London Biggin Hill Airport
ACP-2019-86

Stage 2 Version 2 Design Principles Evaluation Gateway 2

Document Details

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Document Title	London Biggin Hill Airport RNAV (GNSS) Runway 21 Airspace Change Proposal ACP-2019-86 Stage 2 Version 2 Design Principles Evaluation Gateway 2
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1 Introduction

1.1 Background

London Biggin Hill Airport (LBHA) is progressing through the Airspace Change Process as defined by the Civil Aviation Publication (CAP) 1616. This airspace change, if successful, is to introduce a RNAV(GNSS) arrival route in order to:

- Be compliant with EASA Regulatory requirements detailed within IR (EU) 2018/1048[1]. This will also meet the requirements within the CAA Airspace Modernisation Strategy.
- Add a layer of resilience to the airport operation by providing a second instrument approach in the event that the current ILS procedure is unavailable.

This ACP will only impact a small number of stakeholders as the majority of aircraft will continue to operate as they do today. Specifically, this ACP is to change a rarely used inbound procedure which is utilised by approximately 2[2] aircraft a month, and a Missed Approach Procedure (MAP) that is only used about 30 times a year.

1.2 Progress So Far

As part of this redesign, LBHA must follow the guidance provided by the CAA and successfully complete the first 6 stages of CAP 1616.

The Statement of Need submitted to the CAA to initiate this ACP stated:

LBHA is proposing to implement an RNAV(GNSS) Instrument Approach Procedure (IAP), with LNAV and LPV Minima to Runway 21. The IAP will be designed for aircraft in Speed Categories A, B, and C and will include an RNAV Missed Approach Procedure. The RNAV(GNSS) IAP will replicate/mimic the existing Runway 21 ILS/DME/VOR[3] procedure. The RNAV(GNSS) Procedure for Runway 21 will not only act as a back-up in the event of an ILS failure but will also future proof the airfield and provide an alternative to procedures utilising the BIG VOR, which is due to be removed in the near future.

This is the formal explanation of why LBHA wishes to make changes within the airspace surrounding it.

Stage 1 of CAP 1616 requires that the airport and stakeholders, through a two-way process establish a set of Design Principles (DPs) which will subsequently steer and guide the development of the route options. LBHA successfully completed

[1] The principles of which have been adopted into UK law.
[2] Ensures competency and accounts for reduced staffing at the Radar unit at the end of the day resulting in the need for a Procedural Approach.
[3] ILS/DME/VOR Procedures are conventional procedures that utilise ground-based equipment to define the lateral and vertical guidance for the aircraft.

Stage 1 and the finalized prioritised DPs that passed through the CAP 1616 Gateway 1 are shown in Table 1 below.

This LBHA Airspace Change project is now at the Stage 2 (Develop & Assess).

Priority	
1	SAFETY - New routes must be safe and must not erode current ANSP safety barriers
2	ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown
3	COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant
4	NAVIGATION STANDARDS - New routes must be designed to use PBN
5	EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies
6	REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors

Table 1 - Prioritised Design Principles

1.2.1 Previous Gateway 2

This ACP had a Gateway 2 date of 25th June 2021, and the original version of this document and the others associated with that Gateway 2 (all at Version 1) were assessed by the CAA. As part of the CAP 1616 process, the CAA provided feedback on the 3 documents as explained in their CAP1616 Stage 2 Gateway – CAA Response document, which is on the Airspace Change portal. As the ACP did not progress out of Stage 2 in June 2021 LBHA subsequently had to revise the documents for a new Gateway 2.

Version 1 of these 3 documents is therefore no longer valid.

LBHA have incorporated the CAA feedback and new learning into new Stage 2 documentation, and as a result of that fewer options have entered the Design Principles Evaluation (DPE).

1.3 Comprehensive List – Options Development

LBHA developed a Comprehensive List of design options; from radical options through to specific lateral and vertical options, that supported both the Statement of Need and aligned with the design principles. These were shared with

stakeholders to ensure that stakeholder interests, expressed through the design principles had been properly understood and accounted for in designing these options. This engagement is detailed in the Engagement Document which is available on the CAA Airspace Change Portal. In summary, most of the feedback received was positive, one new option was identified, and stakeholders accepted that the options presented did represent a Comprehensive List.

1.4 This Document

Within Stage 2 of CAP 1616, the Comprehensive List, through application of the CAP 1616 process, is refined down. From the feedback given by the CAA after the first Gateway 2[4], LBHA has refined down the Comprehensive List firstly, through use of the design criteria and constraints to a Suitable List of options which is then taken through a Design Principles Evaluation (DPE). The DPE is evidenced by this document, now at Version 2.

The DPE describes how the options respond to the DPs and results in a (Comprehensive) List of Viable Options. This complete process is shown in Figure 1 below.

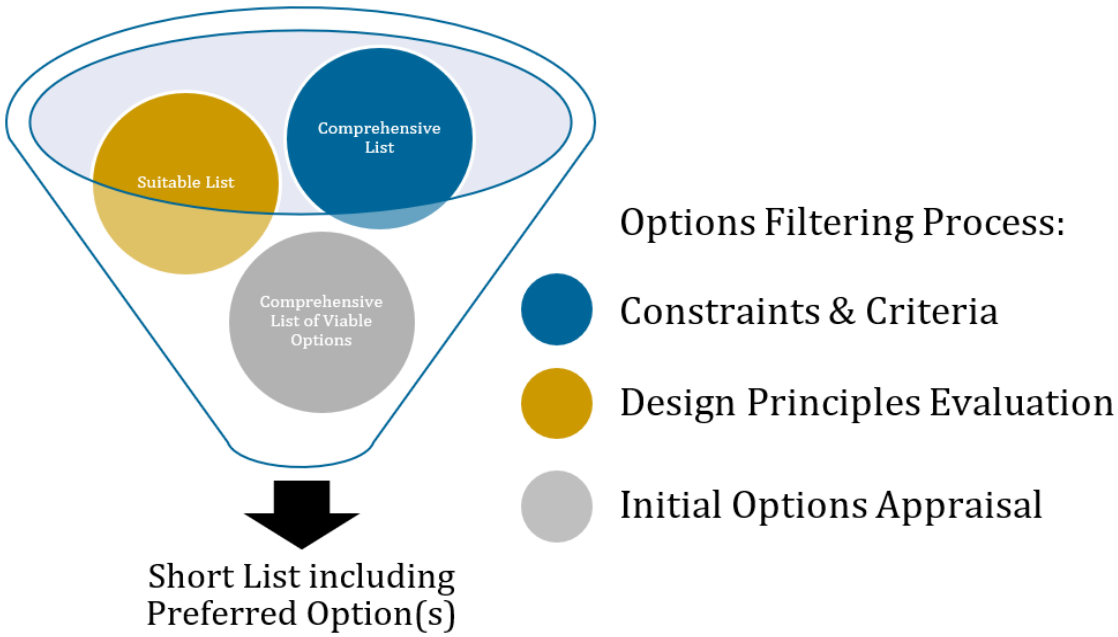


Figure 1 CAP 1616 Options Filtering Process

This document should be read after the Design Options Development Document Version 2 and the Engagement Document and before the Initial Options Appraisal Version 2.

The change sponsor understands that the options that are eventually chosen must also be compliant with the relevant technical criteria as detailed in Appendix F to CAP 1616. Therefore, where an option has been accepted as part of the DPE, a high-level assessment has been undertaken against Appendix F, together with a

[4] Paragraph 1.6 of the Post Gateway 2 Feedback Minutes available on the portal

high-level assessment regarding compatibility and alignment with appropriate regulatory requirements in accordance with para 128 CAP 1616. This is explained fully in Section 4 of this document.

1.5 Next Steps

On completion of this DPE, the options that remain, that is, those options that form the Comprehensive List of Viable Options are then assessed through the Initial Options Appraisal (IOA) which results in a Short List which will include the preferred option. This process is the final part of that shown above in Figure 1, and also the final part of the Stage 2 Develop and Assess requirement in CAP 1616.

1.5.1 Stage 2 documents

CAP 1616 requires various information for Stage 2. To enable clear explanation of our engagement throughout Stage 2, including how feedback was addressed, we have produced 4 documents. The documents for this Gateway 2 are:

- Design Options Development Version 2
- Engagement document Version 1 (which should be read before this document)
- This document, Design Principles Evaluation (produced in the format dictated by Appendix E of CAP 1616) Version 2
- Initial Options Appraisal Version 2

1.6 Context CAP 1616

CAP 1616 is a seven-stage process published by the CAA, those seven stages are:

- Stage 1 – Define
- Stage 2 – Develop and Assess (current stage)
- Stage 3 – Consultation
- Stage 4 – Update and Submit
- Stage 5 – Decide
- Stage 6 – Implement
- Stage 7 – Post-Implementation Review

2 Options within the Design Principle Evaluation

2.1 Comprehensive List to Suitable List

Development of the Comprehensive List is detailed in the Design Options Development document Version 2.

The Comprehensive List contains do nothing and discontinued options totalling 7 inbound options with numerous sub options/variations, and 5 MAP options. Detailed descriptions are in the Design Options Development document Version 2.

That document details the discontinuation of options which occurred through consistent application of the criteria and constraints resulting in a Suitable List of options as follows: This results in a Suitable List of arrival options as follows:

- 2A
- 2AD
- 2B
- 2BD

These arrival options are all compatible with the only MAP option, Option 9.

During development, each different option was allocated a number and letters were added to show variations, those that remain on the Suitable List are shown below:

Variation Code	Basic Description
A	Utilises a 3° PBN final approach angle, which is currently industry standard.
B	Utilises a 3.2° PBN final approach angle.
D	Utilises a direct routing between OSVEV and ALKIN.

Table 2 Variation Coding Explained

2.2 The Options within the Evaluation

The DPE describes how the options on the Suitable List respond to the design principles and results in a Comprehensive List of Viable Options.

The do-nothing options, 1 and 8 are not evaluated as they were discontinued and are not part of the Suitable List. However, the do-nothing scenario will still be referred to throughout the CAP 1616 process to enable comparison. This is explained fully in Section 3 of the Initial Options Appraisal Version 2.

There are 4 arrival options and 1MAP option to evaluate, the description of each of those options is shown below.

2.2.1 Option 2A

This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN. This assumes radar vectors by NATS from OSVEV to enable inbounds to exit the network using extant procedures, or radar vectors by NATS for inbounds from the MAP or the south. Exceptionally, if radar vectors were unavailable the aircraft could self-position. This reflects the current practice for the VOR/DME approach.

The glideslope is at 3.0°.

2.2.2 Option 2AD

This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN and utilise a new direct link from OSVEV to enable inbounds to exit the network without radar vectors if necessary.

It is assumed that radar vectors by NATS will be available from OSVEV if necessary/requested, as is the current practice, and that radar vectors by NATS for inbounds from the MAP or the south will be available as they are today. Exceptionally, if radar vectors were unavailable the aircraft could self-position.

The glideslope is at 3.0°.

2.2.3 Option 2B

This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN. This assumes radar vectors by NATS from OSVEV to enable inbounds to exit the network using extant procedures, or radar vectors by NATS for inbounds from the MAP or the south. Exceptionally, if radar vectors were unavailable the aircraft could self-position. This reflects the current practice for the VOR/DME approach.

The glideslope is at 3.2° for the full PBN design.

2.2.4 Option 2BD

This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN and utilise a new direct link from OSVEV to enable inbounds to exit the network without radar vectors if necessary.

It is assumed that radar vectors by NATS will be available from OSVEV if necessary/requested, as is the current practice, and that radar vectors by NATS for inbounds from the MAP or the south will be available as they are today. Exceptionally, if radar vectors were unavailable the aircraft could self-position.

The glideslope is at 3.2° for the full PBN design.

2.2.5 Option 9 MAP

Mimic the current right turn MAP to ALKIN (via the LBHA overhead), although with different protection areas due to the PBN design criteria, and then radar vectors from NATS/ or follow the procedural approach from ALKIN. This MAP would also become the ILS MAP.

3 Design Principle Evaluation

3.1 Assessment

Each option has been assessed against the prioritised list of Design Principles shown in Table 1 in Section 1 above. Table 3 below gives an overview of how well each option aligns to each Design Principle; it shows a summary of the analysis conducted for each option. Greater detail is provided against each option in section 3.2 which shows an assessment of whether the Design Principle is either not met, partially met, or fully met, as follows:

- A green box indicates that the Design Principle **has been met** by the specified option.
- An orange box means that the Design Principle **has been partially met** by the specified option.
- A red box indicates that the Design Principle **has not been met** by the specified option.

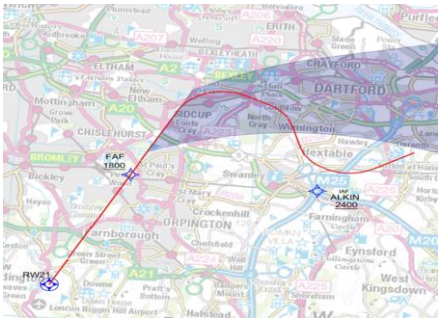
	DP1	DP2	DP3	DP4	DP5	DP6
Option 2A						
Option 2AD						
Option 2B						
Option 2BD						
Option 9						

Table 3 – DPE Overview

3.2 Detailed Evaluation

This evaluation was carried out by the sponsor with recourse to various Subject Matter Experts.

Design Principle Evaluation	**OPTION NO: 2A**
Option Name: 2A	ACCEPT

Description of Option: This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN. This assumes radar vectors by NATS from OSVEV to enable inbounds to exit the network using extant procedures, or radar vectors by NATS for inbounds from the MAP or the south. Exceptionally, if radar vectors were unavailable the aircraft could self-position. This reflects the current practice for the VOR/DME approach. The glideslope is at 3.0°. *The shaded area shows the position of the vast majority of the current arrivals of all types receiving radar vectors. The depiction shows aircraft arrival via the hold at ALKIN.* 			
Design Principle 1: SAFETY - New routes must be safe and must not erode current ANSP safety barriers	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure design and safety work to date implies that the final design will meet acceptable levels of flight safety and will not erode ANSP safety barriers. This option maintains the status quo of no network connectivity.			
Design Principle 2: ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The route does not fly over new populations. For the most part it remains inside the main radar vectoring swathe and when it doesn't it utilises an area that is still currently overflown by inbound aircraft (but to a lesser extent than the main swathe). The glideslope is the industry standard.			
Design Principle 3: COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is compliant			
Design Principle 4: NAVIGATION STANDARDS - New routes must be designed to use PBN	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: This option is designed using PBN.			
Design Principle 5: EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is the most efficient route possible from ALKIN. This option does not optimise efficiencies in terms of network connectivity.			
Design Principle 6: REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option has been designed to replicate as closely as possible, both laterally and vertically, the current VOR/DME procedure.			

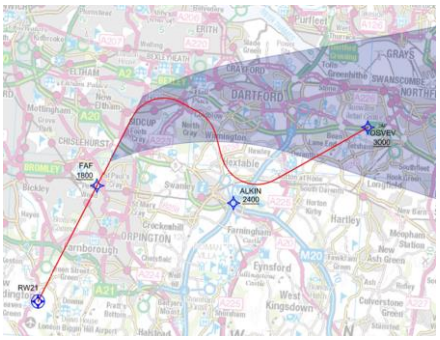
Design Principle Evaluation	**OPTION NO: 2AD**
Option Name: 2AD	ACCEPT

Description of Option: This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN and utilise a new direct link from OSVEV to enable inbounds to exit the network without radar vectors if necessary.

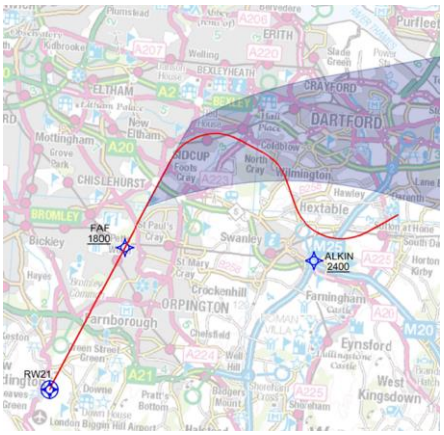
It is assumed that radar vectors by NATS will be available from OSVEV if necessary/requested, as is the current practice, and that radar vectors by NATS for inbounds from the MAP or the south will be available as they are today. Exceptionally, if radar vectors were unavailable the aircraft could self-position.

The glideslope is at 3.0°.

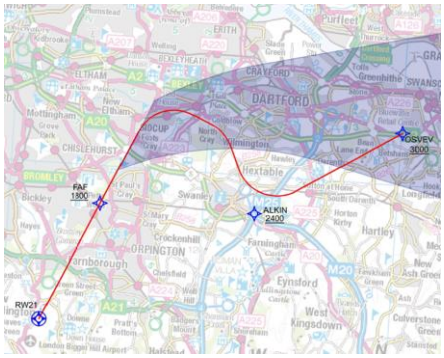
The shaded area shows the position of the vast majority of the current arrivals of all types receiving radar vectors.



Design Principle 1: SAFETY - New routes must be safe and must not erode current ANSP safety barriers	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure design and safety work to date implies that the final design will meet acceptable levels of flight safety and will not erode ANSP safety barriers. The proposed link route from OSVEV to ALKIN will enhance safety as it will provide a complete system route into the airport.			
Design Principle 2: ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The route does not fly over new populations. For the most part it remains inside the main radar vectoring swathe and when it doesn't it utilises an area that is still currently overflown by inbound aircraft (but to a lesser extent than the main swathe). The glideslope is the industry standard.			
Design Principle 3: COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is compliant			
Design Principle 4: NAVIGATION STANDARDS - New routes must be designed to use PBN	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is designed using PBN.			
Design Principle 5: EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is the most efficient route possible from ALKIN. The proposed direct link route is the most efficient route in terms of track miles, from OSVEV to ALKIN and provides operational efficiencies both to ATC and within the cockpit.			

Design Principle 6: REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option has been designed to replicate as closely as possible, both laterally and vertically, the current VOR/DME procedure. The link route from OSVEV to ALKIN is within the current swathe.			
Design Principle Evaluation		**OPTION NO: 2B**	
Option Name: 2B		REJECT	
Description of Option: This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN. This assumes radar vectors by NATS from OSVEV to enable inbounds to exit the network using extant procedures, or radar vectors by NATS for inbounds from the MAP or the south. Exceptionally, if radar vectors were unavailable the aircraft could self-position. This reflects the current practice for the VOR/DME approach. *The glideslope is at 3.2° for the full PBN design.* *The shaded area shows the position of the vast majority of the current arrivals of all types receiving radar vectors. The depiction shows aircraft arrival via the hold at ALKIN.*			
Design Principle 1: SAFETY - New routes must be safe and must not erode current ANSP safety barriers	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure design and safety work to date implies that the final design will meet acceptable levels of flight safety and will not erode ANSP safety barriers. This option maintains the status quo of no network connectivity.			

Design Principle 2: ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The route does not fly over new populations. For the most part it remains inside the main radar vectoring swathe and when it doesn't it utilises an area that is still currently overflown by inbound aircraft (but to a lesser extent than the main swathe). This option has been designed with a slightly increased glideslope for the full RNAV element.			
Design Principle 3: COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is compliant			
Design Principle 4: NAVIGATION STANDARDS - New routes must be designed to use PBN	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is designed using PBN.			
Design Principle 5: EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is the most efficient route possible from ALKIN. This option does not optimise efficiencies in terms of network connectivity. This option could introduce operational inefficiencies through increased radio transmissions (in a small geographical area already congested with radio transmissions) from unfamiliar pilots, on rarely used procedures, requesting confirmation regarding the gradient differences (full PBN versus PBN to ILS) and the PAPI setting.			
Design Principle 6: REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors.	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: This option has been designed to replicate as closely as possible the lateral dimension of the current VOR/DME procedure.			
Design Principle Evaluation			**OPTION NO: 2BD**
Option Name: 2BD			REJECT
Description of Option: This option would be to replicate/mimic the current VOR/DME approach which starts from ALKIN and utilise a new direct link from OSVEV to enable inbounds to exit the network without radar vectors if necessary. *It is assumed that radar vectors by NATS will be available from OSVEV if necessary/requested, as is the current practice, and that radar vectors by NATS for inbounds from the MAP or the south will be available as they are today. Exceptionally, if radar vectors were unavailable the aircraft could self-position.* *The glideslope is at 3.2° for the full PBN design.* *The shaded area shows the position of the vast majority of the current arrivals of all types receiving radar vectors.*			
Design Principle 1: SAFETY - New routes must be safe and must not erode current ANSP safety barriers	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure design and safety work to date implies that the final design will meet acceptable levels of flight safety and will not erode ANSP safety barriers. The proposed link route from OSVEV to ALKIN will enhance safety as it will provide a complete system route into the airport.			
Design Principle 2: ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: The route does not fly over new populations. For the most part it remains inside the main radar vectoring swathe and when it doesn't it utilises an area that is still currently overflown by inbound aircraft (but to a lesser extent than the main swathe). The route has been designed with a slightly increased glideslope for the full RNAV element.			
Design Principle 3: COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is compliant			
Design Principle 4: NAVIGATION STANDARDS - New routes must be designed to use PBN	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is designed using PBN.			
Design Principle 5: EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option is the most efficient route possible from ALKIN. The proposed direct link route is the most efficient route in terms of track miles, from OSVEV to ALKIN and provides operational efficiencies both to ATC and within the cockpit. This option could introduce operational inefficiencies through increased radio transmissions (in a small geographical area already congested with radio transmissions) from unfamiliar pilots, on rarely used procedures, requesting confirmation regarding the gradient differences (full PBN versus PBN to ILS) and the PAPI setting.			
Design Principle 6: REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This option has been designed to replicate as closely as possible the lateral dimension of the current VOR/DME procedure.			

Note: For the DPE of the MAP options below the spirit of the DP has been utilised (e.g. Arrival route is assessed as MAP route)			
Design Principle Evaluation			**OPTION NO: 9**
Option Name: MAP Do minimum			ACCEPT
Description of Option: Mimic the current right turn MAP to ALKIN (via the LBHA overhead), although with different protection areas due to the PBN design criteria, and then radar vectors from NATS/ or follow the procedural approach from ALKIN. *This MAP would also become the ILS MAP.*			
Design Principle 1: SAFETY - New routes must be safe and must not erode current ANSP safety barriers	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure design and safety work to date implies that the final design will meet acceptable levels of flight safety.			
Design Principle 2: ENVIRONMENTAL CONCERNS - Arrival routes should, where possible, be designed to minimise the impact of noise below 7,000' and should avoid the overflight of populations not previously overflown	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The populations overflown due to the PBN design will experience MAP overflight currently due to the variation in flying the current procedure.			
Design Principle 3: COMPLIANCE - Routes should, where possible, be designed to be PANS Ops compliant	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The design will be compliant			
Design Principle 4: NAVIGATION STANDARDS - New routes must be designed to use PBN	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The design uses PBN.			

Design Principle 5: EFFICIENT ROUTES - Arrival routes should, where possible, be designed to minimise emissions and optimise operational efficiencies	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This design mimics the current route and therefore has minimal impact on subsequent arrivals as it utilises the overhead and does not impose inbound restrictions			
Design Principle 6: REPLICATION - Procedure should, where possible mimic the existing procedure and/or the existing ILS positioning by ATC vectors.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Designed to mimic the current MAP as closely as possible.			

Table 4 – Detailed DPE

4 Technical Criteria

4.1 Assessment

Each ACCEPT option is now subject to a high-level assessment against the technical criteria in Appendix F of CAP 1616, this is to ensure that whichever option is eventually chosen will be compliant with the required technical criteria. As Appendix F should not be completed until Stage 4 this is a very high-level assessment.

That high level assessment confirms that all the options accepted within the DPE are considered to be consistent and compatible with the appropriate regulatory requirements and specifically meet the PANS Ops criteria. At this stage, none of the options proceeding to Step 2B for development are identified as requiring any unusual or exceptional safety or technical work.

5 Results

5.1 Comprehensive List of Viable Options

In accordance with CAP 1616 Appendix E format each of the options has been assessed as ACCEPT or REJECT. The sponsor then has to decide which options should be taken forward.

In this case options have been marked as REJECT only when they have two or more Amber assessments.

The summary table is repeated below.

• A green box indicates that the Design Principle **has been met** by the specified option.

• An orange box means that the Design Principle **has been partially met** by the specified option.

• A red box indicates that the Design Principle **has not been met** by the specified option.

	DP1	DP2	DP3	DP4	DP5	DP6
Option 2A						
Option 2AD						
Option 2B						
Option 2BD						
Option 9						

Table 5 – DPE Overview

Consequently the Comprehensive List of Viable Options is as follows:

- 2A
- 2AD
- 9