CAA Operational Assessment

Title of airspace change proposal	Amendment to MAKUX 1B STAR
Change sponsor	NATS En-Route Ltd (NERL)
Project no.	2020-102
SARG project leader	[redacted]
Case study commencement date	19 Apr 21
Case study report as at	13 May 21

Instructions

In providing a response for each question, please ensure that the 'status' column is completed using the following options:

• yes • no • partially • n/a

To aid the SARG project leader's efficient project management it may be useful that each question is also highlighted accordingly to illustrate what is:

resolved Green not resolved Amber not compliant Red

Executive Summary

As part of a NATS Enroute Ltd (NERL) project to rationalise its Doppler Very High Frequency Omnidirectional Range (DVOR) navigation Beacons, NERL have rationalised some of the Standard Terminal Arrival Routes (STARs) into Birmingham Airport (EGBB) and in accordance with the Design Principles of this project had specified them as Area Navigation (RNAV) 5 procedures. The MAKUX 1B, which was implemented under ACP 2019-56, extended into the Isle of Man (IOM) and Antrim Sectors. As the MAKUX 1B was designated as RNAV5, it was not compatible within the RNAV1 systemised airspace of these sectors. Following implementation and a period of use it was also noticed, by NATS, that the MAKUX 1B had been implemented incorrectly (not as approved under CAP1955) from a technical perspective, it did not align with the ATS route Q38/L15 as intended.

1.	Justification for change and options analysis (operational/technical) Status	
1.1	Is the explanation of the proposed change clear and understood?	YES
	NATS are proposing that the MAKUX 1B be specified as an RNAV1 STAR and redesignated as the MAKUX 2B accordingly. They also propose to dual-specify the CHASE (EGBB) hold as RNAV1 and RNAV5 as the CHASE hold also serves the extant RNAV5 STARs that need to remain only RNAV5 specification. NATS will also re-align the MAKUX 2B so that it follows Q38/L15 (will not reference EPOXI) as approved for the MAKUX 1B under CAP1955 (ACP2019-56).	
1.2	Are the reasons for the change stated and acceptable?	YES
	As part of the NERL DVOR rationalisation program, NATS are decommissioning many of the UKs VOR/DME facilities. Under ACP2019-56, which was part of the DVOR rationalisation program, the MAKUX 1B STAR was proposed to route along Q38/L15. NATS are now proposing re-designating it as the MAKUX 2B, realigning it to follow Q38/L15 (will not reference EPOXI) and changing its specification to RNAV1 in order to optimise it in the IOM/Antrim sectors.	
1.3	Have all appropriate alternative options been considered, including the 'do nothing' option?	YES
	Yes; do nothing was not considered viable as the current situation exists as a result of an error. The only viable option is the option proposed (option 2) as it aligns with the design principles (DPs), reduces risk and is correcting an implementation mistake.	
1.4	Is the justification for the selection of the proposed option sound and acceptable?	YES
	Yes; the MAKUX 1B was implemented incorrectly. The MAKUX 2B and dual specified CHASE Hold will reduce risk in the IOM/Antrim sectors, improve systemisation, increase efficiency and correctly align with Q38/L15 as intended.	
2.	**Airspace description and operational arrangements**	**Status**
2.1	Is the type of proposed airspace design clearly stated and understood?	YES
	Yes; re-designation of the MAKUX 1B STAR as the MAKUX 2B STAR (RNAV1 specification), re-aligned with Q38/L15 and dual specification of the EGBB CHASE Hold.	

2.2	Are the hours of operation of the airspace and any seasonal variations stated and acceptable?	N/A
	There are no changes to hours of operation.	
2.3	Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes?	YES
	The MAKUX 2B will be compatible with the IOM/Antrim sectors RNAV1 systemised airspace.	
2.4	Is the supporting statistical evidence relevant and acceptable?	YES
	The data shows that 109 aircraft flew the incorrectly implemented MAKUX 1B in Jan/Feb 2021.	
2.5	Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?	YES
	NATS state that the changes will, '*…lead to an increase in operational efficiency owing to the utilisation of the IOM/ Antrim systemised airspace structure and the improved safety resulting from this change*'.	
2.6	Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSD) and airspace management requirements?	N/A
	N/A	

2.7	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, what action has the change sponsor carried out to resolve any conflicting interests?	N/A
	N/A	
2.8	Is the evidence that the airspace design is compliant with ICAO SARPs, airspace design & FUA regulations, and Eurocontrol guidance satisfactory?	YES
	Yes; the MAKUX 2B will be RNAV1 specification and the EGBB CHASE Hold will be RNAV1 and RNAV5 specification. They will be compliant with PBN specifications laid down in ICAO SARPs.	
2.9	Is the proposed airspace classification stated and justification for that classification acceptable?	N/A
	N/A	
2.10	Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?	N/A
	N/A	
2.11	Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation.)	N/A
	N/A	

2.12	Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area?	N/A
	N/A	
2.13	Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?	N/A
	N/A	
2.14	Are any airspace user group's requirements not met?	NO
	No.	
2.15	Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).	N/A
	N/A	
2.16	Is the airspace design of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments?	N/A
	N/A	

2.17	Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter.)	N/A
	There is no buffer requirement.	
2.18	Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures?	N/A
	There is no new structure.	
2.19	Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?	N/A
	N/A	
2.20	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?	N/A
	N/A	
2.21	Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?	YES
	The MAKUX 2B will meet the dual designated EGBB CHASE Hold.	

3.	Supporting resources and communications, navigation and surveillance infrastructure	Status (CNS)
3.1	Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:	N/A
	• **Communication**: Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with AAA Infrastructure?	
	No Change.	
	• **Navigation:** Is there sufficient accurate navigational guidance based on in-line VOR or NDB or by approved RNAV-derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/ Eurocontrol standards? For example, for navaids, has coverage assessment been made, such as a DEMETER report, and if so, is it satisfactory?	
	No Change.	
	• **Surveillance:** Radar provision – have radar diagrams been provided, and do they show that the ATS route/airspace structure can be supported?	
	No Change.	
3.2	Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable?	N/A
	N/A	

4.	**Maps/charts/diagrams**	**Status**
4.1	Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates? (We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with aeronautical cartographical standards (see airspace change guidance), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals.)	N/A
	N/A	
4.2	Do the charts clearly indicate the proposed airspace change?	YES
	Yes.	
4.3	Has the change sponsor identified AIP pages affected by the change proposal and provided a draft amendment?	YES
	Yes. EGSS AD2.24 6-4	
4.4	Has the change sponsor completed the WGS84 spreadsheet and submitted to the CAA for approval?	N/A
	N/A	

5.	**Operational impact**	**Status**
5.1	Is the change sponsor's analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory? Consideration should be given to:	YES
	a) Impact on IFR General Aviation traffic, on Operational air traffic or on VFR General Aviation traffic flow in or through the area.	YES
	No impact.	
	b) Impact on VFR Routes.	YES
	No Impact.	
	c) Consequential effects on procedures and capacity, i.e. on SIDs, STARs, holds. Details of existing or planned routes and holds.	YES
	This will ACP allow for optimised systemisation of the relevant sectors, which will increase operational efficiency. This ACP is not intended to facilitate an increase in capacity.	
	d) Impact on airfields and other specific activities within or adjacent to the proposed airspace.	YES
	No Impacts.	

	e) Any flight planning restrictions and/ or route requirements.	YES
	Aircraft that are only RNAV5 compatible will fly ATS route L15 and then use the MALUD 1B STAR into EGBB.	
5.2	Does the change sponsor consultation material reflect the likely operational impact of the change?	YES
	Yes.	
Case study conclusions – to be completed by SARG project leader		**Yes/No**
Has the change sponsor met the SARG airspace change proposal requirements and airspace regulatory requirements above?		YES
The change sponsor has met the requirements of the CAP1616 process and the regulatory requirements above. The redesignation of the MAKUX 1B to the MAKUX 2B, as an RNAV1 STAR into EGBB, is required to optimise the airspace systemisation that was achieved under the Future Airspace Strategy Implementation (North) (formerly Prestwick Lower Airspace Systemisation) ACP. By dual designating the CHASE hold there will be no discernible impacts to EGBB arrivals that may utilise it. The incorrect implementation of the MAKUX 1B will also be rectified.		
RECOMMENDATIONS/CONDITIONS/PIR DATA REQUIREMENTS		
Are there any Recommendations which the change sponsor should try to address either before or after implementation (if approved)? If yes, please list them below.		NO
GUIDANCE NOTE: *Recommendations are something that the change sponsor* ***should try*** *to address either before or after implementation, if indeed the airspace change proposal is approved. They may relate to an area in which the change sponsor is reliant upon a third party to actually come to an agreement and consequently they do not carry the same 'weight' as a Condition.*		
Are there any Condition(s) which the change sponsor **must fulfil** either before or after implementation (if approved)? If yes, please list them below.		NO

GUIDANCE NOTE: Conditions are something that the change sponsor **must fulfil** either before or after implementation, if indeed the airspace change proposal is approved. If their proposal is approved, change sponsors **must observe** any condition(s) contained within the regulatory decision; failure to do so **will usually** result in the approval being revoked. Conditions should specify the consequence of failing to meet that condition, whether that be revoking the ACP or some alternative.

Are there any specific requirements in terms of the data to be collected by the change sponsor for the Post Implementation Review (if approved)? If yes, please list them below.	YES

GUIDANCE NOTE: PIR data requirements concerns any specific data which the change sponsor **must** collate post-implementation, if indeed the airspace change proposal is approved. Please use this section to list any such requirements so that they can be captured in the regulatory decision accordingly.

Recorded flight data to demonstrate that there have been no material changes to flight paths or traffic distribution and safety data, service provision/resource issues, operational stakeholder feedback and utilisation data. (See post COVID-19 guidance on the CAA Website.)

General summary

This ACP forms part of the NATS program to rationalise their DVOR navigation beacons. The MAKUX 1B was intended to remove the dependency on the DTY DVOR, which the earlier conventional STARs into EGBB had. By introducing the RNAV1 MAKUX 2B the airspace in the IOM/Antrim sectors is optimised. Furthermore, RNAV5 aircraft into EGBB can route via L15 and the MALUD 1B STAR. The proposal to re-align the MAKUX 2B as approved under ACP2019-56 has been duly considered as a result of the incorrectly implemented MAKUX 1B STAR, being flown. The CAA had to consider the impacts of reverting. NATS have shown that the continued use of the MAKUX 1B STAR could lead to an unnecessary increase in controller workload. NATS introduced an operational notification to controllers to provide information on the technical implementation error and the impact has been further reduced due to the reduction in traffic as a result of Covid-19. By rectifying the implementation error, the controllers can take full advantage of the systemised airspace.

Comments and observations

NATS and the CAA have considered how the MAKUX 1B STAR was implemented incorrectly and have agreed to carry out more thorough checks of the documentation submitted to AIS prior to implementation to ensure that the implemented airspace change matches that which was approved. Had the MAKUX 1B not been utilised, it may have been possible to consider scaling this ACP still further, however, as the procedure had been implemented and flown the ACP process was followed in order to ensure any impacts associated with the change(s) were duly considered.

Operational assessment sign-off/ approvals	Name	Signature	Date
Operational assessment completed by:	AR Case Officer: [redacted]	[redacted]	13/05/2021
Operational assessment approved by:	Principal Airspace Regulator: [redacted]	[redacted]	27/05/2021
Manager Airspace Regulation comments: N/A			