR Rationalisation ACP and should have aligned with ATS route Q38. The STAR was incorrectly implemented and does not currently follow this routing. This ACP seeks to rectify this. Details of the DTY ACP are available here. Additionally, the MAKUX 1B STAR will be re-specified as a RNAV1 procedure to make it compatible with the IOM/ Antrim systemised airspace and the CHASE hold dual-designated as RNAV1/ RNAV5 to support this change. This is NATS' preferred option.

As described in Section 5 below RNAV5 Birmingham inbound aircraft currently flying the MAKUX 1B STAR will be able to fly UK ATS route L15 to MALUD and then the extant MALUD 1B STAR to the CHASE hold. The changes within this ACP will result in a minimal change in tracks over the ground owing to corrective realignment of the MAKUX 1B STAR which was implemented in December 2020.

This submission will identify Design Principles on how best to realign this STAR and make it compatible with the extant IOM /Antrim airspace; potential design options for this; an evaluation of the design options against Design Principles; and a consultation strategy. Realignment of the MAKUX 1B STAR with Q38 will result in negligible change in fuel/ CO_2/ greenhouse gas emissions due to this proposal. This is due to the minimal increase in planned distance flown (<0.01 Nautical Miles (NM) or <20 metres (m) per flight) and the low volume of traffic which has utilised this STAR (<4 Birmingham inbounds from MAKUX in January 2021) since implementation due to the ongoing Covid-19 Pandemic. This low traffic volume has also enabled a higher proportion of aircraft than in pre-pandemic traffic levels to receive shortcuts, therefore not following the STAR. These shortcuts would have been issued to the same aircraft had the MAKUX 1B STAR been implemented as described in the DTY ACP, further reducing the impact of this change. When considered against the STAR as approved in the DTY ACP this proposal will result in No change in fuel/ CO_2/ greenhouse gas emissions as the tracks over will be aligned with this original proposal.

The referenced version of the Assessment Meeting slide pack (Ref 13) should be read alongside this document. This proposal is targeting an implementation date of AIRAC 09/2021 (09/09/2021).

4. Stage 1 Define

Step 1A Assess requirement

4.1 The Statement of Need for this ACP was submitted on 14th December 2020 and a CAA Technical Regulator was allocated in 8th February 2021.

4.2 The Assessment Meeting was held over Microsoft TEAMs on 24th February 2021. NATS provided a short presentation which covered the Statement of Need, background of the change, potential design options and provisional timescales (Ref 13). The justification and technicalities of the change were discussed. This was attended by representatives from NATS and the CAA, as listed in the Assessment Meeting minutes (Ref 13).

4.3 Information subsequently supplied by NATS to the CAA, and uploaded to the portal in February/ March 2021, included:

- The Assessment Meeting presentation slide pack redacted for publication (Ref 13);
- The Assessment Meeting Minutes redacted for publication (Ref 13).

4.4 This proposal is limited to the MAKUX 1B STAR and the CHASE Hold. This submission is proposing to: Realign the MAKUX 1B STAR with Q38 as originally proposed in the DTY ACP and to re-specify it as a RNAV1 procedure to make compatible with the extant IOM/ Antrim airspace. The CHASE hold will be dual designated RNAV1/ RNAV5 as part of this submission.

4.5 There are no other en-route flight procedures, airport-based procedures or ATS Routes under consideration as part of this proposal.

4.6 The CAA agreed that this proposal falls under the Airspace Change Process with a provisional level of 2C, subject to the outcome of the Define Gateway.

4.7 This proposal is targeting an implementation date of AIRAC 09/2021, 09th September 2021. This is one of the four major annual NAS builds which this proposal can be implemented in, because the proposed changes affect the NAS adaptation.

Step 1A complete

Step 1B Design Principles

4.8 This submission is proposing to realign the MAKUX 1B STAR with the UK ATS route Q38, re-specify it as a RNAV1 procedure and dual designate the Chase Hold as RNAV1/ RNAV5. This will rectify the incorrect implementation of the MAKUX 1B as well as ensuring that the STAR is compatible with the extant RNAV1 systemised IOM/ Antrim Airspace through which it routes.

4.9 NATS identified five Design Principles based on the Statement of Need (Ref 13) submitted for this proposal and therefore, its key objective of realigning the MAKUX 1B STAR. These principles were developed by NATS; drawing from previous DVOR submissions and keeping them simple/ aligned to the Statement of Need. Alongside realigning the MAKUX 1B STAR, NATS have included principles to ensure that safety is not compromised, changes to flight behaviours are minimised and stakeholders are not negatively impacted. These are considerations we would consider as part of any Airspace Change Proposal.

4.10 These principles are in line with the simplicity of this proposal, and ACP activity has been scaled appropriately. Engagement has been limited to targeted stakeholders. They were asked for feedback on the Design Principles, alongside the planned design for re-specification of the MAKUX 1B STAR prior to submission of this Stages 1-3 document; no issues were raised so no revisions were made to the proposed Design Principles.

4.11 The following five Design Principles will be applied to the three potential design options of: Doing nothing (baseline); Realigning the MAKUX 1B STAR as a RNAV5 procedure; or Realigning the MAKUX 1B STAR as a RNAV1 procedure and dual-designating the CHASE hold as RNAV1/ RNAV5 (NATS' preferred option).

- The *Design Principle 1 (DP1)* with an overriding priority is that the proposed airspace change must maintain or enhance the current level of safety. This Design Principle cannot be compromised in any way and has therefore been assigned a *High* priority.
- *Design Principle 2 (DP2):* Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056) to rectify the incorrect implementation of the DTY ACP. This Design Principle is the driving objective behind this airspace change and has therefore been assigned a *High* priority.
- *Design Principle 3 (DP3):* the proposed changes should be compatible with the PBN Specification of the extant IOM/ Antrim systemised airspace structure. This Design Principle has been assigned a *High* priority as failure to be compatible with this airspace structure could have a knock-on effect on safety and controller workload.
- *Design Principle 4 (DP4):* the proposed changes should minimise any changes to actual flight behaviours – laterally or vertically. This Design Principle has been assigned a *Medium* priority as the primary objective of rectifying the incorrect implementation of this airspace change cannot be achieved unless flight behaviours are impacted. However, in recognition of the impact that flight behaviours can have on airspace and ground/ based stakeholders, this should be included as an important principle.
- *Design Principle 5 (DP5):* the proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users. This Design Principle has been assigned a *Medium* priority as the primary objective of this airspace change could still be achieved even if stakeholders were impacted upon. However, in recognition of the importance to minimise negative impacts on airspace and ground/ based stakeholders, this should be included as an important principle; met where possible.

Design Principle (DP)	Priority
DP1: The proposed airspace change must maintain or enhance the current level of safety.	High
DP2: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).	High
DP3: The proposed changes should be compatible with the PBN Specification of the extant IOM/ Antrim systemised airspace structure.	High
DP4: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.	Medium
DP5: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.	Medium

Step 1B complete

5. Stage 2 Develop and Assess

Step 2A Airspace Change Design Options

5.1 The airspace change design options considered are limited to the following:

Option 0 – *do nothing (baseline): retain the MAKUX 1B STAR and CHASE hold unchanged from the current AIP definitions*
Doing nothing would retain the MAKUX 1B Hold and CHASE hold as they exist today; thus not rectifying the incorrect implementation of the MAKUX 1B STAR, leaving a STAR which is not compatible with the IOM/ Antrim systemised airspace structure resulting in increased ATCO workload and reduced safety from the proposed airspace design.

Option 1 – *Realign the MAKUX 1B STAR with UK ATS Route Q38 maintaining the RNAV 5 specification*
This design option would realign the MAKUX 1B STAR with *UK ATS Route Q38*; thus, rectifying the incorrect implementation of the MAKUX 1B STAR from the DTY ACP. However, this STAR would remain incompatible with the IOM/ Antrim RNAV1 systemised airspace leading to unnecessary increased ATCO workload and associated safety implications. This option is what was originally proposed and approved in the DTY ACP.

Option 2 (preferred) – *Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designate the CHASE hold as RNAV1/ RNAV5*
This design option would realign the MAKUX 1B STAR with *UK ATS Route Q38*; rectifying the incorrect implementation of the MAKUX 1B STAR from the DTY ACP. Compatibility with the IOM/ Antrim RNAV1 systemised airspace structure will be achieved by re-specifying this as a RNAV1 procedure and the CHASE hold will be dual designated as RNAV1/ RNAV5. RNAV5 aircraft inbound to Birmingham airport, currently flying the MAKUX 1B STAR, will be required to follow coincident UK ATS route L15 to MALUD and then fly the extant MALUD 1B STAR to CHASE.

5.2 NATS developed the above Design Options to align with the objectives of this Airspace Change Proposal; as outlined in the submitted Statement of Need (Ref 13).

5.3 The objective of realigning the MAKUX 1B STAR with the original DTY ACP provides a very limited scope for multiple design options. Following implementation of the MAKUX 1B STAR, it was identified that the original proposal of this STAR as an RNAV5 specification was not compatible with the extant IOM/ Antrim RNAV1 systemised airspace. This has led to our preferred option of realigning with Q38 and re-specifying this STAR as RNAV1, making the STAR compatible and compliant with the RNAV1 systemised airspace structure

5.4 Alongside the Design Principles outlined in Section 4.11 above, NATS developed the three Design Options in isolation. As the scope for different options was so limited and the objective of this change so narrow, engagement was limited to Birmingham Airport, the MOD and relevant Aircraft operators, no other stakeholders were engaged with. This engagement is evidenced in Annex C: Stage 1-3 Engagement evidence. The proposed changes raised no objections from Birmingham Airport, the MOD, or aircraft operators.

Step 2A Design Principle Evaluation

5.5 Option 0 – Do nothing (baseline)

Option 0			REJECT
Description of option: Retain the MAKUX 1B STAR and CHASE hold unchanged from the current AIP definitions.			
Design Principle 1: The proposed airspace change must maintain or enhance the current level of safety			MET

Summary of qualitative assessment: No change from today; the level of safety is therefore maintained. Although this DP is assessed as MET, this route is not compatible with the IOM/ Antrim systemised airspace, which is based on RNAV1 CAP1385 spacing, compromising safety.			
Design Principle 2: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).	NOT MET		
Summary of qualitative assessment: No change from today therefore, the MAKUX 1B STAR does not realign with the original DTY ACP.			
Design Principle 3: The proposed changes should be compatible with the PBN Specification of the extant IOM/ Antrim systemised airspace structure.	NOT MET		
Summary of qualitative assessment: No change from today therefore, the MAKUX 1B is not compatible with the IOM/ Antrim systemised airspace structure, which is based on RNAV1 CAP1385 spacing.			
Design Principle 4: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.			MET
Summary of qualitative assessment: No change from today therefore, no impact on stakeholders.			
Design Principle 5: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.			MET
Summary of qualitative assessment: No change from today therefore, no impact on stakeholders.			

5.6 Option 1 – Realign the MAKUX 1B STAR as an RNAV5 procedure.

Option 1			REJECT
Description of option: Realign the MAKUX 1B STAR with UK ATS Route Q38 maintaining the current RNAV 5 specification.			
Design Principle 1: The proposed airspace change must maintain or enhance the current level of safety			MET
Summary of qualitative assessment: Route realigns with Q38 leading to a reduction in apparent deviations from the ATS route structure leading to an improvement in safety. Although this DP is assessed as MET, this route is not compatible with the IOM/ Antrim systemised airspace, which is based on RNAV1 CAP1385 spacing, compromising safety.			
Design Principle 2: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).			MET
Summary of qualitative assessment: This design option realigns the MAKUX 1B STAR with the original DTY ACP.			
Design Principle 3: The proposed changes should be compatible with the PBN Specification of the extant IOM/ Antrim systemised airspace structure.	NOT MET		
Summary of qualitative assessment: Although realigned with Q38 as originally described, the RNAV5 specification is not compatible with the IOM/ Antrim systemised airspace, which is based on RNAV1 CAP1385 spacing.			
Design Principle 4: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.			MET
Summary of qualitative assessment: The realignment of the STAR with Q38 will result in a minimal lateral shift of traffic. There will be no change to the vertical profile of traffic as a result of this proposal.			
Design Principle 5: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.			MET
Summary of qualitative assessment: There is a minimal lateral shift resulting in a negligible (<0.01 NM) increase track distance flown as a result of the realignment of the MAKUX 1B STAR. This change occurs above FL200 and will not be perceptible to stakeholders on the ground.			

5.7 Option 2 (NATS' preferred option) – Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designate the CHASE hold as RNAV1/ RNAV5.

Option 2			ACCEPT & PROGRESS
Description of option: Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designate the CHASE hold as RNAV1/ RNAV5			
***Design Principle 1*: The proposed airspace change must maintain or enhance the current level of safety**			MET
Summary of qualitative assessment: Route realigns with Q38 leading to a reduction in apparent deviations from the ATS route structure. Route is compatible with IOM/ Antrim systemised airspace structure enhancing safety from the current operation.			
***Design Principle 2*: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).**			MET
Summary of qualitative assessment: This design option realigns the MAKUX 1B STAR with the original DTY ACP.			
***Design Principle 3*: The proposed changes should be compatible with the PBN Specification of the extant IOM/ Antrim systemised airspace structure.**			MET
Summary of qualitative assessment: Re-specifying the route as RNAV1 specification makes the route compatible with the IOM/ Antrim RNAV1 systemised airspace.			
***Design Principle 4*: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.**			MET
Summary of qualitative assessment: The realignment of the STAR with Q38 will result in a minimal lateral shift of traffic. There will be no change to the vertical profile of traffic as a result of this proposal.			
***Design Principle 5*: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.**			MET
Summary of qualitative assessment: There is a minimal lateral shift resulting in a negligible (<0.01 NM or <20 m) increase track distance flown as a result of the realignment of the MAKUX 1B STAR. This change occurs above FL200 and will not be perceptible to stakeholders on the ground.			

Step 2A complete

Step 2B Options Development

5.8 Using the five Design Principles, we have evaluated the three concept options, as summarised above.

5.9 *Option 0: Do nothing (baseline)* - although this design option does not introduce any new safety risks, any change in flight behaviours or any impact on stakeholders; it does not realign the MAKUX 1B STAR with the original DTY ACP which is the key objective behind this airspace change nor is it compatible with the IOM/ Antrim systemised airspace structure. **Rejected.**

5.10 *Option 1: Realign the MAKUX 1B STAR as an RNAV5 procedure* – Although this option does not introduce any new safety risks and it realigns the MAKUX 1B STAR with the original DTY ACP which is the key objective behind this airspace change it is not compatible with the IOM/ Antrim systemised airspace structure and retains the inherent safety issues of *Option 0: Do nothing* this ACP aims to address. **Rejected.**

5.11 *Option 2 (preferred): Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designating the CHASE hold as RNAV1/ RNAV5* – achieves the main objective of realigning the MAKUX 1B STAR with the original DTY ACP. This option is compatible with the IOM/ Antrim systemised airspace structure increasing the safety of the airspace. Changes to flight behaviour are the minimum required to realign the STAR with the DTY ACP and will

not be perceptible to stakeholders on the ground. No additional safety issues have been identified with this option. **Accepted and Progressed.**

Safety Assessment: Option 2 would enhance the current level of safety and no additional potential safety issues have been identified. As discussed during the Assessment Meeting (Ref 13) this option aims to build on the previously agreed and safety assessed DTY ACP. The STAR and the Hold would be contained within existing Controlled Airspace with no issues from either a flight planning acceptance or ATC perspective.

5.12 **Engagement Activities:** As agreed with the CAA at the assessment meeting, engagement on this ACP has been limited to confirming the re-specification of the MAKUX 1B STAR will not adversely impact Birmingham Airport or Aircraft Operators. NATS emailed Birmingham Airport and relevant aircraft operators (NATMAC members; Aer Lingus and RyanAir were specifically targeted as operators of this route) a description of the proposed changes and a list of the Design Principles which will be used to evaluate the options against. NATS have asked stakeholders to confirm they are content with the proposed change. NATS received email responses from Birmingham Airport, the MOD and Aer Lingus confirming they are content. NERL responded by voting approve to the email engagement. No stakeholders raised any issues with the design options.

Evidence of engagement activities completed so far can be found in Annex C: Stage 1-3 Engagement evidence.

Step 2B Options Appraisal (Phase 1 Initial)

5.13 Initial Options Appraisal for Design Option 2 (NATS' preferred option): *Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designating the CHASE hold as RNAV1/ RNAV5*

Group	Impact	Level of Analysis	Evidence
Communities	Noise impact on health and quality of life	N/A	The change to the track over the ground to the MAKUX 1B STAR proposed within this proposal occur above FL200. The CHASE hold will be dual designated RNAV1/ RNAV5. There are no proposed changes to the vertical profile of flights and only minimal changes to lateral tracks. There will therefore be no impact on noise or quality of life. NATS therefore contends that this proposal falls under the airspace change process as a Level 2C proposal; and does not require noise analysis.
Communities	Air quality	N/A	The change to the track over the ground to the MAKUX 1B STAR described in option 2 are above FL200. The CHASE hold will be dual designated RNAV1/ RNAV5. There will be no changes below 1,000 ft as a result of this proposal.
Wider society	Greenhouse gas impact	Monetise and quantify	There are no proposed changes to the vertical profile of flights and only minimal changes to lateral tracks. This change will result in an increase track mileage of <0.01 NM or <20 m per flight and can therefore be considered negligible.
Wider society	Capacity/ resilience	Qualitative	This change does not seek to increase capacity. There will be improved resilience owing to the improved safety resulting from the alignment with the IOM/ Antrim systemised airspace.
General Aviation	Access	N/A	No change from today.
General Aviation/	Economic impact from	Quantify	This change does not seek to increase capacity.

Group	Impact	Level of Analysis	Evidence
commercial airlines	increased effective capacity		
General Aviation/ commercial airlines	Fuel burn	Monetise	Although there is an increase in track miles flown per flight, <0.01 NM or <20 m, this change can be considered negligible.
Commercial airlines	Training cost	N/A	There would be no training required.
Commercial airlines	Other costs	N/A	Updates to FMS and flight planning systems will be completed via the routine AIRAC updates. There are no other known costs which would be imposed on commercial aviation.
Airport/ Air navigation service provider	Infrastructure costs/benefit	Qualitative and quantitative	There will be no associated infrastructure costs.
Airport/ Air navigation service provider	Operational costs	N/A	There would be no associated operational costs.
Airport/ Air navigation service provider	Deployment costs	Qualitative and quantitative	N/A – this change would be introduced via briefings and bulletins for staff, with no additional training or simulation training/costs required.

5.14 **Conclusion**: Option 2 meets all five the Design Principles. There would be a positive impact on safety, with minimal changes to flight behaviours, stakeholder and operational impact. The other two options do not meet all the Design Principles. Option 2 is therefore the only option carried forward to the next stage.

End of Step 2B

6. Stage 3 Consult

Steps 3A-3C

Consultation Strategy

6.1 This airspace change proposal is seeking to realign the incorrectly implemented MAKUX 1B STAR with Q38 as originally proposed and agreed in the DTY ACP.

6.2 Following implementation, it was identified that the RNAV5 specification of this STAR is incompatible with the IOM/ Antrim systemised airspace, leading to a degradation in safety. This is currently mitigated against by an operational notice (OPNOT) within the operation room. Whilst traffic levels are low due to the ongoing Covid-19 pandemic, this OPNOT offers a sufficient mitigation. However, this will become less effective as traffic levels recover and a permanent solution is required.

6.3 This airspace change proposal further seeks to make this procedure compatible with the extant airspace by respecifying this STAR as RNAV1. This technical change will only minimally impact (a planned increase of <0.01 NM, <20 m) aircraft operators utilising this STAR who are the same airspace users previously engaged with for DTY ACP. Any aircraft which are not RNAV1 compliant will be able to fly the coincident ATS route L18 and MALUD 1B STAR.

6.4 Given the low impact of this change and the potential for degradation of safety should traffic levels increase it is desirable that this change is implemented at the earliest opportunity. As a result of this and previous positive engagement with stakeholders we contend a 2-week engagement, focused on the route specification of RNAV1 is sufficient consultation.

6.5 There would be no perceptible impact to people on the ground, nor to aviation stakeholders; beyond typical AIRAC updates with technical changes (AIRAC changes are a “day job” for an air operator). This project was organised to be a technical piece of work, and there would be no noticeable impacts, leading to no material change to the current operation.

6.6 In order to provide full transparency and as agreed with the CAA during the Assessment meeting (Ref 13) NATS has positively engaged with Birmingham Airport, NERL, relevant aircraft operators through NATMAC, RyanAir and Aer Lingus to notify them of the proposed change and confirm that there will be no impact on their operation by re-specifying the MAKUX 1B STAR as an RNAV1 procedure and renamed as the MAKUX 2B.

6.7 Draft Consultation Document: not required, all the practical impacts of Option 2 have been assessed and there are none, except for technical network improvements. Formal consultation would serve no practical purpose.

6.8 Following CAA approval at gateway 3, NATS will undertake the following activities:

- Within 3 working days we will engage with the stakeholders listed in Annex B: List of Stakeholders by email (see Annex D: Stage 3 consultation email to stakeholders), informing them of the final design option and asking them for feedback with a 2 week deadline:
- A reminder email will be sent to any non-responders 1 week after the initial email to ensure we maximise responses.

Full Options Appraisal

6.9 The Full options appraisal is unchanged from the Stage 2 options appraisal (Section 5.13).

End of Steps 3A-3C

7. Summary

7.1 This document details NATS' intention to realign the MAKUX 1B STAR with UK ATS route Q38 and the specification of this procedure as RNAV1. The CHASE hold will be dual designated RNAV1/ RNAV5.

7.2 NATS have provided three design options for this airspace change:
Option 0: *Do nothing (baseline) retain the MAKUX 1B STAR and CHASE hold unchanged from the current AIP definitions*
Option 1: *Realign the MAKUX 1B STAR with UK ATS Route Q38 maintaining the RNAV 5 specification*
Option 2 (preferred): *Realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designate the CHASE hold as RNAV1/ RNAV5*

7.3 The preferred and planned design option (Option 2) proposes to realign the MAKUX 1B STAR as a RNAV1 procedure and dual-designate the CHASE hold as RNAV1/ RNAV5.

7.4 The proposed change would have negligible impact on flight behaviour and no perceptible change to traffic patterns over the ground.

7.5 As covered in Section 6 above, NATS has engaged with Birmingham Airport and relevant aircraft operators to confirm the proposed change will have no impact on their operation.

7.6 Following the Stage 3 Gateway, NATS will further engage with Birmingham Airport and relevant aircraft operators to fulfil the consultation requirements of the CAP1616 process.

7.7 The below table summarises the proposed changes to the MAKUX 1B and CHASE hold:

Current STAR/ Procedure	Current connectivity	Proposed connectivity	Proposed change and impact
MAKUX 1B (RNAV5) STAR	*MAKUX - AMPIT - NOKIN- CREWE - CHASE*	*MAKUX - SOSIM - GIGTO - MALUD - AMPIT - NOKIN- CREWE - CHASE*	Realign MAKUX 1B with Q38 Re-specify as RNAV1 Rename MAKUX 2B Minimal lateral shift in traffic resulting in a negligible change to flight behaviour and track distance flown.
CHASE Hold			Dual- designate RNAV1/ RNAV5

Table 1: Proposed changes

8. Annex A: References

Reference	Title
1	*MAKUX 1B STAR - Statement of Need* Link to portal
2	*MAKUX 1B STAR - Statement of Need V2* Link to portal
3	*MAKUX 1B STAR - Stage 1A Assessment Meeting Slides* Link to portal
4	*MAKUX 1B STAR – Stage 1A Assessment Meeting minutes (redacted)* Link to portal

9. Annex B: List of Stakeholders

Birmingham Airport

NERL

Airlines UK

British Airline Pilots Association (BALPA)

Low Fair Airlines

Heavy Airlines

Ministry of Defence (MOD) through the Defence Airspace and Air Traffic Management (DAATM)

Isle of Man (IOM) Civil Aviation Authority

RyanAir

Aer Lingus

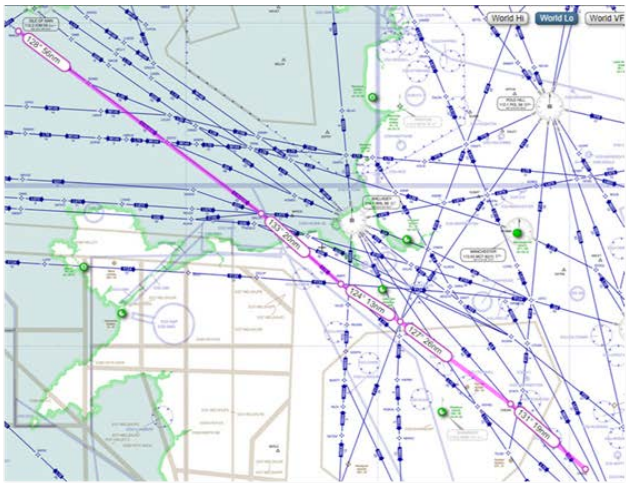
10. Annex C: Stage 1-3 Engagement evidence

10.1 Email sent to Stakeholders 26 February 2021

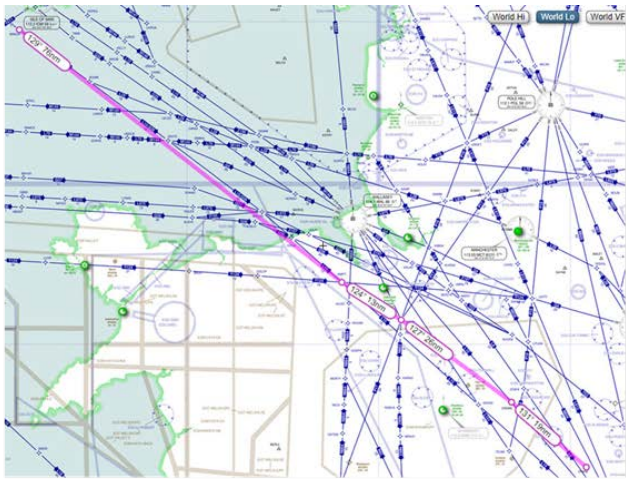
Dear Colleague,

NATS is currently undertaking an ACP (Ref: ACP-2020-102) to Realign the MAKUX 1B STAR into Birmingham Airport. This STAR was originally implemented as part of the DTY DVOR Rationalisation Airspace Change (Ref: ACP-2019-056). Following implementation 2 issues have been identified with this STAR and this ACP seeks to rectify them.

The first is that the STAR was incorrectly implemented. The proposed STAR was supposed to route L15, Q38: MAKUX - MALUD - AMPIT - NOKIN - CREWE – CHASE However the routing submitted to the AIP was L15, Q38: MAKUX - ~~MALUD~~ - AMPIT - NOKIN - CREWE – CHASE.



As Planned



As Implemented

The second is that this STAR routes through the Isle of Man (IOM) systemised airspace structure. As such this STAR is required to be RNAV1 as opposed to the implemented RNAV5 specification to become compatible with this airspace.

As part of the CAP1616 process NATS have developed the Following Design Principals:

Design Principle (DP)	Priority
DP1: The proposed airspace change must maintain or enhance the current level of safety.	High
DP2: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).	High
DP3: The proposed changes should be compatible with the PBN Specification of the extant IOM systemised airspace structure.	High
DP4: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.	Medium
DP5: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.	Medium

To rectify these two issues NATS is proposing to realign the MAXUX 1B STAR with Q38 as originally proposed and approved in the DTY ACP. Secondly NATS will re-specify this route as RNAV1. RNAV5 aircraft will be required to continue along L15 and use the MALUD 1B STAR for Birmingham. Subsequently the CHASE hold will need to be dual designated RNAV1/ RNAV5 to accommodate this change.

If you are content with the proposed change to RNAV1 specification please press the "Approve" voting button, or reply "Approve" by 10th March 2021.

If you are not the correct contact to respond to this engagement, please can you distribute this to the relevant members of your team.

Kind Regards

[redacted]

NATS

10.2 Reminder Email sent to Stakeholders 5th March 2021

Dear Colleague,
Please see the email below relating to the **Realignment and Re-specification of the MAKUX 1B STAR into Birmingham Airport**. If you have already responded thank you for your time. If not, and you would like to respond, please ensure this is by 10th March 2021, next Wednesday.

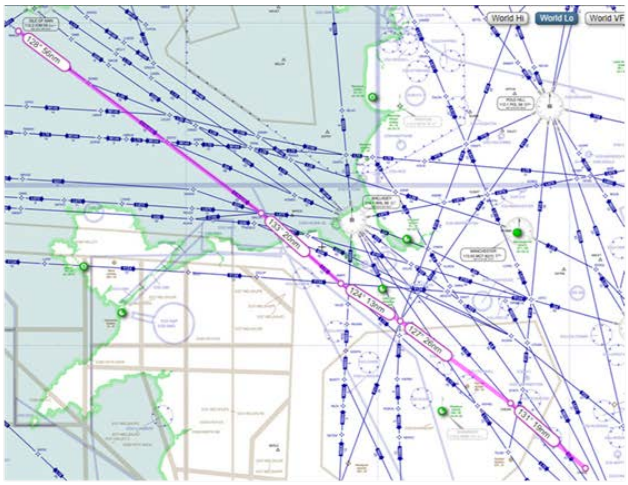
Kind regards

[redacted]
NATS Airspace Change Team

Dear Colleague,

NATS is currently undertaking an ACP (Ref: ACP-2020-102) to Realign the MAKUX 1B STAR into Birmingham Airport. This STAR was originally implemented as part of the DTY DVOR Rationalisation Airspace Change (Ref: ACP-2019-056). Following implementation 2 issues have been identified with this STAR and this ACP seeks to rectify them.

The first is that the STAR was incorrectly implemented. The proposed STAR was supposed to route L15, Q38: MAKUX - MALUD - AMPIT - NOKIN - CREWE – CHASE However the routing submitted to the AIP was L15, Q38: MAKUX - ~~MALUD~~ - AMPIT - NOKIN - CREWE – CHASE.



As Planned

As Implemented

The second is that this STAR routes through the Isle of Man (IOM) systemised airspace structure. As such this STAR is required to be RNAV1 as opposed to the implemented RNAV5 specification to become compatible with this airspace.

As part of the CAP1616 process NATS have developed the Following Design Principals:

Design Principle (DP)	Priority
DP1: The proposed airspace change must maintain or enhance the current level of safety.	High
DP2: Realigns the existing MAKUX 1B STAR with the original DTY ACP (Ref: ACP-2019-056).	High
DP3: The proposed changes should be compatible with the PBN Specification of the extant IOM systemised airspace structure.	High
DP4: The proposed changes should minimise any changes to actual flight behaviours – laterally or vertically.	Medium
DP5: The proposed airspace change should minimise the impact on stakeholders, including ground-based stakeholders and other airspace users.	Medium

To rectify these two issues NATS is proposing to realign the MAXUX 1B STAR with Q38 as originally proposed and approved in the DTY ACP. Secondly NATS will re-specify this route as RNAV1. RNAV5 aircraft will be required to continue along L15 and use the MALUD 1B STAR for Birmingham. Subsequently the CHASE hold will need to be dual designated RNAV1/ RNAV5 to accommodate this change.

If you are content with the proposed change to RNAV1 specification please press the "Approve" voting button, or reply "Approve" by 10th March 2021.

If you are not the correct contact to respond to this engagement, please can you distribute this to the relevant members of your team.

Kind Regards

[redacted]

10.3 Email Response from Birmingham Airport 1st March 2021

Good afternoon,

APPROVE.

Best regards

[redacted]

Birmingham Airport Air Traffic

[redacted]
Manager Air Traffic Services
Birmingham Airport Limited
Tel: [redacted]
Mob: [redacted]
E-mail: [redacted]

10.4 Email Response from MOD via DAATM 1st March 2021

Good Morning,

No issues from a MOD, including Swk Mil point of view. Sorry, no voting buttons on my email, therefore - 'Approve'.

Regards

[redacted]

[redacted] | SO2 Airspace Operations | Defence Airspace and Air Traffic Management | ~~Aviation House | 1E Beehive Ringroad Crawley West Sussex RH6 0YR~~ | Civilian Telephone: [redacted] | Skype: [redacted] | E-Mail: [redacted]

10.5 Email Response from Aer Lingus 8th March 2021

[redacted]

Thank you for notifying Aer Lingus of this proposed change.
As Aer Lingus are RNAV 1 approved, we have no issue with the amendment as proposed.

Kind regards,

[redacted]

[redacted]
Base Captain Dublin
Technical Pilot

M [redacted]
T + [redacted]
www.aerlingus.com

Aer Lingus, Flight Operations, T2L1, Dublin Airport,
Dublin, Ireland

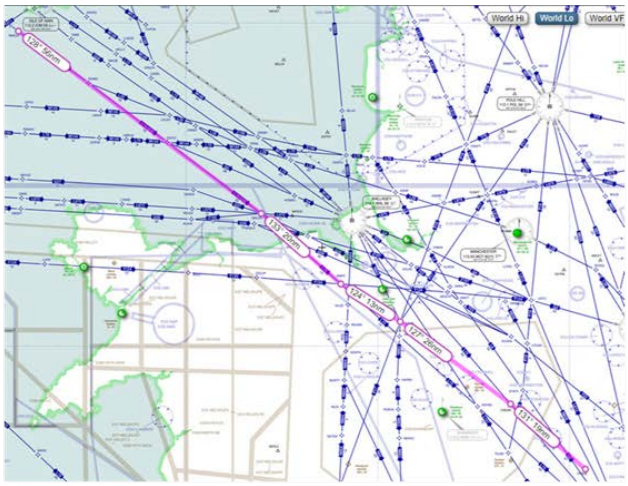
11. Annex D: Stage 3 Consultation email to stakeholders

Dear Colleagues,

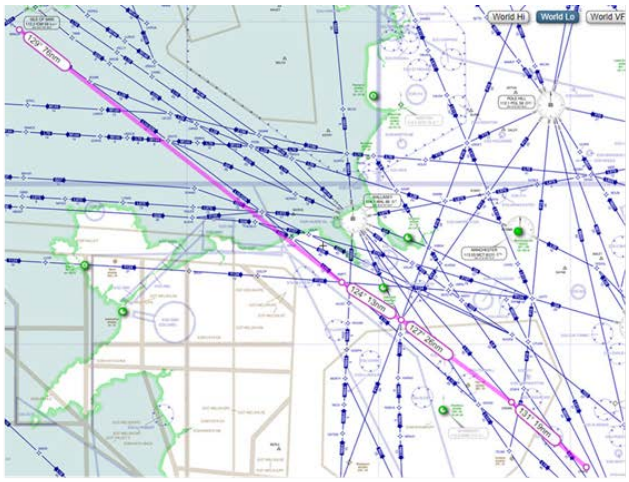
Thank you for your previous engagement on this Airspace Change proposal to realign the MAKUX 1B STAR into Birmingham Airport (Ref: ACP-2020-102). As per the CAP1616 Airspace Change process we are required to engage with stakeholders at various stages throughout the airspace change process. This email will satisfy the consultation requirements (Stage 3) of the CAP1616 airspace change process.

The MAKUX 1B STAR was originally implemented as part of the DTY DVOR Rationalisation Airspace Change (Ref: ACP-2019-056). Following implementation 2 issues have been identified with this STAR and this ACP seeks to rectify them.

The first is that the STAR was incorrectly implemented. The proposed STAR was supposed to route L15, Q38: MAKUX - MALUD - AMPIT - NOKIN - CREWE – CHASE. However, the routing submitted to the AIP was L15, Q38: MAKUX - ~~MALUD~~ - AMPIT - NOKIN - CREWE – CHASE.



As Planned



As Implemented

The second is that this STAR routes through the Isle of Man (IOM)/ Antrim sector systemised airspace structure. As such this STAR is required to be RNAV1 as opposed to the implemented RNAV5 specification to become compatible with this airspace.

To rectify these two issues NATS is proposing to realign the MAXUX 1B STAR with Q38 as originally proposed and approved in the DTY ACP. Secondly NATS will re-specify this route as RNAV1. RNAV5 aircraft will be required to continue along L15 and use the MALUD 1B STAR for Birmingham. Subsequently the CHASE hold will need to be dual designated RNAV1/ RNAV5 to accommodate this change.

If you approve the proposed change and use of RNAV1 specification please press the “Approve” voting button or reply “Approve” by (Insert date here when sent).

If you have any other comments on the proposal, please include them in a response to this email.

Kind regards

End of document