DVOR Rationalisation
Removal of Enroute Dependencies
Manchester (MCT) Deployment

DVOR MCT Holds and STARs
CAP1616 Stage 2 Gateway

v2

NATS Public

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1.0	May 2021	Submitted to the CAA
1.1	May 2021	Annex G: Engagement evidence updated, and links updated
2.0	July 2021	New submission following gateway rejection, containing: • Justification for RNAV1 selection • Clarity around removal of SLPs • Traffic numbers provided for in-scope STARs • Clarity around RNAV5 traffic provision • Explanation for introduction of new waypoint FIZED • Justification for removal of ROSUN 2E • Links updated

Contents

1. Introduction

This document continues the CAP1616 process started with the Statement of Need (DAP1916) submitted in February 2020 (Ref 3). The intent of this document is to summarise and satisfy the requirements of CAP1616 Stage 2. The CAA reference is ACP-2020-018, the link to the CAA progress page is here.

This proposal is limited to removing the dependency of enroute instrument flight procedures in the UK AIP from the Manchester (MCT) DVOR. Hence this proposal is focused on Standard Terminal Arrival Routes (STARs) and Holding procedures which refer to MCT as a conventional navaid in the enroute environment, where NATS is the primary Air Navigation Service Provider (ANSP). There are minor changes to ATS routes as part of this proposal as a result of the removal of the MCT. A new point will replace MCT and this will be reflected on the routes.

This proposal contains the relevant changes to remove the dependency on MCT from these STARs and Holds. Design Principles have been developed (Ref 4) which are focused on best removing the enroute DVOR dependencies whilst ensuring the changes are safe and do not result in changes to flight behaviour. This document will identify:

- option concepts for replacing current connectivity relevant to MCT with RNAV procedures;
- an evaluation of those option concepts against the Design Principles;
- a full list of the specific changes.

2. Stage 2 Develop and Assess

Step 2A Options Development

2.1 CAA's PBN STAR Replication Policy (V2) was published in Mar 2018 and was used as the basis for this proposal. It defines PBN STAR Replication as a PBN redesign of an existing conventional STAR from the commencement of the STAR in the ATS enroute network to the termination point with the intention of retaining the existing route and track over the ground (para 5.4). Para 5.5 of the same policy makes assumptions that replication ensures procedures follow the same path over the ground as the existing conventional procedure, as closely as possible. This means that there would be no change to pilot or controller behaviour (apart from technical designation changes), and no change to lateral traffic position.

2.2 Airspace change design options

The design options considered to remove the enroute dependencies from the MCT DVOR, were limited to the following:

Option 0 – Do nothing. Retain all the STARs and Holds unchanged from today's AIP definition.
Option 1 – Using the CAA policies, replicate all relevant STARs and Holds using RNAV, exactly as defined in the AIP without considering any practicalities.
Option 2 – Examine the use of existing STARS and Holds from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.
Option 3 – Remove all existing STARs and Holds that refer to or use the MCT DVOR.

On-going engagement throughout the DVOR project – with relevant airfields and ATC Development and Procedure teams at NATS – has determined that, the conventional STARs, using PBN design criteria, will be replicated to the RNAV1 specification. This is in accordance with Policy published on the CAA website regarding STAR replication:

"Either on an opportunity basis e.g., the introduction of a new airspace design or co-incident with the next Instrument Flight Procedure (IFP) review, those STARs currently promulgated using the RNAV 5 specification, will be re-designed using the RNAV 1 specification in compliance with Part-AUR.PBN.2005 (4)."

As these procedures are replications of current conventional procedures there is no requirement for ensuring separation from other ATS Routes/STARs.

Speed Limit Points (SLPs) will be removed from the procedures. Where an existing waypoint is co-incident with the current SLP, the speed restriction shall be coded at the waypoint. Otherwise, the speed restriction shall be coded into the hold, or new waypoints introduced to enable coding. ATC will continue to issue tactical speed clearances as required.

By replicating the STARS in scope using RNAV1, this will cater to the PBN equipage of >95.99% of the arrivals into the stakeholder airports (Q3 2019 figures), see Table 1:

Airport	STAR	Planned Arrivals on in-scope STARS		RNAV5 %	Calculated Number of RNAV5 equipped aircraft on in-scope STARs	
		Total	Per STAR		Total	Per STAR
EGBB	CHASE 4B	7261	4967	2.64	192	131
	CHASE 3F		126			3
	CHASE 3G		566			15
	CHASE 3H		1602			42
EGNX	ROKUP 1B	5101	3627	4.01	205	145
	ROKUP 1F		616			25
	ROKUP 1G		803			32
	ROKUP 1K		55			2
EGCC	ROSUN 2A	16593	4655	2.44	405	114
	ROSUN 2B		94			2
	ROSUN 4D		1943			47
	ROSUN 1F		8880			217
	ROSUN 1G		1021			25
	ROSUN 2E	See Note 1.				
	DALEY 2A	See Note 2 & 3.				
	DALEY 2B					
	DALEY 4D					
	DALEY 2E					
	DALEY 1F					
	DALEY 1G					

Table 1: Total No of Arrivals filing an in-scope STAR and the calculated number of RNAV 5 equipped arrivals on each procedure. Number of arrivals sourced from Central Flow Management Unit (CFMU) flight-planned data from year 2019, all values are rounded to the nearest integer.

For aircraft not suitably equipped to fly a RNAV1 STAR there will be a provision to flight-plan a route which is coincident with the new RNAV1 procedure. This will be achieved by:

- Following the ATS route whilst this is coincident with the STAR,
- Once the STAR deviates from the ATS route, aircraft will follow a series of DCTs (as detailed in the SRD) coincident with the STAR, terminating at the holding fix.
- ATC will tactically manage these aircraft, providing Heading/ Level/ Speed clearances as necessary.

This provision will be published in the relevant sections of the airfield AIP AD 2.22.

The holding patterns are to be dual designated RNAV 1/ 5, ensuring that RNAV 5 aircraft remain catered for within the airspace.

In support of the eventual removal of the MCT DVOR, this proposal will RNAV replicate a hold serving Manchester Airport. New RNAV1 STARs (serving Birmingham Airport, East Midlands Airport and Manchester Airport) will be introduced to replace the current conventional procedures. The new STARs will be named based

[1] The ROSUN 2E STAR is being withdrawn as it is underutilised, CFMU data shows it has not been filed since 5th March 2019.

[2] Aircraft which filed the DALEY STARs in 2019 are not included in this data.

[3] The DALEY STARs serving Manchester airport are contingency STARs for when MCT DVOR is out of service. As the dependency on MCT is being removed, these STARs are no longer required

on their starting waypoints in line with ICAO requirements. These replications will conform as closely as possible to the current conventional procedures, using RNAV1 design criteria.

New waypoint FIZED will be added to UL975, between LIBSO and GOLES. This will allow improved descent planning for when TRA006 is active.

This proposal will extend some STARs (serving Birmingham Airport and East Midlands Airport) back to existing waypoints in order to provide flight plannable options and retain or improve important descent planning restrictions. These STARs will also be RNAV1 replicated and re-named as per their starting waypoints.

The ROSUN 2E STAR will be withdrawn due to under-utilisation. Flight plan data from CFMU shows it has not been filed since 5th March 2019.

Finally, STARs associated with DALEY (serving Manchester Airport) will be withdrawn, along with the associated hold, due to their role as contingency STARs when MCT is out of service. Due to PBN replication, allowing the MCT DVOR to be decommissioned, these will no longer be required.

All of the above proposed changes are detailed fully in Annexes C-F.

Birmingham, East Midlands and Manchester Airports have been engaged with regarding this proposal and the changes to the relevant Hold and STARs (evidence of engagement with the airports is detailed in Annex H). The proposed changes are supported by the airports.

2.3 Stakeholder Engagement

As part of Stage 2, CAP1616 requires change sponsors to develop a comprehensive list of Design Options, which are tested with the same group of stakeholders who were engaged with during Stage 1. However, as covered in the Stage 1B Design Principles document (Ref 4), the Design Principles for this submission were constructed around how best to remove the enroute dependencies from the MCT DVOR, alongside ensuring the changes are safe and do not result in any changes to flight behaviour. NATS had previously taken part in a (CAA-led) consultation with the National Air Traffic Management Advisory Committee (NATMAC) on DVOR rationalisation; prior to the introduction of CAP1616 and the requirement to seek feedback on Design Principles.

Alongside the Design Principles, the Design Options have been developed to provide different methods in which the enroute dependencies can be removed from a DVOR, whilst ensuring no changes to flight behaviours. The Design Options have been used consistently across the numerous DVOR submissions as they achieve the same outcome; although they are always reviewed to ensure relevance. We therefore conclude that there is no need to re-consult with the NATMAC members, nor any additional stakeholders, as there will not be any impact upon them.

However, as part of this Airspace Change Proposal and as per previous submissions, NATS has been in contact with relevant airfields which use the STARs and associated Holds we plan to RNAV replicate, specifically Birmingham, East Midlands and Manchester Airports. The aerodrome sections of the AIP for the affected airfields will need to be updated, approval to update these sections has been sought through engagement. The proposed changes have been designed to be invisible from an airport's perspective so there are no other impacts anticipated. Annex H provides a summary of the engagement activity for these procedures.

Previous DVOR removal proposals have proposed three Design Options: in summary, to do nothing; to replicate all procedures; and lastly, to examine all procedures and improve where appropriate (rationalise/ truncate/ replicate). These Design Options were accepted by the CAA. NATS was later requested to add an additional option to all future submissions, whereby all procedures with a dependency are removed; thus, removing the DVOR dependency. The CAA acknowledged that this Design Option would not meet the Design Principles however; it is included for completeness.

The Design Options have therefore been developed so they can be applied to each of the individual DVOR submissions and have evolved following guidance from the CAA. As mentioned above, appropriate engagement has previously been completed with NATMAC members and the relevant airports; and airports will be fully briefed when their AIP pages are required to be updated.

3. Step 2A Options Development: Design Principle Evaluation

This section evaluates the performance of all 4 Design Options with respect to each of the five Design Principles. The Design Principles developed during Stage 1B (Ref 4) are included in Annex A for reference. As covered fully in the Stage 1B document, the Design Principles for this MCT DVOR submission have been developed to ensure that they are still relevant; as a consistent set has been used throughout the DVOR Programme.

The below assessment criteria have been used to determine whether each Design Option has met; partially met; or not meet each of the seven Design Principles.

Design Principle	Description	Assessment Criteria		
		Does not meet	Partially meets	Met
DP1 Safety	The proposed airspace change must maintain or enhance the current level of safety	Unlikely to pass a safety case due to major safety issues from proposed changes	Issues identified that would require a robust safety case e.g. workload, IFP (flyability), new hazards	No significant safety issues identified
DP2 No change to flight behaviour	None of the proposed technical changes to definitions of STARs/ Holds would result in a change to actual flight behaviours – laterally, vertically or in dispersal	Proposed change(s) would result in a change to flight behaviour	N/A – either met or not met	None of the proposed changes would result in a change to flight behaviour
DP3 PBN Specification	The proposed airspace change will yield maximum safety and efficiency benefits by using an appropriate standard of PBN	No RNAV replications are made as part of the proposal; or, adequate justification is not provided for the proposed changes	N/A – either met or not met	Conventional procedures are replaced with RNAV versions. Proposed changes fully consider and justify the chosen PBN specification
DP4 Remove DVOR Dependencies	Remove enroute dependencies on the MCT DVOR through appropriate design changes; including removing unnecessary references to the MCT DVOR which are not material to the procedure and rationalising rarely used STARs.	Not all enroute dependencies on the MCT are removed	N/A – either met or not met	All enroute dependencies on the MCT DVOR are removed
DP5 Airspace Optimisation	Where appropriate, the proposed airspace will facilitate an optimised airspace design. Including: - Use PBN Replication – replacing conventional STARs/ Holds with RNAV STARs/ Holds. - Using CAA STAR Truncation Policy, when applied logically to STARs with many common segments, can result in the withdrawal of unnecessary duplicate STARs. - Minor changes to a STAR which currently cannot be flown as it is formally defined for legacy reasons – these changes reflect what would actually happen in practice. - Extend or split a current STAR to allow important descent planning levels to be formally incorporated in the STAR description	Procedures are not individually evaluated for potential application of this DP; therefore, no technical changes are made	Procedures are individually evaluated for potential application of this DP, but no appropriate technical changes are made	Procedures are individually evaluated for potential application of this DP, and minor changes are made, with justification provided

3.1 Option 0 – Do nothing. Retain all the STARs and Holds unchanged from today's AIP definition.

See the submitted Stage 1 Assessment Meeting slide pack (Ref 1) for further details on the procedures which reference the MCT DVOR on their charts and which would remain as they are, for this option. The table below presents an evaluation of this option against the five Design Principles:

Option 0			REJECT
Description of option			
This is the current scenario. No change to existing AIP definitions of STARs or Holds.			
Design Principle 1: Maintain or enhance the current level of safety			MET
Summary of qualitative assessment No change from today; the level of safety is maintained. Therefore, this Design Principle would be satisfied.			
Design Principle 2: No change to flight behaviours			MET
Summary of qualitative assessment No change to lateral/vertical track patterns. Therefore, this Design Principle would be satisfied.			
Design Principle 3: PBN specification	NOT MET		
Summary of qualitative assessment Procedures are not individually evaluated for potential application of this DP; therefore, no RNAV replications would take place under this Design Option. Does not remove any enroute flight dependency from the MCT DVOR and this Design Principle would not be satisfied.			
Design Principle 4: Remove DVOR dependencies	NOT MET		
Summary of qualitative assessment Procedures are not individually evaluated and therefore all existing enroute dependencies on the MCT DVOR would remain and this Design Principle would not be satisfied.			
Design Principle 5: Airspace optimisation	NOT MET		
Summary of qualitative assessment Procedures are not individually evaluated for potential application of this DP. Therefore, no proposed changes to optimise the airspace would take place under this Design Option and this Design Principle would not be satisfied.			

3.2 Option 1 - Using the CAA policies, replicate STARs/ Holds using RNAV, exactly as defined in the AIP without considering any practicalities.

This option would replace all dependant procedures identified in the Assessment Meeting slide pack (Ref 1) as RNAV procedures. This table evaluates this option against the five Design Principles:

Option 1			REJECT
Description of option			
All IFPs would be replicated exactly as defined in the current AIP. No account would be taken of actual usage, route segment duplication, or other factors.			
Design Principle 1: Maintain or enhance the current level of safety			MET
Summary of qualitative assessment Conventional IFPs replicated as RNAV procedures. The level of safety is maintained or slightly improved due to increased precision. No potential safety issues identified. Therefore, this Design Principle would be satisfied.			
Design Principle 2: No change to flight behaviours			MET
Summary of qualitative assessment No practical change to connectivity therefore, no change to lateral/vertical track patterns. Therefore, this Design Principle would be satisfied.			
Design Principle 3: PBN specification			MET
Summary of qualitative assessment This Design Option would purely replicate procedures like for like using an appropriate PBN specification; including route segment duplications etc. Therefore, this Design Principle would be satisfied.			
Design Principle 4: Remove DVOR dependencies			MET
Summary of qualitative assessment Conventional procedures are replicated under this Design Option, which removes the enroute dependencies on the MCT DVOR. Therefore, this Design Principle would be satisfied.			
Design Principle 5: Airspace optimisation	NOT MET		
Summary of qualitative assessment Asides from replicating conventional procedures as they are currently defined under this Design Option, procedures are not evaluated for potential further airspace optimisation opportunities, eg. descent planning. Therefore, this Design Principle would not be satisfied.			

Option 2 - Examine the use of existing STARS and Holds from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.

This option evaluates the usage of each procedure individually and creates opportunity bespoke to specific procedures. See Annexes C-F below for the detailed proposed change for each of the procedures under this option. This table evaluates this option against the five Design Principles:

Option 2			ACCEPT and PROGRESS
Description of option			
Examine the use of existing IFPs from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.			
Design Principle 1: Maintain or enhance the current level of safety			MET
Summary of qualitative assessment IFPs replicated as RNAV1 procedures. The level of safety is maintained or slightly improved due to increased precision. Procedures can be simplified depending on actual usage today. No potential safety issues identified. Therefore, this Design Principle would be satisfied.			
Design Principle 2: No change to flight behaviours			MET
Summary of qualitative assessment No practical change to connectivity therefore, no change to lateral/vertical track patterns. Therefore, this Design Principle would be satisfied.			
Design Principle 3: PBN specification			MET
Summary of qualitative assessment This Design Option would evaluate current IFPs and propose RNAV replication where relevant, including an appropriate specification. Therefore, this Design Principle would be satisfied.			
Design Principle 4: Remove DVOR dependencies			MET
Summary of qualitative assessment This Design Option would evaluate current IFPs and propose that conventional procedures with an MCT dependency are replicated; thus, removing the enroute dependencies on the MCT DVOR. Therefore, this Design Principle would be satisfied. For example, this enables the Manchester ROSUN 1B STAR to be RNAV replicated which removes the current dependency on the MCT DVOR.			
Design Principle 5: Airspace optimisation			MET
Summary of qualitative assessment This Design Option would evaluate current IFPs and where appropriate, propose changes which would facilitate an optimised airspace design. Therefore, this Design Principle would be satisfied. For example, this enables the East Midlands ROKUP 1G STAR to be RNAV replicated and extended back to an existing waypoint, thus retaining the important descent planning restriction.			

3.3 Option 3 – Remove all existing STARs and holds that refer to or use the MCT DVOR.

This option removes each STAR and Hold with a MCT dependency and replaces *MCT DVOR/DME* with *MCT DME*. This table evaluates this option against the five Design Principles:

Option 3			REJECT
Description of option			
Remove all existing IFPs for which the MCT DVOR is materially important.			
Design Principle 1: Maintain or enhance the current level of safety	NOT MET		
Summary of qualitative assessment The removal of these procedures would create a gap in the network. This would require all aircraft currently using the existing IFPs to be channelled into other, potentially busy flows/ sectors, which could greatly increase controller workload in those areas. This could create significant safety issues from such substantial changes. Therefore, this Design Principle would not be satisfied.			
Design Principle 2: No change to flight behaviours	NOT MET		
Summary of qualitative assessment Aircraft would not be able to use the current procedures, causing a significant change in flight behaviours to work around this. Therefore, this Design Principle would not be satisfied.			
Design Principle 3: PBN specification	NOT MET		
Summary of qualitative assessment Procedures are not individually evaluated for potential application of this DP. Therefore, no RNAV replications would take place under this Design Option and this Design Principle would not be satisfied.			
Design Principle 4: Remove DVOR dependencies			MET
Summary of qualitative assessment All en-route procedures with a dependency on the MCT DVOR would be removed; thus, removing all dependencies and therefore satisfying this Design Principle.			
Design Principle 5: Airspace optimisation	NOT MET		
Summary of qualitative assessment Procedures are not individually evaluated for potential application of this DP. Therefore, no proposed changes to optimise the airspace would take place under this Design Option and this Design Principle would not be satisfied.			

3.4 Summary – Options Development

Using the five Design Principles, we have evaluated the four concept Design Options, as summarised above.

3.5 *Option 0: Do Nothing – Retain all the STARs and Holds unchanged from today's AIP definition.* This does not achieve the removal of dependencies from the MCT DVOR. **Rejected.**

3.6 *Option 1: Using the CAA policies, replicate STARs/ Holds using RNAV, exactly as defined in the AIP without considering any practicalities* – this achieves the removal of dependencies from the MCT DVOR and provides RNAV replication of existing conventional procedure. However, it does not allow additional network optimisations to be proposed such as improving network connectivity or withdrawing duplicate route segments. **Rejected.**

3.7 *Option 2: Examine the use of existing STARS and Holds from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.* This achieves the removal of dependencies from the MCT DVOR; alongside providing the opportunity to improve upon the current airspace and procedures such as introducing an important descent planning level. Superfluous procedures, such as the MCT DVOR contingency STARs, can be withdrawn. **Accepted and progressed.**

3.8 *Option 3: Remove all existing STAR and Holds that refer to or use the MCT DVOR.* This would technically remove the dependencies from the MCT DVOR; however, it removes STARs and Holds that are used and needed by aircraft today and going forward. **Rejected**

Conclusion: Design Option 2 concept best meets all five of the Design Principles. The shortlist comprises the Option 2 concept only. The other three design option concepts are therefore not progressed.

End of Step 2A

4. Step 2B Options Appraisal

4.1 The baseline (do nothing) option does not achieve the removal of dependencies from the MCT DVOR. The ratings for the baseline option against each of the Design Principles shows that whilst it maintains safety levels and creates no change to flight behaviours, it does not meet the remaining three Design Principles.

4.2 Following the Design Principle evaluation, we conclude that the following Design Option 2 could be used to remove the dependencies from the MCT DVOR in accordance with the Design Principles:

Examine the use of existing STARS and Holds from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.

4.3 There would be no change in fuel/ CO2/ greenhouse gas emissions due to this proposal because there would be no change to lateral or vertical tracks. Fuel uplift changes are unlikely to occur. There are no costs or benefits which could be reasonably monetised due to this enroute proposal.

4.4 Safety Assessment: The Option 2 concept would take full account of existing usage and connectivity needs. It would ensure all IFPs are designed by an APD, as regulated by CAA SARG. There would be a qualitative improvement in safety because each remaining IFP would use improved navigation specifications and be defined in an official manner. Today's conventional IFPs are known to be flown using FMS overlays, which are not state regulated in the same way.

5. MCT Option 2 Cost/ Benefit Analysis

The CAP1616 Appendix E cost/ benefit analysis is given below.

Group	Impact	Level of Analysis	Evidence
Communities	Noise impact on health and quality of life	N/A	As there are no proposed changes to lateral or vertical tracks there will be no impact on noise or quality of life.
Communities	Air quality	N/A	No changes below 1,000ft.
Wider society	Greenhouse gas impact	Monetise and quantify	No proposed changes to lateral or vertical tracks so no impact
Wider society	Capacity/ resilience	Qualitative	No changes
General Aviation	Access	N/A	No changes
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Quantify	No changes
General Aviation/ commercial airlines	Fuel burn	Monetise	No proposed changes to lateral or vertical tracks so no impact.
Commercial airlines	Training cost	N/A	N/A – there is not expected to be any airline training or associated cost.
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	The cost of implementation of the change, adaptation of systems is estimated to be £65,000. Removal of the en-route dependency enables decommissioning of the DVOR (once airfields have removed their dependencies i.e. SIDs). This will yield an annual cost saving of circa £10,000 per DVOR (MCT).
Airport/ Air navigation service provider	Operational costs	N/A	N/A – this proposal would not lead to changes in 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.

5.1 Conclusion: There would be a positive impact on safety whilst also improving the overall network connectivity and resilience

End of Step 2B

6. Summary

6.1 This document details the STARs and Hold where the MCT DVOR is material to the instrument flight procedure. It describes the current connectivity; the method used to progress the change; and the proposed connectivity.

6.2 This proposal will RNAV replicate several procedures which will confirm as closely as possible to the current conventional procedures, using RNAV1 design criteria.

6.3 Some minor administrative changes to STARs and a Hold are included, in order to improve the consistency of charts within the AIP and to follow CAA/ ICAO guidance on the naming of STARs (i.e. changing the name to reference the start point of the STAR).

6.4 This submission also includes a number of technical amendments: Some STARs will be extended back to existing waypoints in order to maintain important descent planning restrictions.

6.5 Some STARs will become redundant due to their current role as contingency STARs (in case of the MCT DVOR being out of service). These STARs will be withdrawn.

6.6 The proposed connectivity remains entirely unchanged due to RNAV1 replication, with or without ATS route extensions:

- routes are unchanged
- connectivity is unchanged
- hence flight behaviours and traffic patterns over the ground are unchanged.

6.7 Annexes C-F below detail the IFP changes we are proposing to make in support of removing the MCT DVOR enroute dependencies and rationalisation of the network, as summarised in Table 2 below:

Ref	Airport	Type	Procedure	MCT DVOR	Proposed Changes
1	Birmingham	STAR	CHASE 4B	Dependent on MCT	RNAV1 replicated, SLP at new waypoint *ELEZE* and re-named CROFT 1B
2	Birmingham	STAR	CHASE 3F	Dependent on MCT	RNAV1 replicated, SLP at new waypoint *ELEZE* and re-named BEGAM 1B
3	Birmingham	STAR	CHASE 3G	Dependent on MCT	RNAV1 replicated, SLP at new waypoint *ELEZE* and re-named POL 1B
4	Birmingham	STAR	CHASE 3H	Dependent on MCT	RNAV1 replicated, SLP at new waypoint *ELEZE*. Extended back to existing waypoint VEGUS and re-named VEGUS 1B
5	East Midlands	STAR	ROKUP 1B	Dependent on MCT	RNAV1 replicated and re-named CROFT 1E
6	East Midlands	STAR	ROKUP 1F	Dependent on MCT	RNAV1 replicated and re-named POL 1E
7	East Midlands	STAR	ROKUP 1G	Dependent on MCT	RNAV1 replicated, extended back to existing waypoint VEGUS and re-named VEGUS 1E
8	East Midlands	STAR	ROKUP 1K	Dependent on MCT	RNAV1 replicated and re-named BEGAM 1E.
9	Manchester	STAR	ROSUN 2A	Not Dependent on MCT	RNAV1 replicated, SLP at new waypoint *DIZZE* and re-named LAKEY 1M
10	Manchester	STAR	ROSUN 2B	Dependent on MCT	RNAV1 replicated, and re-named SETEL 1M
11	Manchester	STAR	ROSUN 4D	Dependent on MCT	RNAV1 replicated, and re-named TILNI 1M
12	Manchester	STAR	ROSUN 2E	Dependent on MCT	Withdraw
13	Manchester	STAR	ROSUN 1F	Dependent on MCT	RNAV1 replicated, extended and re-named OTBED 1M
14	Manchester	STAR	ROSUN 1G	Dependent on MCT	RNAV1 replicated, extended and re-named LIBSO 1M
15	Manchester	Hold	ROSUN	Dependent on MCT	RNAV replicated, Levels reduced to FL70 – FL140
16	Manchester	STAR	DALEY 2A	Not Dependent on MCT	Withdraw
17	Manchester	STAR	DALEY 2B	Not Dependent on MCT	Withdraw
18	Manchester	STAR	DALEY 4D	Not Dependent on MCT	Withdraw
19	Manchester	STAR	DALEY 2E	Not Dependent on MCT	Withdraw
20	Manchester	STAR	DALEY 1F	Not Dependent on MCT	Withdraw
21	Manchester	STAR	DALEY 1G	Not Dependent on MCT	Withdraw
22	Manchester	Hold	DALEY	Not Dependent on MCT	Withdraw

Table 2: Summary of proposed changes

7. Conclusion

7.1 We have assessed that there are no foreseen adverse impacts of making the proposed changes described in the tables below (Annexes C - F) and conclude that making these technical changes to the procedures would not alter traffic patterns.

8. Annex A: Design Principles

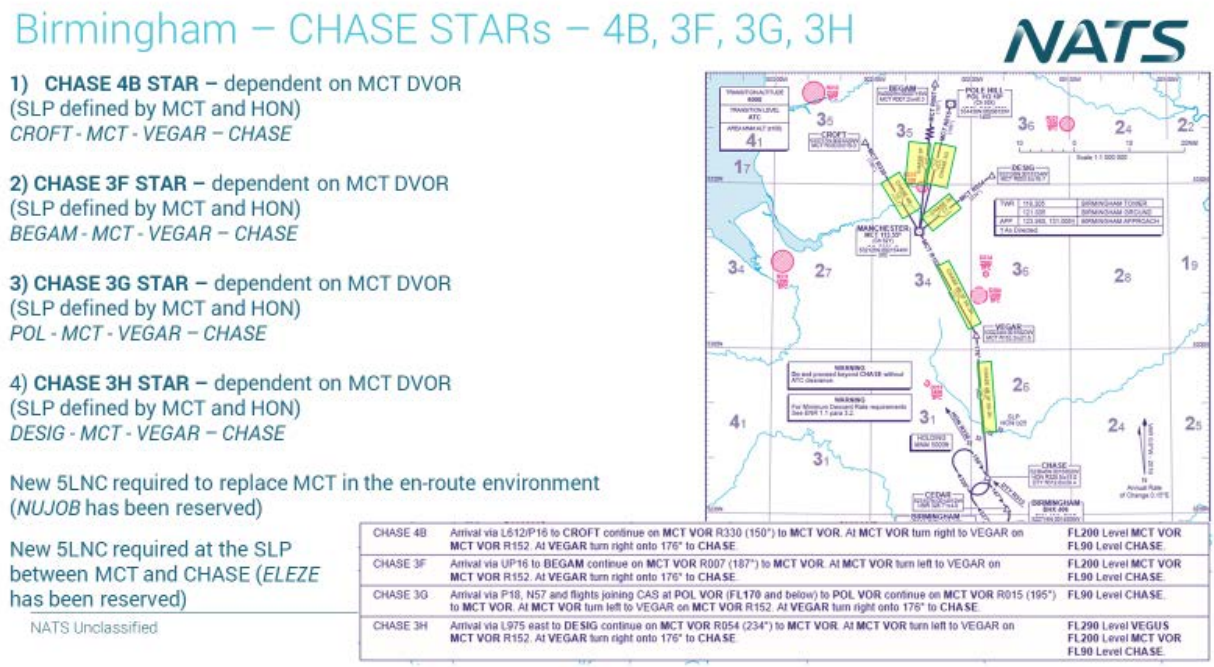
Design Principle	Description
DP1 Safety	The proposed airspace change must maintain or enhance the current level of safety
DP2 No change to flight behaviour	None of the proposed technical changes to definitions of STARS/ Holds would result in a change to actual flight behaviours – laterally, vertically or in dispersal
DP3 PBN Specification	The proposed airspace change will yield maximum safety and efficiency benefits by using an appropriate standard of PBN
DP4 Remove DVOR Dependencies	Remove enroute dependencies on the MCT DVOR through appropriate design changes; including removing unnecessary references to the MCT DVOR which are not material to the procedure, and rationalising rarely used STARs
DP5 Airspace Optimisation	Where appropriate, the proposed airspace will facilitate an optimised airspace design. Including: - Use PBN Replication – replacing conventional STARs/ Holds with RNAV STARs/ Holds; - Using CAA STAR Truncation Policy, when applied logically to STARs with many common segments, can result in the withdrawal of unnecessary duplicate STARs. - Minor changes to a STAR which currently cannot be flown as it is formally define for legacy reasons – these changes reflect what would actually happen in practice. - Extend or split a current STAR to allow important descent planning levels to be formally incorporated in the STAR description

9. Annex B: Design Option 2: Procedure Detail

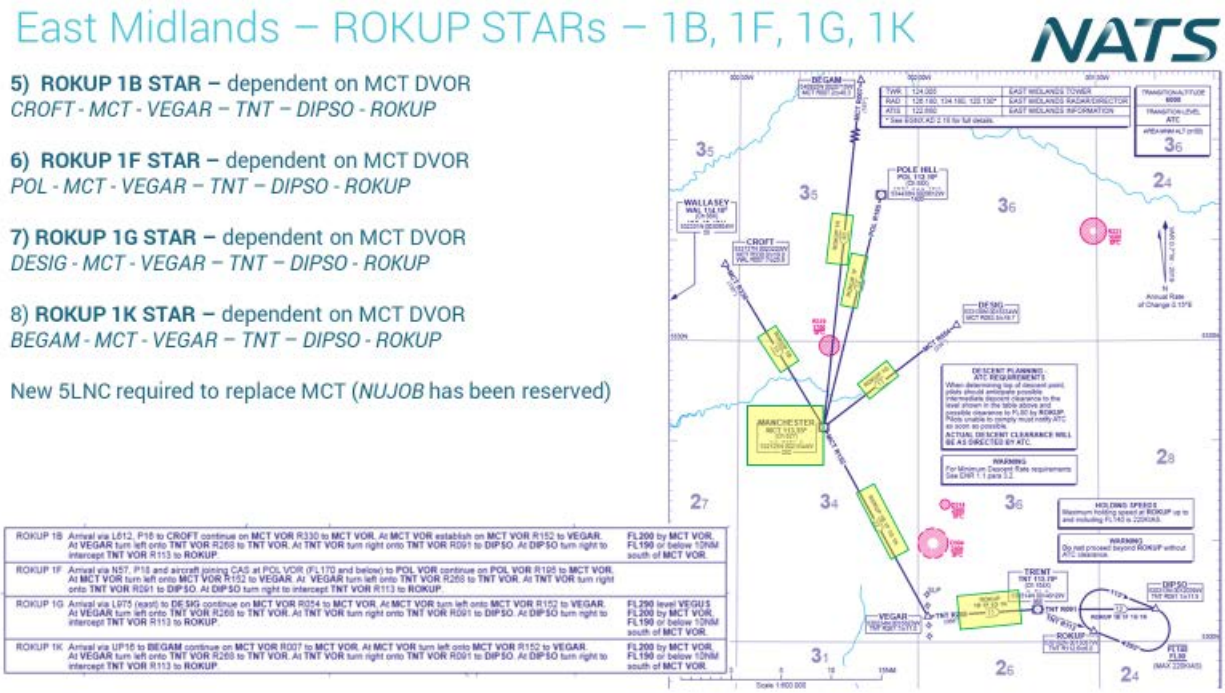
This section demonstrates the proposed changes for Design Option 2. The below screenshots show the current procedures and have been taken from the Assessment Meeting Slides [Ref 1].

Option 2: *Examine the use of existing STARS and holds from a practical point of view, re-evaluate how they are used and how the network may be improved by rationalising/truncating/replicating them in a considered manner.*

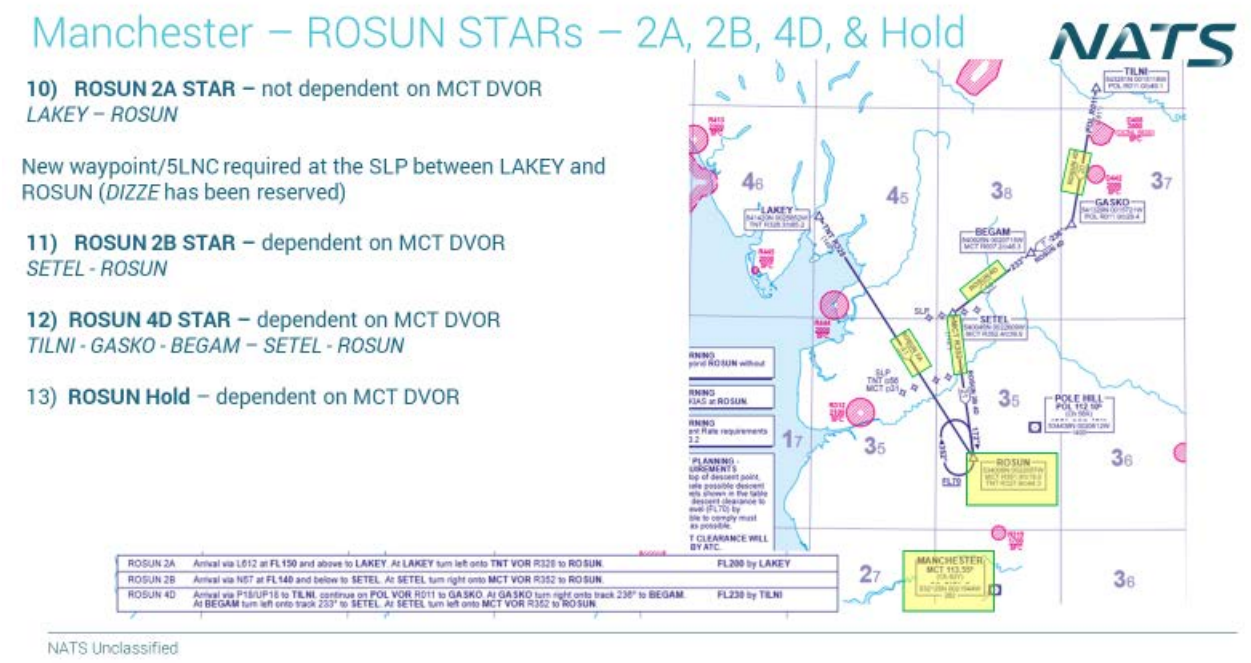
Birmingham – CHASE STARs 4B, 3F, 3G, 3H



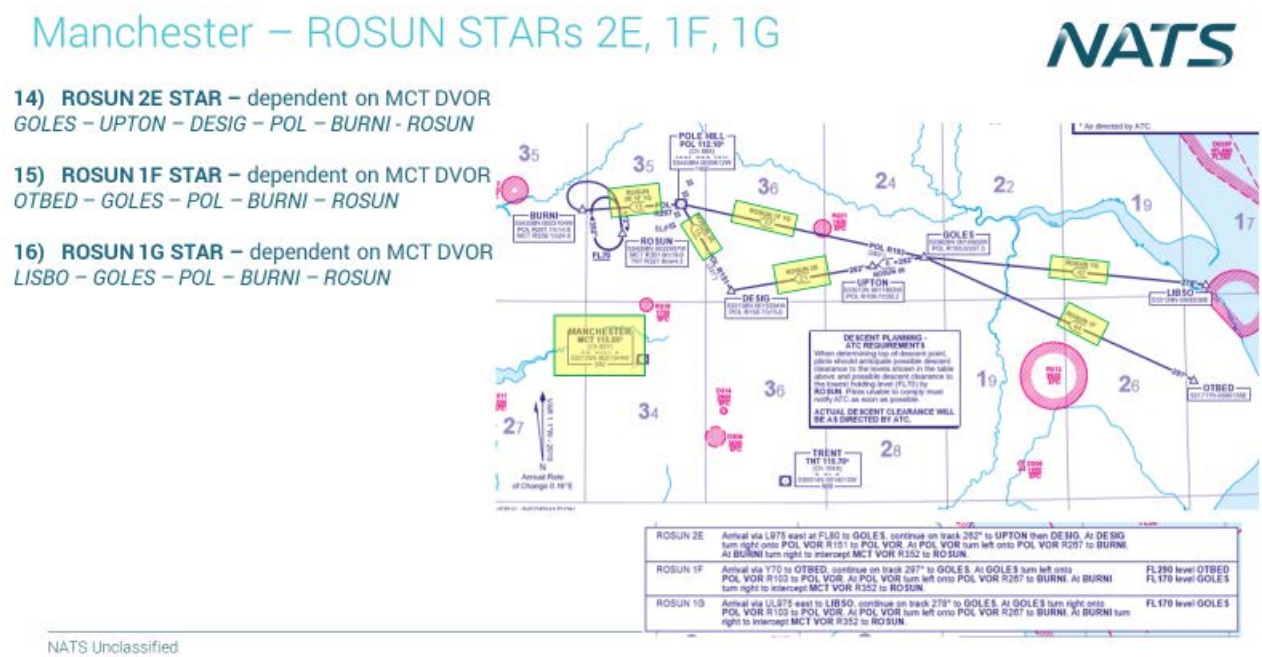
East Midlands – ROKUP STARs 1B, 1F, 1G, 1K



Manchester – ROSUN STARs 2A, 2B, 4D & Hold



Manchester – ROSUN STARs 2E, 1F, 1G



Manchester – DALEY STARs 2A, 2B, 4D & Hold

Manchester – DALEY STARs 2A, 2B, 4D & Hold

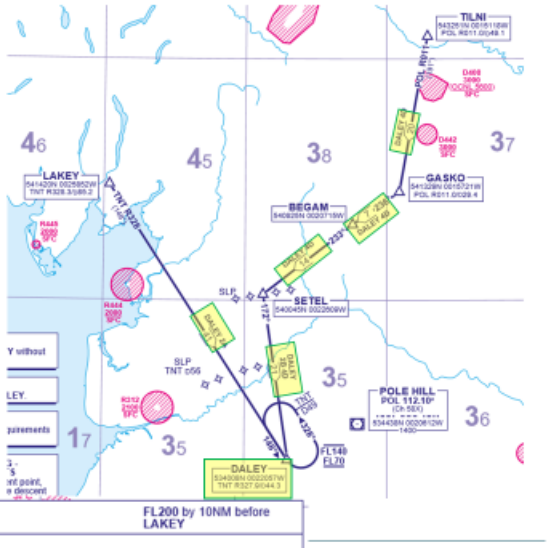
These STARS are not dependent on MCT VOR.
They are contingency procedures for when MCT is OOS.

17) DALEY 2A STAR – not dependent on MCT DVOR
LAKEY – DALEY

18) DALEY 2B STAR – not dependent on MCT DVOR
SETEL - DALEY

19) DALEY 4D STAR – not dependent on MCT DVOR
TILNI - GASKO - BEGAM – SETEL – DALEY

20) DALEY Hold – not dependent on MCT DVOR



DALEY 2A	Arrival via L612 at **FL150** and above to **LAKEY**. At **LAKEY** turn left onto **TNT VOR** R328 to **DALEY**.	**FL200** by 10NM before **LAKEY**
DALEY 2B	Arrival via N57 at **FL140** and below to **SETEL**. At **SETEL** turn right onto track 172° to **DALEY**.	
DALEY 4D	Arrival via P18/UP18 to **TILNI**, continue on **POL VOR** R011 to **GASKO**. At **GASKO** turn right onto track 236° to **BEGAM**. At **BEGAM** turn left onto track 233° to **SETEL**. At **SETEL** turn left onto track 172° to **DALEY**	**FL230** by **TILNI**

Manchester – DALEY STARs 2E, 1F, 1G

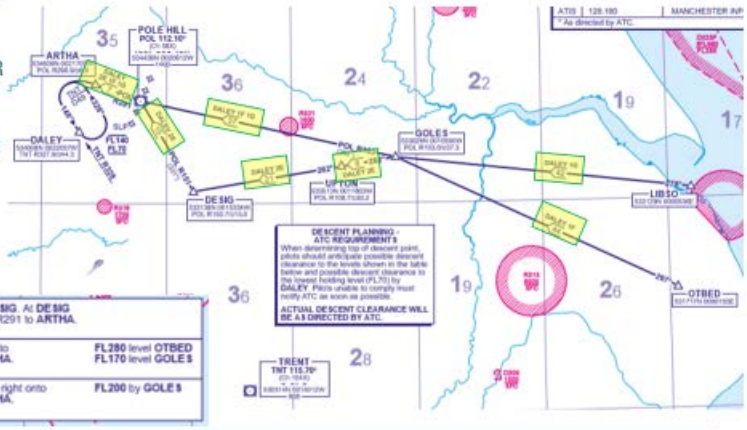
Manchester – DALEY STARs – 2E, 1F, 1G

These STARS are not dependent on MCT VOR.
They are contingency procedures for when MCT is OOS.

21) DALEY 2E STAR – not dependent on MCT DVOR
GOLES – UPTON – DESIG – POL – ARTHA - DALEY

22) DALEY 1F STAR – not dependent on MCT DVOR
OTBED – GOLES – POL - ARTHA - DALEY

23) DALEY 1G STAR – not dependent on MCT DVOR
LISBO – GOLES – POL – ARTHA - DALEY



DALEY 2E	Arrival via L975 east at FL80 to **GOLES**, continue on track 262° to **UPTON** then **DESIG**. At **DESIG** turn right onto **POL VOR** R151 to **POL VOR**. At **POL VOR** turn left onto **POL VOR** R291 to **ARTHA**. At **ARTHA** turn left to intercept **TNT VOR** R328 to **DALEY**.	
DALEY 1F	Arrival via Y70 to **OTBED**, continue on track 297° to **GOLES**. At **GOLES** turn left onto **POL VOR** R103 to **POL VOR**. At **POL VOR** turn right onto **POL VOR** R291 to **ARTHA**. At **ARTHA** turn left to intercept **TNT VOR** R328 to **DALEY**.	**FL280** level **OTBED** **FL170** level **GOLES**
DALEY 1G	Arrival via UL975 east to **LIBSO**, continue on track 278° to **GOLES**. At **GOLES** turn right onto **POL VOR** R103 to **POL VOR**. At **POL VOR** turn right onto **POL VOR** R291 to **ARTHA**. At **ARTHA** turn left to intercept **TNT VOR** R328 to **DALEY**.	**FL200** by **GOLES**

NATS Unclassified

10. Annex C: Impact Assessment – Birmingham Procedures

For charts and technical notes, see the Assessment Meeting slide pack [Ref 1] for the current IFPs.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
CHASE 4B STAR	L612/P16: *CROFT – MCT – VEGAR – CHASE*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	L612/P16: *CROFT – **NUJOB** – VEGAR – **ELEZE** - CHASE* Re-named as **CROFT 1B**	The conventional STAR will be RNAV1 replicated and re-named. New way point required to replace the *MCT* (5LNC *NUJOB* has been reserved). New waypoint required at the SLP between *VEGAR* and *CHASE* (5LNC *ELEZE* has been reserved). STAR to be re-named based on its new starting waypoint *CROFT* and the 'B' designator used to denote the destination airport (Birmingham). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the CHASE hold will be designated RNAV1/5.
CHASE 3F STAR	UP16: *BEGAM – MCT – VEGAR - CHASE*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	UP16: *BEGAM – **NUJOB** – VEGAR – **ELEZE** - CHASE* Re-named as **BEGAM 1B**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required to replace *MCT* (5LNC *NUJOB* has been reserved). New waypoint required at the SLP between *VEGAR* and *CHASE* (5LNC *ELEZE* has been reserved). STAR to be re-named based on its new starting waypoint *BEGAM* and the 'B' designator used to denote the destination airport (Birmingham).

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the CHASE hold will be designated RNAV1/5.
CHASE 3G STAR	P18/N57: *POL – MCT – VEGAR – CHASE*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	P18/N57: *POL – **NUJOB** – VEGAR – **ELEZE**- CHASE* Re-named as **POL 1B**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required at the to replace *MCT* (5LNC *NUJOB* has been reserved). New waypoint required at the SLP between *VEGAR* and *CHASE* (5LNC *ELEZE* has been reserved). STAR to be re-named based on its new starting waypoint *POL* and the 'B' designator used to denote the destination airport (Birmingham). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the CHASE hold will be designated RNAV1/5.
CHASE 3H STAR	L975: *DESIG – MCT – VEGAR – CHASE*	Satisfies all 5 DPs	RNAV1 replication, STAR extension and re-designation	Y70: *VEGUS GOLES L975 - DESIG – **NUJOB** – VEGAR – **ELEZE**- CHASE* Re-named as **VEGUS 1B**	The conventional STAR will be RNAV1 replicated and extended back to *VEGUS* (along Y70) and *LIBSO* (along UL975) creating two new STARs. Extending the STAR back to *VEGUS* will provide flight plannable options and retain the important descent planning restriction.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
				UL975: *LIBSO* – ***FIZED*** - *GOLES L975 - DESIG* – ***NUJOB*** – *VEGAR* – ***ELEZE*** - *CHASE* Re-named as LIBSO 1B	New waypoint required at to replace *MCT* (5LNC *NUJOB* has been reserved). New waypoint required at the SLP between *VEGAR* and *CHASE* (5LNC *ELEZE* has been reserved). STARs to be re-named based on their new starting waypoints *VEGUS* and *LIBSO*, and the 'B' designator used to denote the destination airport (Birmingham). The STARs will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STARs and the CHASE hold will be designated RNAV1/5.

11. Annex D: Impact Assessment – East Midland Procedures

For charts and technical notes, see the Assessment Meeting slide pack [Ref 1] for the current IFPs.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
ROKUP 1B STAR	L612/P16: *CROFT – MCT – VEGAR – TNT – DIPSO – ROKUP*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	L612/P16: *CROFT – **NUJOB** – VEGAR – TNT – DIPSO – ROKUP* Re-named as **CROFT 1E**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required to replace *MCT* (5LNC *NUJOB* has been reserved). STAR to be re-named based on its new starting waypoint *CROFT* and the 'E' designator used to denote the destination airport (East Midlands). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROKUP hold will be designated RNAV1/5.
ROKUP 1F STAR	N57/P18: *POL – MCT – VEGAR – TNT – DIPSO – ROKUP*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	N57/P18: *POL – **NUJOB** – VEGAR – TNT – DIPSO – ROKUP* Re-named as **POL 1E**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required to replace *MCT* (5LNC *NUJOB* has been reserved). STAR to be re-named based on its new starting waypoint *POL* and the 'E' designator used to denote the destination airport (East Midlands). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROKUP hold will be designated RNAV1/5.
ROKUP 1G STAR	L975: *DESIG– MCT – VEGAR – TNT – DIPSO – ROKUP*	Satisfies all 5 DPs	RNAV1 replication, STAR extension and re-designation	Y70: *VEGUS GOLES L975– DESIG - **NUJOB** – VEGAR – TNT – DIPSO – ROKUP* Re-named as **VEGUS 1E** UL975: *LIBSO – **FIZED** - GOLES L975– DESIG - **NUJOB** – VEGAR – TNT – DIPSO – ROKUP* Re-named as **LIBSO 1E**	The conventional STAR will be RNAV1 replicated extended back to *VEGUS* (along Y70) and *LIBSO* (along UL975) creating two new STARs Extending the STAR back to *VEGUS* will provide flight plannable options and retain the important descent planning restriction. New waypoint required replacing *MCT* (5LNC *NUJOB* has been reserved). New waypoint required to assist with descent planning at the TRA006 boundary (5LNC *FIZED* has been reserved) STARs will be renamed based on their new starting waypoints, *VEGUS* and *LIBSO* and the "E" designator used to denote the destination airport, East Midlands. The STARs will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STARs and the ROKUP hold will be designated RNAV1/5.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
ROKUP 1K STAR	UP16: *BEGAM– MCT – VEGAR – TNT – DIPSO – ROKUP*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	UP16: *BEGAM – **NUJOB** – VEGAR – TNT – DIPSO – ROKUP* Re-named as **BEGAM 1E**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required replacing *MCT* (5LNC *NUJOB* has been reserved). STAR to be re-named based on its new starting waypoint *BEGAM* and the 'E' designator used to denote the destination airport (East Midlands). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROKUP hold will be designated RNAV1/5.

12. Annex E: Impact Assessment – Manchester Procedures

For charts and technical notes, see the Assessment Meeting slide pack (Ref 1) for the current IFPs.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
ROSUN 2A STAR	L612: *LAKEY – ROSUN*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	L612: *LAKEY – DIZZE - ROSUN* Re-named as **LAKEY 1M**	The conventional STAR will be RNAV1 replicated and re-named. New waypoint required at the SLP between *LAKEY* and *ROSUN* (5LNC *DIZZE* has been reserved). STAR to be re-named based on its new starting waypoint *LAKEY* and the 'M' designator used to denote the destination airport (Manchester). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROSUN hold will be designated RNAV1/5.
ROSUN 2B STAR	N57: *SETEL - ROSUN*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	N57: *SETEL - ROSUN* Re-named as **SETEL 1M**	The conventional STAR will be RNAV1 replicated and re-named. STAR to be re-named based on its new starting waypoint *SETEL* and the 'M' designator used to denote the destination airport (Manchester). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROSUN hold will be designated RNAV1/5.
ROSUN 4D STAR	P18/UP18: *TILNI – GASKO – BEGAM – SETEL - ROSUN*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV1 replication and re-designation	P18/UP18: *TILNI – GASKO – BEGAM – SETEL - ROSUN* Re-named as TILNI 1M	The conventional STAR will be RNAV1 replicated and re-named. New Level restriction FL250 *TILNI* STAR to be re-named based on its new starting waypoint *TILNI* and the 'M' designator used to denote the destination airport (Manchester). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROSUN hold will be designated RNAV1/5.
ROSUN Hold	N/A	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5	RNAV replication	N/A	This Hold will be RNAV replicated, to match as closely as possible with the currently published conventional Hold. Hold will be designated as RNAV1/5. Levels specified as FL70 – FL140. This will ensure that traffic holding at ROSUN remains separated from the MIRSI Hold. In 2019, aircraft did not hold above FL120, so this is deemed sufficient capacity.
ROSUN 2E STAR	L975: *GOLES – UPTON – DESIG –*	Satisfies DP1, DP2, DP3, & DP4 - no	Withdraw	N/A	The conventional STAR will be withdrawn, as it has not been filed since 5 March 2019, based on CFMU data. Any traffic

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
	POL – BURNI - ROSUN	further changes proposed (DP5)			joining low level from L975 will be able to join the revised STARs at *POL* via DCT's (*GOLES – DESIG - POL*)
ROSUN 1F STAR	Y70: *OTBED - GOLES – POL – BURNI - ROSUN*	Satisfies all 5 DPs	RNAV1 replication and re-designation	Y70: *OTBED - GOLES – POL – BURNI - ROSUN* Renamed as **OTBED 1M**	The conventional STAR will be RNAV1 replicated. STAR to be re-named based on its starting waypoint and the 'M' designator used to denote the destination airport (Manchester). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing. RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROSUN hold will be designated RNAV1/5.
ROSUN 1G STAR	UL975: *LIBSO - GOLES – POL – BURNI - ROSUN*	Satisfies all 5 DPs	RNAV1 replicationa nd re-designation	UL975: *LIBSO – **FIZED** - GOLES – POL – BURNI – ROSUN* Renamed as **LIBSO 1M**	The conventional STAR will be RNAV1 replicated. New waypoint required to assist with descent planning at the TRA006 boundary (5LNC *FIZED* has been reserved) STAR to be re-named based on its starting waypoint and the 'M' designator used to denote the destination airport (Manchester). The STAR will be replicated and created using RNAV design criteria to align as closely as possible with the existing routeing.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					RNAV5 Aircraft will follow a series of DCT's which replicate the route of the RNAV1 STAR and the ROSUN hold will be designated RNAV1/5.
DALEY 2A STAR	L612: *LAKEY - DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.
DALEY 2B STAR	N57: *SETEL- DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.
DALEY 4D STAR	P18/UP18: *TILNI – GASKO – BEGAM – SETEL - DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.
DALEY 2E STAR	L975: *GOLES – UPTON – DESIG – POL – ARTHA - DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.
DALEY 1F STAR	Y70: *OTBED – GOLES – POL – ARTHA - DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.
DALEY 1G STAR	UL975: *LIBSO - GOLES – POL – ARTHA - DALEY*	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
DALEY Hold	N/A	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	Withdraw	N/A	None. Contingency procedures so no longer required once alternative routes are RNAV'd.

13. Annex F: Route Revision

ATS Route Name	Current route	Proposed Route Name	Design Principle	How	Proposed route	Impact of proposed change on connectivity and flight behaviour
UL975	… – *LIBSO* – *GOLES* - …	UL975	Satisfies DP1, DP2, DP3, & DP4 - no further changes proposed (DP5)	RNAV5	… – *LIBSO* – *FIZED* - *GOLES* - …	FIZED will added to UL975 to provide improved descent planning when TRA006 is active

14. Annex G: List of references

Reference	Name	Hyperlink
1	*MCT DVOR CAP1616 Stage 1 Assessment Meeting Slide pack*	Link
2	*MCT DVOR Assessment Meeting minutes (redacted)*	Link
3	*MCT DVOR Statement of Need*	Link
4	*MCT DVOR Stage 1B Design Principles*	Link
5	*MCT DVOR Removal Engagement Evidence (redacted) V1.1*	Link

15. Annex H: Engagement Evidence

This section summarises the engagement activities in support of this ACP.

Stakeholder	Type of engagement	Date	Notes
Birmingham Airport	Email	May 2021	To summarise options, changes to relevant procedures, and seek approval
East Midlands Airport	Teams call	May 2021	To summarise options, changes to relevant procedures, and seek approval
	Email	May 2021	Approval response from airport
Manchester Airport	Teams call	Feb 2021	To discuss options and changes to relevant procedures
	Teams call	Mar 2021	MCT DVOR update
	Teams call	Mar 2021	MCT DVOR project activities and expected timelines
	Email	May 2021	To summarise options, changes to relevant procedures, and seek approval, with approval response

End of document