

## Safety and Airspace Regulation Group

Page 1 of 15

Airspace Change Proposal - Operational Assessment

Version: 1.0/ 2016

<b>Title of Airspace Change Proposal</b>	<b>Birmingham Airport Runway 33 SIDs</b>
<b>Change Sponsor</b>	<b>Birmingham Airport</b>
<b>SARG Project Leader</b>	
<b>Case Study commencement date</b>	<b>12 June 2018</b>
<b>Case Study report as at</b>	<b>04 February 2019</b>
<b>File Reference</b>	<b>ACP-2016-15</b>

### 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  not resolved  not compliant  as part of the AR Project Leader's efficient project management.

**Safety and Airspace Regulation Group**

1.	Justification for change and “Option Analysis”	Status
1.1	<p><b>Is the explanation of the proposed change clear and understood?</b></p> <p>The proposal is for four new RNAV SIDs to replace the current conventional SIDs and the non-standard MOSUN procedure from Runway 33 at the aerodrome. There is no proposed change to the dimensions of controlled airspace as the procedures aim to keep traffic close to where it currently flies. The current Whitegate (WHI) SID is not being replaced in the proposal due to the enroute network requirements that all northbound traffic goes to a new point (LUVUM) to enable the systemised separation of departing and arriving traffic.</p>	YES
1.2	<p><b>Are the reasons for the change stated and acceptable?</b></p> <p>The removal of the ground-based navigation aids which are required for the continued operation of the airport’s current SID procedures means that new RNAV procedures are required to replace them.</p>	YES
1.3	<p><b>Have all appropriate alternative options been considered, including the ‘do nothing’ option?</b></p> <p>For northbound procedures, the “do nothing” option is not available to the airport due to the removal of the ground-based navigation infrastructure. There were also limitations on the options available due to the enroute network requirements meaning that the current Whitegate SID could not be retained for northbound departures.</p> <p>For southbound procedures, the “do nothing” option is not available to the airport due to the removal of the ground-based navigation infrastructure. The airport considered a number of options for replication of the extant procedures including replicating the centreline of the extant SID and replicating the nominal centre of tracks currently flown.</p>	YES
1.4	<p><b>Is the justification for the selection of the proposed option sound and acceptable?</b></p> <p>The proposed SID to the north was required to terminate at the new waypoint, LUVUM, due to the upcoming redesign of enroute airspace to the north of the airport. Ideally this would be co-ordinated with the introduction of the new enroute airspace but the VOR rationalisation has meant that the sponsor must introduce the RNAV SIDs before this takes place. NERL have provided the sponsor with an entry point to the network (LUVUM) which will work with their planned airspace arrangements. As such the Whitegate SID could not be retained or replicated as it would not terminate at LUVUM. It would have been possible to replicate the first part of the procedure but then would need to overfly those currently not overflowed in order to reach LUVUM, and would be more track miles and therefore less efficient from a fuel/CO2 perspective. The proposed northbound SID replicates closely what is flown today on the Trent SID. The proposed SIDs to the south attempt to replicate the existing nominal ground tracks as opposed to the existing SID centrelines. While the proposed option for northbound traffic effectively doubles the number of aircraft movements on the route to LUVUM, it removes departure traffic completely from what was the WHI SID, which is a much more heavily populated area. The area under the WHI SID is also impacted by arriving traffic when on RWY 15 so by removing departures from this area, respite is introduced.</p>	YES

## Safety and Airspace Regulation Group

Page 3 of 15

### Airspace Change Proposal - Operational Assessment

Version: 1.0/ 2016

For the southbound procedures, ADMEX and UNGAP, which share the initial part of the departure, the sponsor initially selected a route which replicated the nominal track of aircraft flying the current conventional procedure. Following feedback from residents in the Curdworth area, it was agreed that the sponsor would move the proposed SID centreline north over J9 of the M42 to reduce noise impacts. The change took place outside of the Noise Contours, and still flies a track that is flown by aircraft today. In addition, the sponsor has made it clear that due to the nature of the turn, there will be a degree of dispersion and subsequently aircraft are still likely on occasion to directly overfly Curdworth, which is located within the NPR swathe.

2.	Airspace Description and Operational Arrangements	Status
2.1	<p><b>Is the type of proposed airspace clearly stated and understood?</b></p> <p>No change to airspace dimensions or classification</p>	N/A
2.2	<p><b>Are the hours of operation of the airspace and any seasonal variations stated and acceptable?</b></p> <p>No change</p>	N/A
2.3	<p><b>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?</b></p> <p>Agreement has been reached with NERL that traffic will enter the enroute network via the SIDs as described in the proposal. For the UMLUX and LUVUM SIDs, DCTs will be added to the Standard Route Document to allow flight planning via the new SIDs, until the enroute network is developed.</p>	YES
2.4	<p><b>Is the supporting statistical evidence relevant and acceptable?</b></p> <p>The sponsor has provided relevant statistical evidence on the fleet equipage for RNAV1 at the airport – in 2017 98.5% were using the current RNAV procedures from runway 15. Of the remaining 1.5%, nearly half were RJ1H aircraft which have since been removed from service and replaced with RNAV1 capable aircraft. Also provided are statistics on previous, current and forecast future aircraft movements from runway 33, overall changes in fuel burn and CO2 emissions.</p>	YES
2.5	<p><b>Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?</b></p>	YES

**Safety and Airspace Regulation Group**

	There will be no change to the traffic mix as a result of this proposal. As the fleet equipage is so high, there should be no impact on the complexity and workload as part of the introduction of RNAV SIDs from Runway 33, particularly as RNAV SIDs are already in use from Runway 15.	
2.6	<b>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?</b>	<b>N/A</b>
2.7	<b>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 sponsor carried out to resolve any conflicting interests?</b>	<b>N/A</b>
2.8	<b>Is the evidence that the Airspace Design is compliant with ICAO SARPs, Airspace Design &amp; FUA regulations, and Eurocontrol Guidance satisfactory?</b>	<b>YES</b>
	While the UMLUX SID (which replaces the non-standard MOSUN departure) terminates outside controlled airspace, the procedure standardises the initial part of the procedure and the restrictions on the use of the route will remain the same.	
2.9	<b>Is the proposed airspace classification stated and justification for that classification acceptable?</b>	<b>N/A</b>
	No change	
2.10	<b>Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?</b>	<b>YES</b>
	No change	
2.11	<b>Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation)</b>	<b>N/A</b>
	No Change	
2.12	<b>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?</b>	<b>YES</b>
	No change	

**Safety and Airspace Regulation Group**

2.13	<p><b>Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?</b></p> <p>No change</p>	YES
2.14	<p><b>Are any airspace user group's requirements not met?</b></p> <p>There was a response to the consultation by airspace users that the removal of the WHI SID would add additional track miles and planned fuel upload. Some alternatives were proposed such as the removal of a Flight Level cap on the LUVUM SID to allow fuel planning for an unrestricted climb. This would not be in accordance with PANS OPS design requirements so was rejected by the sponsor.</p>	NO
2.15	<p><b>Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).</b></p>	N/A
2.16	<p><b>Is the airspace structure 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?</b></p> <p>While the UMLUX SID (which replaces the non-standard MOSUN departure) terminates outside controlled airspace, the procedure standardises the initial part of the extant procedure and the restrictions on the use of the route will remain the same. The sponsor has provided a safety case at Appendix 8 which has been accepted by the ATS Inspector. All other procedures are contained within controlled airspace.</p>	YES
2.17	<p><b>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).</b></p>	N/A
2.18	<p><b>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?</b></p>	N/A
2.19	<p><b>Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?</b></p>	YES

## Safety and Airspace Regulation Group

Page 6 of 15

### Airspace Change Proposal - Operational Assessment

Version: 1.0/ 2016

2.20	<b>If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?</b>	<b>YES</b>
2.21	<b>Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?</b>	<b>YES</b>
<p>Operating arrangements have been agreed and will be co-ordinated with NERL for enroute integration. All northbound SIDs will route via LUVUM in order to procedurally separate all departures from arrivals at the network level. Southbound operations will remain the same.</p>		
<b>3.</b>	<b>Supporting Resources and CNS Infrastructure</b>	<b>Status</b>
3.1	<b>Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:</b>	
	<ul style="list-style-type: none"> <li>▪ <b>Communication:</b> 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?</li> </ul>	<b>YES</b>
No change		
	<ul style="list-style-type: none"> <li>▪ <b>Navigation:</b> 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? Eg. Nav aids – has coverage assessment been made eg. a DEMETER report, and if so, is it satisfactory?</li> </ul>	<b>YES</b>
IFPs approved including nav infrastructure assessment		
	<ul style="list-style-type: none"> <li>▪ <b>Surveillance:</b> Radar Provision – have radar diagrams been provided, and do they show that the ATS route / airspace structure can be supported?</li> </ul>	<b>YES</b>
No change		
3.2	<b>Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growths acceptable?</b>	<b>N/A</b>
<p>ATS inspector is content that the introduction of these procedures will pose no issues to the unit.</p>		

**Safety and Airspace Regulation Group**

**Safety and Airspace Regulation Group**

4.	Maps/Charts/Diagrams	Status
4.1	<p>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 AC&amp;D aeronautical cartographical standards (see CAP725), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals. AC&amp;D work would relate to regulatory consultation charts only).</p>	YES
	<p>No change to airspace dimensions, charts provided as part of the IFP package, as well as diagrams showing proposed SID centrelines against current centrelines/tracks and NPRs.</p>	
4.2	<p>Do the charts clearly indicate the proposed airspace change?</p>	YES
4.3	<p>Has the Change Sponsor identified AIP pages affected by the Change Proposal and provided a draft amendment?</p>	YES



**Safety and Airspace Regulation Group**

5.	Operational Impact	Status
5.1	<p><b>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?</b>                      Consideration should be given to:                      a) <b>Impact on IFR GAT, on OAT or on VFR general aviation traffic flow in or through the area.</b></p>	YES
	<p>No change other than to the small number of non-RNAV capable aircraft that will be co-ordinated separately. For some departures, there will be an increase in track mileage using the LUVUM SID as opposed to the extant WHI SID.</p>	
	<p>b) <b>Impact on VFR Routes.</b></p>	N/A
	<p>c) <b>Consequential effects on procedures and capacity, ie on SIDS, STARS, holds. Details of existing or planned routes and holds.</b></p>	YES
	<p>The RNAV SIDs are to replace the current suite of SIDs from Runway 33 which should enable the airport to retain their current level of capacity and growth potential.</p>	
	<p>d) <b>Impact on Airfields and other specific activities within or adjacent to the proposed airspace.</b></p>	NO
	<p>e) <b>Any flight planning restrictions and/ or route requirements.</b></p>	YES
<p>The new UMLUX and LUVUM SIDs currently do not connect to ATS routes as the enroute network is developing. The onward routes, initially via DCT, will be published in the Standard Route Document to ensure they are flight plannable.</p>		
5.2	<p><b>Does the Change Sponsor Consultation letter reflect the likely operational impact of the change?</b></p>	YES

**Safety and Airspace Regulation Group**

6.	Economic Impact	Status
6.1	<p><b>Is a provisional economic impact assessment to all categories of operations and users likely to be affected by the change included and acceptable? (This may include any forecast capacity gains and the cost of any resultant additional track mileage).</b></p> <p>The proposal is not assessed to have a significant economic impact other than enabling the airport to continue operating as it does today. There are some fuel burn penalties for some routes which would previously have used the WHI SID but these are largely offset by the potential for future systemisation of enroute airspace, leading to increased efficiency and capacity.</p>	YES

7.	Recommendations / Conditions / PIR Data Requirements	
7.1	<p><b>Are there any Recommendations which the change sponsor <u>should try</u> to address either before or after implementation (if approved)? If yes, please list them below.</b></p>	NO
7.2	<p><b>Are there any Condition(s) which the change sponsor <u>must fulfil</u> either before or after implementation (if approved)? If yes, please list them below.</b></p>	NO
7.3	<p><b>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.</b></p>	YES
	<p>The change sponsor is required to collate related stakeholder observations (enquiry/complaint data) and present it to the CAA. Any location/area from where more than 10 individuals have made enquiries/complaints must be plotted on separate maps displaying a representative sample of:</p> <ul style="list-style-type: none"> <li>• aircraft track data plots; and</li> <li>• traffic density plots</li> </ul> <p>The plots should include a typical days-worth of movements from the last month of each standard calendar quarter (March, June, September, December) from each of the years directly preceding and following implementation of the airspace change proposal.</p>	

## Safety and Airspace Regulation Group

Page 11 of 15

### Airspace Change Proposal - Operational Assessment

Version: 1.0/ 2016

Case Study Conclusions – To be completed by SARG Project Leader	Yes/No
<p><b>Has the Change Sponsor met the SARG Airspace Change Proposal requirements and Airspace Regulatory requirements above?</b></p> <p>The sponsor has examined the options that were available, given the requirement to introduce a mitigation to the removal of relevant conventional navigation aids, including the Trent VOR and Whitegate NDB. The sponsor was also limited in design options for northbound departures due to the agreed network access point at LUVUM which enables more systemised flows of traffic for both departures to and arrivals from the north of the airport.</p> <p>Whilst the frequency of aircraft using the current departure route to Trent will increase, the corresponding reduction in departing aircraft over a densely populated area of Birmingham, which also is overflowed by arriving traffic, means that there will be a large number of households who will see a reduction in noise events from departing aircraft.</p> <p>The sponsor was able to closely replicate the nominal track of aircraft using the existing southbound SIDs, ADMEX and UNGAP. Following feedback from consultees, the sponsor moved the proposed centreline of the SIDs approximately 0.4km north in the vicinity of Curdworth but explained to local stakeholders that they would still likely experience aircraft noise.</p> <p>The sponsor has proposed an RNAV SID (UMLUX) to replace its non-standard MOSUN departure which takes aircraft southwest, saving approximately 70 nautical miles when heading to destinations such as the Canary Islands, Portugal and southern Ireland. The current procedure can take aircraft into Class G airspace and so has restrictions on timings of use for jet traffic. The CAA's ATS inspector is content with the new arrangements. The proposed SID replicates the mean track of jet traffic using the non-standard route and will have the same restrictions of use as the current procedure. NATS are proposing to introduce new controlled airspace in this region in the future and if it is approved would allow the use of the MOSUN route to increase.</p> <p>The sponsor has selected an appropriate solution to the airspace issue identified and has demonstrated that feedback received from the consultation was considered when deciding on their final proposal.</p>	<p><b>YES</b></p>

Outstanding Issues		
Serial	Issue	Action Required
1	Amendment to decision on RWY15 LUVUM SID	Update to RWY 15 decision to include updated northbound SID designs as these need to be implemented at the same time.
2		

**Safety and Airspace Regulation Group**

**Additional Compliance Requirements (to be satisfied by Change Sponsor)**

Serial	Requirement
1	The sponsor should record any/all noise complaints or airspace conflicts so these can be considered against the proposal in the PIR.
2	

Recommendations	Yes/No
Is the approval of the SoS for Transport required in respect of the Environmental Impact of the airspace change?	NO
Is the approval of the MoD required in respect of National Security issues surrounding the airspace change?	NO


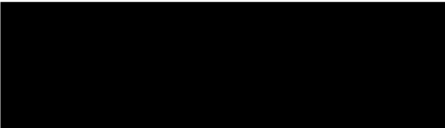
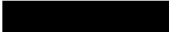

**General Summary**

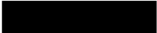
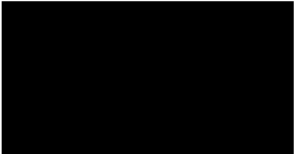
The navigation aids that the current departure procedures from RWY 33 at Birmingham Airport are predicated on are being withdrawn. The sponsor developed options in accordance with certain design principles. A formal consultation was undertaken in accordance with the requirements of CAP 725 and the sponsor has selected an appropriate solution to the airspace issue identified, demonstrating that feedback received from the consultation was considered when deciding on their final proposal.

**Comments & Observations**


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**Safety and Airspace Regulation Group**

<b>Operational Assessment Sign-off/ Approvals</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
<b>Operational Assessment completed by:</b>	 <b>AR Case Officer</b>		04 Feb 2019
<b>Operational Assessment approved:</b>	 <b>Mgr AR</b>		15/02/2019
<b>Mgr AR Comments:</b>			

<b>Hd AAA Comment/ Approvals</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
<b>Operational Assessment Conclusions approved:</b>	 <b>Hd AAA</b>		21.02.2019
<b>Hd AAA Comments:</b> This proposal is recommended for approval.			

**Safety and Airspace Regulation Group**

GD SAR Decision/ Approval	Name	Signature	Date
<b>GD SAR Decision:</b> Approved subject to condition below.	<b>Mark Swan</b> <b>GD SAR</b>		22 Feb 2019
<p>GD SARG Comments: I have discussed with Hd AAA and Mgr AR separately the issue of overflights of both Castle Bromwich and Curdworth and the associated consultations. I am satisfied that the process has been followed and the views of consultees taken into account adequately. I do however wish the PIR to examine specifically the effects of these changes on those residents in some detail, to ascertain that what has been proposed does not adversely those communities outside the considerations of the consultation process.</p> <p>With that condition the ACP is approved.</p>			