BKY DVOR Rationalisation
Stage 4 Update and Submit

Airspace Change Proposal
Issue 1.0

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1. Contents

2. Introduction

The intent of this document is to summarise and satisfy the requirements of CAP1616 Stage 4: update design and submit airspace change proposal to the CAA. The CAA reference is ACP-2019-19, the link to the CAA portal page is here.

NATS operates 46 DVORs and NDBs around the UK which are going through the first batch of rationalisation as part of NATS' DVOR Rationalisation Programme. This is due to the DVORs operating well beyond their design life and no longer being needed due to RNAV5 (Area Navigation - 5NM) mandated Air Traffic Service (ATS) routes since 2009. This extended period of use has also created continued and unnecessary maintenance costs; as well as impacting upon airport development work prevented by safeguarding the navaids.

Within the UK, there are several en-route Instrument Flight Procedures (IFP) which are dependent on these radio navigation aids (navaids). As a number of them are scheduled to be removed from service, the en-route IFP definitions require updating so that they no longer refer to the navaids scheduled to be removed.

This airspace proposal is primarily focused on en-route IFPs, in the UK AIP, which use the Barkway (BKY) DVOR as a materially important navaid. The scope of the proposal includes Standard Terminal Arrival Routes (STARs) and holding patterns dependent on/ referencing the BKY DVOR as a conventional navaid; where NATS is the primary Air Navigation Services Provider (ANSP).

Airport-based procedures such as Standard Instrument Departures (SIDs) and Instrument Approach Procedures (IAPs) are not relevant to the en-route scope of this proposal. Airport operators are separately developing their own equivalent procedures to mitigate the removal of the BKY DVOR.

As described in Section 8.2.1 below, there are several methods in which a STAR or a Hold's dependency on a navaid can be removed. As such, each STAR and Hold has been evaluated in order to determine the most

appropriate method in which to remove the dependency from the BKY DVOR. This method improves the overall network connectivity, reduces duplication and accounts for the current usage levels.

3. Executive Summary

In support of the DVOR Rationalisation Programme, NATS has identified all AIP en-route dependencies on, and references to, the BKY DVOR. In order to remove IFP dependencies from these navaids, a list of seven Design Principles (DPs) have been created which have been used to assess the individual IFPs against. The Design Principle (DP0) with overriding priority is that the airspace change must "maintain or enhance the current level of safety". The Design Principle (DP1) driving this change is that none of the proposed technical changes would result in a change to flight behaviours. The remaining five Design Principles focus on techniques which could be used to remove the dependencies, such as IFP RNAV replication or withdrawal of a procedure.

As described in the Stage 2 Gateway documentation (Ref 3), four separate design options were developed in order to remove the identified en-route IFP dependencies from the BKY DVOR.

- Option 0 (do nothing) would retain all of the current STARs and Holds unchanged from today's AIP definition.
- Option 1 would replicate each IFP with a dependency on the BKY DVOR by replacing existing conventional procedures using PBN procedures.
- Option 2 would evaluate 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 would completely remove each IFP with a dependency on the BKY DVOR.

The seven Design Principles were used to qualitatively assess each of the four design options (Ref 3). This process reduced the four design options down to one, known as Option 2, which is the preferred concept option presented here. Consultation regarding DVOR rationalisation was undertaken in 2009. Due to the technical nature of the changes which will not result in changes to flight paths, no further consultation has been required.

4. Current Airspace Description

The current en-route IFPs which are dependent on the BKY DVOR as an essential navaid are associated with London City, Luton, Southend and Stansted airports. These are summarised in Table 1 below and the relevant charts can be found in the Stage 2 Gateway document (Ref 3).

Associated Airport	Current IFP	Current Routing	BKY Dependency
Luton/ Stansted	ASKEY 1K STAR	*DTY - FINMA - BOMBO - BKY - BUSTA - ASKEY*	Yes – dependent on BKY
Luton/ Stansted	ASKEY 2H STAR	*HON - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	Yes – dependent on BKY
Luton/ Stansted	ASKEY 3G STAR	*MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	Yes – dependent on BKY
Luton/ Stansted	ASKEY 5F STAR	*LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	Yes – dependent on BKY
Luton/ Stansted[1]	LOREL 2H STAR	*HON - CLIPY - BOMBO - BKY - BUSTA - LOREL*	Yes – dependent on BKY
Luton/ Stansted	LOREL 3G STAR	*MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - LOREL*	Yes – dependent on BKY

[1] The Assessment Meeting slide pack (Ref 2) included the Luton/ Stansted LOREL 1K STAR which is dependent on the BKY DVOR. It is worth noting that this will be truncated at FINMA and RNAV replicated, as part of the DTY DVOR ACP (link to the portal page). Therefore, although linked, this is not covered under this proposal.

Associated Airport	Current IFP	Current Routing	BKY Dependency
Luton/ Stansted	LOREL 5F STAR	*LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - LOREL*	Yes – dependent on BKY
Stansted	ABBOT 1A STAR	*BKY - ADNAM - ABBOT*	Yes – dependent on BKY
Southend	SPEAR 1M STAR	*MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY*	Yes – dependent on BKY
Southend	SPEAR 2H STAR	*HON - CLIPY - BOMBO - BKY*	Yes – dependent on BKY
Southend	SPEAR 2L STAR	*LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY*	Yes – dependent on BKY
London City	JACKO 1H STAR	*HON - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	Not dependent on BKY – similar to other STAR routings in this proposal
London City	JACKO 1M STAR	*MCT - PEDIG - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	Not dependent on BKY – similar to other STAR routings in this proposal
London City	JACKO 2L STAR	*LISTO - PEDIG - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	Not dependent on BKY – similar to other STAR routings in this proposal
N/A	BKY Hold	N/A - Hold	Yes – dependent on BKY

Table 1: Summary of Current IFPs

4.1 Structures and Routes

The full technical notes and associated charts for each of the above current IFPs, listed in Table 1, can be found in the Assessment Meeting slide pack (Ref 2):

- Luton/ Stansted 7 STARs – Slides 8 – 9
- Stansted 1 STAR – Slide 10
- Southend 3 STARs – Slide 11
- London City 3 STARs – Slides 13 – 14
- BKY Hold – Slide 15

4.2 Airspace usage and proposed effect

The proportions of aircraft, including fleet mix and operators, using any of the IFPs related to this project would not change as an outcome of the proposed changes. The proposed flight plan connectivity remains entirely unchanged due to RNAV replication of the STARS; therefore, the usage would remain the same as today.

There would be no change to pilot or controller behaviour, and no change to vertical traffic dispersion, nor any impact on adjacent IFPs. This ACP proposes a small lateral change to three current STARs – LOREL 5F, SPEAR 2H, SPEAR 2L – which will be re-routed via FINMA instead of CLIPY. The distance between CLIPY and FINMA is 1.2NM and will result in a very small kink in the profile of these STARs. This will create a negligible change to the horizontal profile of flights; and the level restriction at FINMA (FL150) is above a level noticeable by ground-based stakeholders. There will be no other lateral change to traffic dispersion as a result of this proposal.

Therefore, the airspace capacity, usage and current operation will stay the same as today.

4.3 Operational efficiency, complexity, delays and choke points

There are no specific issues relating to operational efficiency, complexity, delays or choke points associated with any of the IFPs related to this airspace change proposal.

4.4 Safety issues

There are no specific safety issues associated with any of the IFPs related to this airspace change proposal.

Ensuring the safety of the proposed changes is a priority for NATS. NATS has a dedicated safety manager for the DVOR Rationalisation Programme who ensures that the safety representatives from SARG have oversight of the safety assurance process. Section 10 contains further details on the safety assessment for this proposal.

4.5 Environmental issues

There are no specific environmental issues associated with any of the IFPs related to this project, to be solved by this airspace change proposal.

5. Statement of Need

The Statement of Need (Ref 1) submitted in May 2020 for this proposal summarises the proposed changes in support of removing the en-route dependency from the BKY DVOR. This has been included in Section 15.2 below.

6. Proposed Airspace Description

6.1 Objectives/ requirements for Proposed Design

The primary objective for this proposed airspace design is to remove all en-route IFP dependencies from the BKY DVOR. This will be achieved by either replacing the current connectivity using RNAV5 procedures or removing the procedure altogether. The en-route flight procedures under consideration are all STARs and holding patterns where BKY is material to their definition.

These changes are in support of the NATS DVOR Rationalisation Programme which aims to reduce dependence on ground infrastructure without reducing en-route services.

The CAA's PBN STAR Replication Policy for Conventional STAR Replacement (Ref 7) has been used as a 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 en-route network to the termination point without introducing any change to existing track patterns over the ground. RNAV5 is mandated for en-route IFPs and does not require consultation under the CAA's replication policy.

This proposal has been used as an opportunity to review the relevance of the existing procedures and their details. As such, methods such as extending back RNAV versions of existing STARs - to ensure that important Descent Planning Levels are incorporated - have been explored and considered. In some cases, this will require the establishment of slightly amended STARs to ensure that all flight options and levels are captured; but will not change the lateral track or vertical profile of traffic flown today. This had been in line with the STAR replication policy mentioned above. Additionally, the removal of some STARs will also occur.

6.2 Proposed New Airspace/ Route Definition and Usage

There is no predicted change to current connectivity or flight behaviour as a consequence of this airspace change proposal; the proposed changes are only technical changes. This means that there would be no change to pilot or controller behaviour (apart from designation changes), and no change to lateral or vertical

traffic dispersion, nor any impact on adjacent IFPs. The proposed changes will also not alter route usage or traffic mix within the associated airspace.

A full summary of all the proposed changes and associated impacts can be found in Sections 15.3 to 15.7 below. This details the impact assessment which was completed for all IFPs where the BKY DVOR is material to the procedure, or they feature on the same chart. These are summarised below:

- Luton/ Stansted: ASKEY 1K, ASKEY 2H, ASKEY 3G, ASKEY 5F, LOREL 2H, LOREL 3G and LOREL 5F STARs
- Stansted: ABBOT 1B STAR
- Southend: SPEAR 1M, SPEAR 2H and SPEAR 2L STARs
- London City: JACKO 1H, JACKO 1M and JACKO 2L STARs
- BKY conventional Hold (not associated with a specific airport)

This document includes a full list of all IFPs: their current connectivity, the proposed connectivity and the impact of each proposed change. Charts and technical notes on all of the above individual IFPs can be found in the Assessment Meeting slide pack (Ref 2). The impact assessment can also be found in the Stage 2 Gateway document (Ref 3).

The proposed changes to RNAV5 replication will not change the connectivity of the procedures from today with or without appropriate extensions. Where extensions/truncated STARs are being proposed, appropriate starting points for the STAR have been identified to ensure that there is no impact to connectivity. This means no change to route usage or traffic patterns over the ground. Sections 15.3 to 15.7 below summarise the impact assessment of all STARs and Holds which are part of this proposal.
As part of this change the BKY DVOR references will be removed from the AIP entry however as the DME will be retained the 3LNC (BKY) will also be retained; therefore, there will be no impact to system adaptation. An update to the UK AIP section ENR3.3 will be required to reflect this change.

The location of the BKY DVOR/ DME will stay the same however, the description will be amended to *BKY DME* to denote the removal of the DVOR reference. The definition of the BKY DVOR will be removed from UK AIP ENR 4.1 but will need to be added to the airfield sections of the AIP as the DVOR will continue to support SID procedures. This change will not introduce any changes to traffic patterns.

The relevant airspace structures, and related AIP sections, which are associated with the STAR and Hold changes, are listed in Table 2 below.

Airspace Structure	Comment	AIP Section
Aerodrome AIP changes	Individual airport charts, coding tables and text updated to reflect STAR and Hold changes	AD 2.EGGW-7-XX AD 2.EGLC-7-XX AD 2.EGMC-7-XX AD 2.EGSS-7-XX
Area Navigation Routes	All affected RNAV routes amended by this ACP to be included in this section	ENR 3.3
En-route Holding	BKY Hold description will be removed	ENR 3.6
Radio Navigation Aids and Waypoints	BKY will be amended	ENR 4.1

Table 2: Current Relevant Airspace Structures associated with Administrative Changes

The summary of the proposed changes is that changing the procedures will not alter the traffic patterns or route usage, due to the truncation or replication of STARs.

Further technical information on the proposed designs can be found in a document summarising the draft AIP changes and the associated AIP pages where these changes need to occur (Ref 5); alongside the NATS Design IFP report (Ref 6).

7. Impacts and Consultation

7.1 Net impacts summary for proposed route

Category	Impact	Evidence
Safety/ Complexity	No impact on safety or complexity	See Section 4.4 and Section 10
Capacity/Delay	No impact on capacity/ usage or delay	See Section 4.2
Fuel Efficiency/ CO_2	No impact, there will be no change to lateral or vertical tracks, nor to impact adjacent IFPs	See Section 7.7
Noise – Leq/ SEL	No impact, this is a Level 2C[2] change	See Section 7.8
Tranquillity, visual intrusion (AONBs & National Parks)	No impact, this is a Level 2C change	See Section 7.8
Local Air Quality	No impact, this is a Level 2C change	See Section 7.8
Other Airspace Users	No impact, no changes to volume or classification of CAS	See Sections 7.4 to 7.6

7.2 Units affected by the proposal

In order to provide full transparency, NATS has engaged with the London Area Control Centre (an assumed associate throughout the DVOR programme), London City Airport, Luton Airport, Southend Airport and Stansted Airport throughout the project (Ref 8). The airports have been fully briefed on the proposed changes and the justification behind why the en-route DVOR dependencies are being removed. The airports have all confirmed support for the proposed changes. The changes have all been designed to be invisible from an airport's perspective, aside from the required updates to the AIP.

The proposed changes will alter nomenclature in the aerodrome AIP pages for the airports; where procedures have been withdrawn and STAR names are re-designated. Appropriate airport representatives have been informed about these changes prior to submission of this ACP. There were no issues raised as part of the engagement nor any changes made to the proposed designs. Assuming approval of this ACP, the affected airports will then be advised, and permission sought to amend these sections of the AIP.

Asides from these changes, there are no other impacts anticipated for airports or relevant activities; the scope of these changes is just for en-route procedures, not airports. Airports will complete their own Airspace Change Proposals to remove navaid dependencies for airport procedures, such as SIDs and approaches. The changes are purely technical changes which will not lead to any material change to the current operation.

If the proposal is approved, the CAA will also organise appropriate co-ordination with ICAO prior to implementation.

[2] The CAA agreed that this proposal falls under the airspace change process as a Level 2C proposal. This is a proposal which reflects the current use of airspace concerned and does not alter traffic patterns below 7,000ft. The Government's Air Navigation Guidance states that below 7,000ft is the maximum height at which noise is a priority for consideration; therefore, noise analysis has not been completed for this proposal.

7.3 Consultation

NATS took part in a (CAA-led) consultation with the National Air Traffic Management Advisory Committee (NATMAC) in 2008. NATMAC members were provided with a consultation paper which outlined NATS plans to rationalise the DVOR infrastructure; alongside being invited to provide feedback or questions on the proposal. As this consultation was completed before the introduction of CAP1616, there was not a requirement for NATS to engage or seek feedback on Design Principles.

A follow-up informative letter was sent to NATMAC members in 2010 which summarised the results of the consultation; including broad support from airlines and a recognised requirement for airports to remove their own airport procedure dependencies. NATS, through the DVOR Rationalisation Project, also provided the NATMAC members with an update on the project in 2018; including an explanation of the stages required to remove the navaid dependencies and how they will be physically removed from service.

7.4 Military impact and consultation

No military airspace user stakeholders were identified as being impacted by the proposed changes. The changes are purely technical changes which will not lead to any material change to the current operation.

7.5 General Aviation airspace users' impact and consultation

No General Aviation/ VFR airspace user stakeholders have been identified as being impacted by the proposed changes.

7.6 Commercial air transport impact and consultation

There would only be technical changes for commercial air transport such as nomenclature and RNAV5 route replication. There would be no impact to connectivity or flight behaviour, as there would be no change to lateral or vertical tracks, nor to impact adjacent IFPs.

No commercial air transport/ IFR stakeholders were identified as being impacted by the proposed changes; other than the nomenclature changes mentioned.

7.7 CO_2 environmental analysis impact and consultation

There would be no change in fuel, CO_2 or greenhouse gas emissions as a result of the proposed changes because there would no change to lateral or vertical tracks, or to impact adjacent IFPs. Fuel uplift changes are unlikely to occur. The actual fuel uplift is very difficult to quantify, however there is an established relationship between distance flown and the amount of fuel uplift. As this proposal will not impact the distance flown or vertical profile, we can deduce that the fuel uplift should not change.

This aligns with the Design Principle (DP1) which is driving this change, of ensuring that none of the proposed technical changes to IFP definitions result in any changes to actual flight behaviours.

7.8 Local environmental impacts and consultation

There would be no change in environmental impacts, such as noise or tranquillity, as a result of the proposed changes because there would be no change to lateral or vertical tracks, nor any impact to adjacent IFPs.

This aligns with the Design Principle (DP1) which is driving this change, of ensuring that none of the proposed technical changes to IFP definitions result in any change to actual flight behaviours.

7.9 Economic impacts

The cost to the ANSP (NATS) for implementation of the change and adaptation of systems is estimated to be approx. £65,000.

Removal of the enroute 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 VOR. However, the development of this Airspace Change Proposal has not been motivated by economic constraints or opportunities.

8. Analysis of Options

8.1 Airspace Change Design Options

In order to remove the en-route IFP dependencies from the BKY DVOR, NATS developed four separate design options on how best to adapt the UK airspace in support of this. These are known as Option 0 (do nothing), Option 1, Option 2 and Option 3. The design options are described fully in the Stage 2 Gateway document (Ref 3).

The first considered option (Option 0), of doing nothing, would retain all the current STARs and Holds unchanged from today's AIP definition. Options 1, 2 and 3 involve making changes to today's AIP definition. The Options are:

- Option 1: Using CAA policies, replicate STARs/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 BKY DVOR.

8.2 Design Options Assessment

8.2.1 Design Principles

Design Principles have been created in order to assess the four design options. They have been constructed around the general objectives for this airspace change proposal, such as removing the en-route dependencies from the BKY DVOR and reviewing the relevance of existing procedures. For example, this ACP is proposing to withdraw specific STARs after reviewing them and concluding that they are not needed once other STARs have been replicated to an RNAV5 specification.

The analogy of a toolbox was used to describe potential methods of removing the en-route dependencies from the DVORs, with each tool having a particular function, in combination with other tools when appropriate. This analogy has been used to construct the seven design principles.

The overriding Design Principle (DP0), with the highest priority, for this airspace change is that the proposed airspace change must "maintain or enhance the current level of safety".

The seven Design Principles for this proposal are:

Design Principle	Description
DP0 Safety	The airspace change must maintain or enhance the current level of safety
DP1 Flight behaviour	None of the proposed technical changes to the definition of STARs/ Holds would result in a change to actual flight behaviours – laterally, vertically or in dispersal.
DP2 Admin	Remove unnecessary references to the BKY DVOR which are not material to the procedure
DP3 Withdraw	Some STARs are rarely used, some do the same job, some have segments in common with other STARs
DP4 Replicate	PBN Replication – replace conventional STARs/ Holds with RNAV STARs/Holds
DP5 Truncate	CAA STAR Truncation Policy used. When applied logically to STARs with many common segments, it can result in the withdrawal of unnecessary duplicate STARs (DP3).

	When the final arrangement is decided, the truncated conventional STAR is always RNAV-replicated (DP4). In the case of a change to the actual vertical profile flown in the STAR, additional fuel/ CO_2 analysis and justification will be provided.
DP6 Technical amendment	Minor changes to a STAR/ Hold which currently cannot be flown as it is formally defined, for legacy reasons – these changes always reflect what would actually happen in practical terms.

The seven Design Principles summarised above have been detailed fully in the Stage 2 Gateway document [Ref 3], which includes a contextual example of each design principle being put into practice.

8.2.2 Options Assessment using the Design Principles

The four options outlined in Section 8.1 above were assessed against the following seven Design Principles:

- *Design Principle 0*: maintain or enhance the current level of safety
- *Design Principle 1*: no change to flight behaviours
- *Design Principle 2*: administrative change
- *Design Principle 3*: withdraw unnecessary STARs
- *Design Principle 4:* replicate using RNAV replication policies
- *Design Principle 5:* assess the impact of truncating specific and relevant STARs
- *Design Principle 6*: technical amendment

The four Design Options were qualitatively assessed against each Design Principle in order to evaluate whether the principle had been met, partially met or not at all. The first Option 0: doing nothing, did not meet any of the Design Principles except for DP0 and DP1: maintain/ enhance the current level of safety and introduce no changes to flight behaviours. Option 0 therefore does not achieve the removal of dependencies from the BKY DVOR nor improve the network in any way; and has therefore been rejected.

Option 1: replication of each STAR/ Hold - fully met four Design Principles: maintain/ enhance the current level of safety; introduce no changes to flight behaviours; withdraw unnecessary STARs; and replicate using RNAV replication policies. However, it did not meet any of the final three design principles. Although Option 1 removes the BKY DVOR dependencies, it does not improve the network connectivity; does not account for current usage levels and it leaves route duplication in place. Therefore Option 1 has also been rejected.

Although Option 3 removes dependencies from the BKY DVOR - as a consequence of removing all IFPs - it does not fully meet any of the seven design principles; offering no network improvements but significant disruption. Option 3 was therefore rejected.

Option 2 involves an individual evaluation of each STAR and Hold. As this option focussed on a flexible approach for removing the DVOR dependencies, it was able to fully meet all the proposed design principles.

The conclusion of this assessment was to reduce the number of design options to one, known as Option 2 which best meets all the Design Principles. This option removes the BKY DVOR dependencies whilst also improving the overall network connectivity, reducing duplication and taking into consideration the current usage levels. A full summary of the above options assessment can be found in Section 2 of the Stage 2 Gateway document [Ref 3].

9. Airspace Description Requirements

	The proposal should provide a full description of the proposed change including the following:	Description for this proposal
a	The type of route or structure; for example, airway, UAR, Conditional Route, Advisory Route, CTR, SIDs/ STARs, holding patterns etc.	STARs and holding patterns - see Section 6.
b	The hours of operation of the airspace and any seasonal variations	H24 (unchanged from today)
c	Interaction with domestic and international en-route structures, TMAs or CTAs with an explanation of how connectivity is to be achieved. Connectivity to aerodromes not connected to CAS should be covered	This proposal would not have any impact on current connectivity - see Section 6.2 and Sections 15.3 to Error! Reference source not found..
d	Airspace buffer requirements (if any). Where applicable describe how the CAA policy statement on 'Special Use Airspace – Safety Buffer Policy for Airspace Design Purposes' has been applied.	N/A – this proposal does not change any existing/ introduce new buffers.
e	Supporting information on traffic data including statistics and forecasts for the various categories of aircraft movements (passenger, freight, test and training, aero club, other) and terminal passenger numbers	This proposal would have no impact on airspace usage - see Sections 4.2 and 6.2.
f	Analysis of the impact of the traffic mix on complexity and workload of operations	This proposal would have no impact on the traffic mix - see Sections 4.2 and 6.2.
g	Evidence of relevant draft Letters of Agreement, including any arising out of consultation and/or airspace management requirements	N/A – this proposal does not change any existing/ introduce new LoAs; cross-border elements are not impacted.
h	Evidence that the airspace design is compliant with ICAO Standards and Recommended Practices (SARPs) and any other UK policy or filed differences, and UK policy on the Flexible Use of Airspace (or evidence of mitigation where it is not)	STAR Replication policy and PANS-OPS compliance – see NATS design report (Ref 6).
i	The proposed airspace classification with justification for that classification	No change to existing airspace classification.
j	Demonstration of commitment to provide airspace users equitable access to the airspace as per the classification and where necessary indicate resources to be applied or a commitment to provide them in line with forecast traffic growth. 'Management by exclusion' would not be acceptable	N/A - this proposal does not change any existing/ introduce new airspace user access.
k	Details of and justification for any delegation of ATS	No change to the delegation of ATS.

10. Safety Assessment

10.1 There is an overriding safety design principle for the proposed changes which states that safety should be at least maintained, or improved, as an impact of the changes.

10.2 The safety of the IFP changes has been assured by NATS Design who have worked alongside the CAA SARG IFP Regulator.

10.3 Prior to implementation, NATS will also undertake a formal Hazard Analysis in order to prove that the proposed changes are safe to be implemented into the operational environment.

10.4 The Option 2 concept would take full account of existing usage and connectivity needs. It would ensure that all IFPs are designed and checked by a suitably qualified APD, as regulated by CAA SARG.

10.5 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.

10.6 Where STARs have been extended and/or additional STARs established as part of this proposal to ensure important Descent Planning levels are maintained as per today, we have ensured that appropriate and safe connectivity is still provided, by identifying common route segments which can be used, which replicates procedures flown today. These will also be assessed as part of the safety hazard analysis, mentioned above in 10.3.

10.7 Where IFPs have been withdrawn as part of this proposal, we have ensured that appropriate/ safe connectivity is still provided and that there are no impacts.

10.8 Therefore, there would be a positive impact on safety whilst also improving the overall network connectivity. This is dependent on the satisfactory completion of the hazard analysis.

11. Operational Impact

	An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to:	Evidence of compliance/ proposed mitigation
a	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area	No impact to air traffic (technical change only) – see Sections 7.5 - 7.6.
b	Impact on VFR operations (including VFR routes where applicable);	No impact on VFR operations. See Section 7.5 -7.6.
c	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds	No impact on procedures or capacity (technical change only) - see Section 6.2.
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	No impact on aerodromes or other relevant activities – see Section 7.2.
e	Any flight planning restrictions and/or route requirements	No impact – technical changes only.

12. Supporting Infrastructure/ Resources

	General requirements	Evidence of compliance/ proposed mitigation
a	Evidence to support RNAV and conventional navigation as appropriate with details of planned availability and contingency procedures	N/A – current RNAV5 coverage is demonstrably adequate
b	Evidence to support primary and secondary surveillance radar (SSR) with details of planned availability and contingency procedures	Traffic uses the same regions as today in a similar manner from a surveillance point of view. Demonstrably adequate for the region.
c	Evidence of communications infrastructure including R/T coverage, with availability and contingency procedures	Traffic uses the same regions as today in a similar manner from a comms infrastructure point of view. Demonstrably adequate for the region.
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered	Existing contingency procedures based on the conventional navigation BKY DVOR would no longer be required and will be withdrawn. RNAV replication removes the en-route dependency from the BKY DVOR. Other existing contingency procedures and management protocol will continue to apply as today.
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out including details of navigation aid coverage, unit personnel levels, separation standards and the design of the airspace in respect of existing international standards or guidance material	As above (12d).
f	A clear statement on SSR code assignment requirements	No change to SSR code allocation.
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change	No training or additional qualifications required.

13. Airspace and Infrastructure

	General requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments	As today - no proposed changes to the airspace structure (technical changes only). See Section 6.2.

b	Where an additional airspace structure is required for radar control purposes, the dimensions shall be such that radar control manoeuvres can be contained within the structure, allowing a safety buffer. This safety buffer shall be in accordance with agreed parameters as set down in CAA policy statement 'Safety Buffer Policy for Airspace Design Purposes Segregated Airspace'. Describe how the safety buffer is applied, show how the safety buffer is portrayed to the relevant parties, and provide the required agreements between the relevant ANSPs/ airspace users detailing procedures on how the airspace will be used. This may be in the form of Letters of Agreement with the appropriate level of diagrammatic explanatory detail.	As today - no proposed changes to the airspace structure (technical changes only).
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures	As today - no proposed changes to the existing airspace structure (technical changes only).
d	Air traffic control procedures are to ensure required separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures	As today – no proposed changes to the existing ATC procedures.
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable	As today - no proposed changes to existing airspace classifications.
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation	As today– no proposed changes to airspace classification or volume.
g	Pilots shall be notified of any failure of navigational facilities and of any suitable alternative facilities available and the method of identifying failure and notification should be specified	Existing contingency procedures would continue to apply.
h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements. This is normally done through the AIRAC cycle	No proposed new structures and all changes will be promulgated through the AIRAC cycle.
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace	No change from today's Controlled Airspace. R/T coverage demonstrably adequate as per current day.
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	No proposed new structures.
k	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 air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests	No proposed new airspace structures.

	ATS route requirements	Evidence of compliance/ proposed mitigation
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/ Eurocontrolstandards	RNAV5 navaid coverage is demonstrably adequate. DME coverage is adequate and demonstrated in the coverage plots in Reference 6.
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task	As today – there are no new link routes required as part of this proposal.
c	All new routes should be designed to accommodate P-RNAV navigational requirements	Confirmed - RNAV5 will be used.

	Terminal airspace requirements	Evidence of compliance/ proposed mitigation
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas	As today - no proposed changes to the airspace structure.
b	There shall be effective integration of departure and arrival routes associated with the airspace structure and linking to designated runways and published instrument approach procedures (IAPs)	As today - no proposed changes to the airspace structure.
c	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure	As today - the revised STARs will end in the same locations as they do currently.
d	The airspace structure shall be designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace	As today - no change to the airspace structure.
e	Suitable arrangements for the control of all classes of aircraft (including transits) operating within or adjacent to the airspace in question, in all meteorological conditions and under all flight rules, shall be in place or will be put into effect by the change sponsor upon implementation of the change in question (if these do not already exist)	As today - no change to the airspace structure.
f	The change sponsor shall ensure that sufficient visual reference points are established within or adjacent to the subject airspace to facilitate the effective integration of VFR arrivals, departures and transits of the airspace with IFR traffic	As today - no change to visual reference points.
g	There shall be suitable availability of radar control facilities	As today - no change to radar control facilities.

h	The change sponsor shall, upon implementation of any airspace change, devise the means of gathering (if these do not already exist) and of maintaining statistics on the number of aircraft transiting the airspace in question. Similarly, the change sponsor shall maintain records on the numbers of aircraft refused permission to transit the airspace in question, and the reasons why. The change sponsor should note that such records would enable ATS managers to plan staffing requirements necessary to effectively manage the airspace under their control	As today - there are no proposed changes to the airspace structure.
i	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure	As today – no new procedures.

	Off-route airspace requirements	Evidence of compliance/ proposed mitigation
	There are no proposed changes to off-route airspace structures	

14. Environmental Assessment

	Theme	Content	Evidence of compliance/ proposed mitigation
a	WebTAG analysis	Output and conclusions of the analysis (if not already provided elsewhere in the proposal)	N/A – no change in noise impacts, CO_2 or greenhouse gas emissions. See Section 7.7
b	Assessment of noise impacts (Level 1/M1 proposals only)	Consideration of noise impacts, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no noise impacts, the rationale must be explained	N/A – this is a Level 2C change.
c	Assessment of CO_2 emissions	Consideration of the impacts on CO_2 emissions, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on CO_2 emissions impacts, the rationale must be explained	N/A – no change in CO_2 or greenhouse gas emissions. See Section 7.7
d	Assessment of local air quality (Level 1/M1 proposals only)	Consideration of the impacts on local air quality, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no impact on local air quality, the rationale must be explained	N/A – this is a Level 2C change

e	Assessment of impacts upon tranquillity (Level 1/M1 proposals only)	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks, and where appropriate the related qualitative and/or quantitative analysis If the change sponsor expects that there will be no tranquillity impacts, the rationale must be explained	N/A – this is a Level 2C change.
f	Operational diagrams	Any operational diagrams that have been used in the consultation to illustrate and aid understanding of environmental impacts must be provided	See the Assessment Meeting slide pack (Ref 2). No change to environmental impacts, as covered in Section 7.7
g	Traffic forecasts	10-year traffic forecasts, from the anticipated date of implementation, must be provided (if not already provided elsewhere in the proposal)	No foreseeable changes to capacity or usage - see Section 4.2.
h	Summary of environmental impacts and conclusions	A summary of all of the environmental impacts detailed above plus the change sponsor's conclusions on those impacts	No foreseeable environmental impact - see Section 7.7.

14.1 Reversion Statement

Should the proposal be approved and implemented, reversion to the pre-implementation state would only be possible if the conventional navaids are kept in operation. Once the navaids are removed it would not be possible to revert to the pre-implementation state.

The BKY DVOR is scheduled to be decommissioned and physically removed in 2022 or sooner if all aerodrome dependencies are removed before then.

In the unlikely event that there are unexpected issues caused by this proposal, then short notice changes could be made via NOTAM or by adding Route Availability Document (RAD) restrictions. For a permanent reversion, the changes would have to be reversed by incorporating this into an appropriate future AIRAC date. Due to the limitations of NATS Area System (NAS - flight and radar data processing) large scale airspace changes are usually only implemented four times a year.

15. Appendices

15.1 References

Ref No	Name	Hyperlink
1	BKY DVOR Statement of Need	Link
2	BKY DVOR Stage 1 Assessment Meeting Slides	Link
3	BKY DVOR Stage 2 Document	Link
4	BKY DVOR Stage 3 Document	Link
5	AIP changes in support of BKY DVOR Airspace Change Proposal V2.0	Supplied directly to CAA
6	NATS Design Ltd. BKY DVOR Design Report (IFP Report) V2.0	Supplied directly to CAA
7	SARG Policy: Policy for the replication of conventional SIDs, STARs and Holds using PBN	Link
8	BKY DVOR Removal – Engagement Evidence (redacted)	Supplied directly to CAA

15.2 Statement of Need for BKY DVOR ACP (ACP-2019-19)

In order to facilitate the eventual removal of the Barkway (BKY) DVOR, it is proposed to remove the en-route dependency on the DVOR by RNAVing the majority of the conventional STARs and Holds that are dependent upon it; replicating the current conventional procedures as closely as possible using RNAV design criteria.

Therefore, as part of this ACP, en-route procedures with a dependency on the BKY DVOR will be evaluated. Where appropriate, procedures will be RNAV replicated and re-designated using their starting waypoint and destination airport. Dependent on current usage, some procedures may be withdrawn in order to rationalise the number of STARs and provide more optimal connectivity from the ATS Route Network. Similarly, small amendments may also be made to STARs. None of these changes will amend the vertical profile or traffic using the STAR, or the lateral track of aircraft at 7,000ft or below.

The procedures which are currently dependent on the BKY DVOR and fall under this ACP are the following:

- *Luton/ Stansted ASKEY 1K, 2H, 3G and 5F STARs*
- *Luton/ Stansted LOREL 2H, 3G and 5F STARs*
- *Stansted ABBOT 1A STAR*
- *Southend SPEAR 1M, 2H and 2L STARs*

This ACP will also include technical amendments to the London City JACKO 1H, 1M and 2L STARs. Although they are not dependent on the BKY DVOR, they have similar routings to some of the other procedures in this proposal and require updating.

Finally, a separate SoN was submitted (#3436) to remove the conventional BKY Hold from ENR3.6. This previous SoN will be withdrawn, and the proposed withdrawal will sit under this submission.

This SoN replaces DAP1916-2661.

15.3 Impact assessment: Luton/ Stansted STARs

For charts and technical notes, see the Assessment Meeting slide pack [Ref 2] for the current IFPs. The Assessment Meeting slide pack included the Luton/ Stansted LOREL 1K STAR which is dependent on the BKY DVOR. It is worth noting that this will be truncated at FINMA and RNAV replicated, as part of the DTY DVOR Airspace Change Proposal (link to the portal page). Therefore, although linked, this is not covered under this proposal.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
ASKEY 1K STAR	M605: *DTY - FINMA - BOMBO - BKY - BUSTA - ASKEY*	3 Withdraw	Not required	Not required	Used when BPK is out of service. Not required once the equivalent GW/ SS LOREL 1K STAR has been RNAV replicated under the DTY ACP (link). As noted above, the LOREL 1K STAR will be truncated at FINMA and re-designated as FINMA 1L.
ASKEY 2H STAR	L15: *HON - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	3 Withdraw	Not required	Not required	Used when BPK is out of service. As covered below, the equivalent LOREL 2H STAR is being withdrawn as it will be replaced by the FINMA 1L STAR (covered under the DTY ACP – link).
ASKEY 3G STAR	(U)L612: *MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	3 Withdraw	Not required	Not required	Used when BPK is out of service. As covered below, the equivalent LOREL 3G STAR is being withdrawn after the 2017 PLAS airspace change truncated the LOREL 4F STAR to LISTO. This provides the required connectivity as LISTO is an established waypoint on ATS Route (U)L612.
ASKEY 5F STAR	(U)Q4, Z197: *LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - ASKEY*	3 Withdraw	Not required	Not required	Used when BPK is out of service. Not required once the equivalent GW/ SS LOREL 5F STAR has been RNAV replicated (covered below).
LOREL 2H STAR	L15: *HON - CLIPY - BOMBO - BKY - BUSTA - LOREL*	3 Withdraw	Not required	Not required	Under the DTY DVOR ACP (link) the LOREL 1K STAR was truncated at FINMA; and RNAV5 replicated/ re-designated as FINMA 1L. FINMA 1L routes from FINMA to LOREL.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					This BKY submission proposes to withdraw the LOREL 2H STAR. This will be replaced by the FINMA 1L STAR, which will be fed by ATS routes L15 and M605; thus, maintaining the same connectivity as today. The FINMA 1L STAR provides appropriate flight plannable options as FINMA is on the ATS network, whereas CLIPY is not. This change also removes CLIPY from the AIP, allowing the 5LNC to be returned to ICAO.
LOREL 3G STAR	(U)L612: *MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - LOREL*	3 Withdraw	Not required	Not required	The PLAS Airspace Change of 2017 truncated the then SPEAR 1L/ LOREL 4F STARs from WAL to LISTO, an established waypoint on the ATS route network. Prior to this, the LOREL 3G STAR was used for traffic from the north/ north-east however this can now be withdrawn. Following the PLAS truncation to LISTO – an established waypoint on ATS Route (U)L612 – this allows traffic to flight plan the STAR and provides the required connectivity. Additionally, feedback has been received from the NERL DP-ER programme that STARs should start in the last AC sector if not the first TC sector – otherwise, issues can be created for flight data processing software.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					Finally, removing all enroute dependencies from MCT will allow the DOC to be reduced; thus, helping to extend its longevity for use by Manchester Airport (most of their procedures depend on MCT).
LOREL 5F STAR	(U)Q4, Z197: *LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY - BUSTA - LOREL*	2 Admin 4 Replicate 6 Technical Amendment	RNAV5 replication and slight amendment to route via FINMA	(U)Q4, Z197*: LISTO - PEDIG - ROGBI - FINMA - BOMBO - BKY - BUSTA - LOREL* Rename as **LISTO 1L**	The STAR will be amended to route via FINMA which is on the ATS network, whereas CLIPY is not. The DTY DVOR Airspace Change Proposal (link to the portal page) previously amended the Luton/ Stansted LOREL 1K STAR to route via FINMA. This provides appropriate flight plannable options. Waypoint FINMA retains the FL150 level restriction previously located at CLIPY. This also removes CLIPY from the AIP, allowing the 5LNC to be returned to ICAO. Created using RNAV design criteria to align as closely as possible with the existing conventional procedure. STAR re-designated based on its starting waypoint LISTO; and the 'L' designator used for the Route Indicator, after one of the destination airports (L – Luton).

15.4 Impact assessment: Stansted STAR

For charts and technical notes, see the Assessment Meeting slide pack (Ref 2) 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
ABBOT 1A STAR	*BKY - ADNAM - ABBOT*	2 Admin 4 Replicate	RNAV5 replication and re-designation	*BKY - ADNAM - ABBOT* Rename as **BKY 1X**	Created using RNAV design criteria to align as closely as possible with the existing conventional procedure. STAR re-designated based on its starting waypoint BKY; and the 'X' designator used to demonstrate an extraordinary STAR (alongside 'Q, Y, Z') i.e. stack-swap or contingency STARs. No impact to connectivity and no predicted change to flight behaviour.

15.5 Impact assessment: Southend STARs

For charts and technical notes, see the Assessment Meeting slide pack (Ref 2) 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
SPEAR 1M STAR	(U)L612: *MCT - PEDIG - ROGBI - CLIPY - BOMBO - BKY*	3 Withdraw	Not required	Not required	The PLAS Airspace Change of 2017 truncated the then SPEAR 1L/ LOREL 4F STARs from WAL to LISTO, an established waypoint on the ATS route network. Prior to this, the SPEAR 1M STAR was used for traffic from the north/ north-east however this can now be withdrawn. Following the PLAS truncation to LISTO – an established waypoint on ATS Route (U)L612 – this allows traffic to flight plan the STAR and provides the required connectivity. Additionally, feedback has been received from the NERL DP-ER programme that STARs should start in the last AC sector if not the first TC sector – otherwise, issues can be created for flight data processing software. Finally, removing all enroute dependencies from MCT will allow the DOC to be reduced; thus, helping to extend its longevity for use by Manchester Airport (most of their procedures depend on MCT).
SPEAR 2H STAR	L15, L10, L8, L612: *HON - CLIPY - BOMBO - BKY*	2 Admin 4 Replicate 5 Truncate 6 Technical Amendment	RNAV5 replication; truncated and re-aligned to commence at FINMA; amended to continue onto SPEAR; and re-	L15, M605: *FINMA - BOMBO - BKY - BRAIN - MAYLA - SPEAR* Rename as **FINMA 1S**	STAR truncated and re-aligned to commence at FINMA, instead of HON. FINMA is on the ATS route network, whereas CLIPY is not. This provides appropriate flight plannable options for traffic at FL190 and below. Waypoint FINMA retains the FL150 level restriction previously located at CLIPY. This also removes CLIPY from the AIP, allowing the 5LNC to be returned to ICAO.

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
			designated as FINMA 1S		The new STAR delivers aircraft to SPEAR from FINMA. Created using RNAV design criteria to align as closely as possible with the conventional procedure. STAR re-designated based on its starting waypoint FINMA; and the 'S' designator used for the Route Indicator, after the destination airport (S – Southend).
SPEAR 2L STAR	(U)Q4, Z197: *LISTO - PEDIG - ROGBI - CLIPY - BOMBO - BKY*	2 Admin 4 Replicate 6 Technical Amendment	RNAV 5 replication; re-aligned to route via FINMA and continue onto SPEAR; and re-designated as LISTO 1S	(U)Q4, Z197: *LISTO - PEDIG - ROGBI - FINMA - BOMBO - BKY - BRAIN - MAYLA - SPEAR* Re-designated as **LISTO 1S**	The DTY DVOR ACP (link) amended the LOREL arrivals to route via FINMA instead of CLIPY. FINMA is on the ATS route network, whereas CLIPY is not. This change also facilitated other STARs to commence at FINMA. The same rationale has been applied to Southend arrivals into SPEAR from the north, via the SPEAR 2L STAR. The proposed STAR is re-aligned to route via FINMA which is part of the ATS route network, instead of CLIPY. The proposed STAR (LISTO 1S) retains the FL150 level restriction at FINMA, previously located at CLIPY. STAR re-designated based on its starting waypoint LISTO; and the 'S' designator used for the Route Indicator, after the destination airport (S – Southend).

15.6 Impact assessment: London City STARs

For charts and technical notes, see the Assessment Meeting slide pack (Ref 2) 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
JACKO 1H STAR	UL612, L10: *HON - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	2 Admin	Re-designated as HON 1C	Unchanged from today Re-designated as **HON 1C**	This is an RNAV STAR serving London City, introduced as part of the LAMP 1A airspace change in 2016. Although it is not dependent on BKY, this STAR has a similar routing to other STARs in this proposal. STAR re-designated based on its starting waypoint HON; and the 'C' designator used for the Route Indicator, after the destination airport (C – London City).
JACKO 1M STAR	UL612: *MCT - PEDIG - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	3 Withdraw	Not required	Not required	The PLAS Airspace Change of 2017 truncated the then SPEAR 1L/ LOREL 4F STARs from WAL to LISTO, an established waypoint on the ATS route network. Prior to this, the JACKO 1M STAR was used for traffic from the north/ north-east however this can now be withdrawn. Following the PLAS truncation to LISTO – an established waypoint on ATS Route (U)L612 – this allows traffic to flight plan the STAR and provides the required connectivity. Feedback has been received from the NERL DP-ER programme that STARs should start in the last AC sector if not the first TC sector – otherwise, issues can be created for flight data processing software. Commencing a STAR at MCT does not meet this requirement.

Current IFP	Current route connectivity/STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
					Finally, removing all enroute dependencies from MCT will allow the DOC to be reduced; thus, helping to extend its longevity for use by Manchester Airport (most of their procedures depend on MCT).
JACKO 2L STAR	UQ4, Z197: *LISTO - PEDIG - ROGBI - TIXEX - ODVOD - ROPMU - NUDNA - INLIM - JACKO*	2 Admin	Re-designated as LISTO 1C	Unchanged from today Re-designated as **LISTO 1C**	This is an RNAV STAR serving London City, introduced as part of the LAMP 1A airspace change in 2016. Although it is not dependent on BKY, this STAR has a similar routing to other STARs in this proposal. STAR re-designated based on its starting waypoint LISTO; and the 'C' designator used for the Route Indicator, after the destination airport (C - London City).

15.7 Impact assessment: BKY Hold

Current IFP	Current route connectivity/ STAR	Design Principle	How	Proposed route Connectivity/ STAR	Impact of proposed change on connectivity and flight behaviour
BKY Hold	N/A – conventional Hold	3 Withdraw	Not required	Not required	Removal of the ENR3.6 enroute Hold at BKY was originally submitted under a separate SoN (#3436). NATS requested that it is included as part of this proposal where is logically fits. The BKY conventional Hold is very seldom used and – given that it is a conventional Hold dependent on the BKY DVOR – it will not be RNAV replicated. Therefore, it can be removed from ENR3.6.

15.8 Engagement Activity

This section summarises the engagement activities we conducted, which influenced the design decisions/ considerations. Copies of the engagement material have been sent to the CAA.

Stakeholder	Type of engagement	Date	Notes
London City Airport	Email	05/06/2020	Email outlining proposed changes to STARs as part of the DVOR Rationalisation programme; seeking approval
Luton Airport	Email	02/06/2020	Email outlining proposed changes to STARs as part of the DVOR Rationalisation programme; seeking approval
Southend Airport	Email	02/06/2020	Email outlining proposed changes to STARs as part of the DVOR Rationalisation programme; seeking approval
Stansted Airport	Email	02/06/2020	Email outlining proposed changes to STARs as part of the DVOR Rationalisation programme; seeking approval

Table 3: Engagement with Airports for BKY DVOR proposed changes

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