

LJLA Airspace Transition

Design Principles Evaluation

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1 Introduction

1.1 Background

The LJLA Airspace Transition project is currently at the Stage 2 – Develop & Assess stage of the CAP 1616 Airspace Design process. Step 2A requires the change sponsor to develop a comprehensive list of options that address the Statement of Need and aligns with the Design Principles developed through the two-way engagement process with key LJLA stakeholders during Stage 1. As the change sponsor, LJLA has tested these options with those stakeholders that contributed to the development of the Design Principles. The Design Principle Evaluation describes how the options have responded to the Design Principles.

This document articulates the evaluation of each of the options against the Design Principles agreed during Stage 1, and forms part of the document set required as evidence to satisfy the Stage 2 Develop & Assess Gateway. This document should be read alongside the LJLA Options Development Step 2A Issue 4 document which has also been uploaded to the portal at Step 2A.

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. Included in this document is an initial evaluation of how each developed option responds to the technical criteria, identifying where plans will need to be established to resolve any issues that may arise.

1.2 Prioritised List of Design Principles

The work undertaken during Stage 1 helped to establish a prioritised shortlist of Design Principles to act as a framework against which Design Options have been drawn up. The prioritised list of Design Principles is shown in Table 1 below.

Prioritised DP	Design Principle
1	Procedures must be designed to meet acceptable levels of flight safety.
2	Procedures must be designed to minimise aircraft emissions to reduce air pollution.
3	Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.
=4 (4a)	Procedures must be designed to minimise the impact of noise below 7,000ft.
=4 (4b)	Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.
6	Procedures should be designed to enable more continuous climbs.

Prioritised DP	Design Principle
=7 (7a)	Procedures should be designed to fit within existing airspace constraints and boundaries.
=7 (7b)	Procedures should be designed to enable more continuous descents.
9	Procedures should be designed that minimise the number of track miles flown.
10	If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.
11	Procedures should be developed to allow for alternative routes to offer respite.
=12 (12a)	Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.
=12 (12b)	Procedures should be designed to concentrate routes to minimise the numbers overflown.
14	Procedures should be designed to ensure predictability of tracks for consistency of operations.
15	Procedures should be designed to include alternative routes to avoid other aviation operators.

Table 1 – Prioritised Design Principles

1.3 Step 2B – Options Appraisal

The second part of Stage 2 (Step 2B) involves an assessment of the options to develop the short list to be taken forward to Stage 3. Options Appraisal is used as a tool throughout the CAP1616 process to help refine the options from an initial longlist, down to a short list and a final set of preferred options. The process is iterative with the Initial Options Appraisal being used to whittle down the longlist in Stage 2B, Full Options Appraisal of the shortlist taking place in Stage 3 for consultation, and the Final Options Appraisal supporting the submission of the ACP application to the CAA.

At the end of Step 2B, LJLA will submit details of the options and the Initial Options Appraisal to the CAA for assessment at the Stage 2 Develop & Assess Gateway, currently programmed for 28th June 2019.



2 Longlist of Options

2.1 Procedure Options

New arrival and departure procedures, including transitions, are being considered by the Airport to comply with the new regulatory directives, and to improve operational efficiency. Table 2 contains a summary of the extant conventional procedures and the list of options under consideration for DPE.

Please see Section 5 for options added to the list during the engagement activities that were also carried forward to DPE.

Procedure	Number of options	Basic Description							
Conventional SID from each runway	4	Conventional departures from each runway to POLE HILL, REXAM, WAL and BARTN							
SID from runway 27 to AGGER	3	Options include: an immediate right turn to AGGER; a later right hand turn to AGGER; and a left hand turn to AGGER							
SID from runway 27 to WAL	2	Options include: a right hand turn overhead the Mersey to WAL; and a later right hand turn overland to WAL.							
SID from runway 27 to TEMP2	1	Only one option available to balance aircraft performance versus noise sensitive areas.							
SID from runway 09 to AGGER	2	Both options follow similar series of right hand turns to achieve 11,000ft by AGGER. Left hand turns not feasible to achieve height by AGGER.							
SID from runway 09 to CAVEN	4	Two options turning left, and two turning right to CAVEN.							
SID from runway 09 to CORKA	3	Two options turning right to CORKA and one turning left.							
Transitions	0	No current Transition procedures. Aircraft are vectored by ATC to join the approach procedure.							
Transition to runway 27 from DIOUF	1	Only one option available to achieve continuous descent profile from starting altitude.							
Transition to 27 from NOMSU	1	Only one option due to conflict with Manchester arrivals.							

Procedure	Number of options	Basic Description				
Transition to 27 from VEGUN	2	One option routes aircraft to join the approach procedure from the north and the other offers a shorter transition from southeast.				
Transition to runway 09 from DIOUF	1	Only one option for continuous descent and optimal length.				
Transition to runway 09 from NOMSU	1	Only one option considered: optimal route remains over the sea.				
Transition to runway 09 from VEGUN	1	Only one option for continuous descent and optimal length.				
Conventional and RNAV approaches to each runway	9	Conventional approaches (ILS/DME/NDB, LOC/DME/NDB, NDB/DME and SRA) and RNAV approaches to each runway				
Approach to runway 27	3	Three traditional T-bar approaches of varying lengths with defined Missed Approach Procedures.				
Approach to runway 09	3	Three straight in approaches of varying lengths with defined Missed Approach Procedures.				

Table 2 – Summary of number of options under consideration

3 Design Principle Evaluation

3.1 Evaluation of the Options against the Design Principles

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 with a high-level 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.

					Star	ıdar	d Ins	stru	men	t De	part	ures					Transitions										Арр	roa	ches			
	Baseline (Do Nothing)	SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3	Baseline (Do Nothing)	Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN	Baseline 1 (Do Nothing)	Baseline 2 (Do Nothing)	Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
DP 1																																
DP 2																																
DP 3																																
DP 4a																																
DP 4b																																1
DP6																																
DP 7a																																
DP 7b																																
DP 9																																
DP 10																																
DP 11																																
DP 12a																																
DP 12b																																
DP 14																																
DP 15																																

Table 3 – Design Principle Evaluation Overview

Design Principle Evaluation	OPTION NO: Baseline								
Option Name: SID Baseline (Do Nothing)		REJECT							
<i>Description of Option:</i> Retain the current conventional SIDs. The DPE for all SIDs are summarised in this table – the results were the same for each.									
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: No change. Current	conventio	nal procedure	es are safe.						
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Maximum altitude until cleared by ATC.	for aircraft	following SID)s is 4,000 ft						
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Conventional routi procedures do not take into account sensitive areas.	ng less pred	dictive that Pl	BN. Current						
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Maximum altitude until cleared by ATC.	for aircraft	following SID)s is 4,000 ft						
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: No Change. Current technically flyable and maintain existing operational per	it conventio formance,	onal procedur and capacity.	es are						
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Maximum altitude until cleared by ATC.	for aircraft	following SID)s is 4,000 ft						
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET						

<i>Summary of Qualitative Assessment:</i> Potential for aircraft to leave controlled airspace if clearance to climb not received by ATC.									
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: Not evaluated for S	SIDs.								
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: More direct routin	g achievable								
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	. MET						
Summary of Qualitative Assessment: No change.									
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: Single SIDs availab	le depending	g on routing.							
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> No change. ATC intervention required for altitude clearances to join the en-route structure and deconfliction between arriving and departing traffic.									
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Conventional procedures rely on the pilot interpreting ground-based beacon information and don't represent actual tracks flown.									
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Single SIDs availab destination.	le dependin	g on routing	to						

Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No change to existing arrangements.				

Design Principle Evaluation		OPTION NO): SID 1	
Option Name: Runway 27 SID AGGER Option 1		REJEC	CT	
<i>Description of Option:</i> On achieving 500 ft, aircraft make an immediate right-hand turn to fly direct towards AGGER, achieving an altitude of FL 110 (approximately 11,000 ft) by AGGER. During the initial turn, aircraft will fly-by waypoints GPW01, GPW03, GPN01 and GPN03.	CTICN D SFC CTICN D SFC 0.0 457 56950 (50 4.57 1005) Catheory V Participant 4.57 1005 Catheory V Participant 4.57 1005 Catheory V Participant Construct Catheory Construct Catheory	CAALD 25 E480 OC EUR PERCENTER CONTENT PERCENTER	TIMA A 3500+ TIMA A 3500+ Cover and the second se	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has blevels of flight safety.	been design	ed to meet a	cceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Although the procedure incorporates a continuous climb, the procedure is designed to be flown at 190 Kts and therefore the aircraft will not be in an optimum configuration so will need an increased power setting to fly the profile. The aircraft will not be able to follow this route if the turn is delayed achieving optimum speed/configuration to minimise emissions.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies Sefton Park and a secondary school at approximately 2,000 ft during the initial turn after departure. A steeper climb gradient to avoid the areas vertically would not be possible in the planned configuration.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The initial turn is designed to be flown at 190 Kts and therefore the aircraft will not be in an optimum configuration so will need an increased power setting to fly the profile. A steeper climb gradient is not possible in this configuration and the aircraft will not be able to follow this route if the turn is delayed to achieve optimum speed/configuration.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.			
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incomprofile.	orporates a c	ontinuous cl	imb
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is co boundaries.	ontained wit	hin existing	airspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for S	IDs.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure rep AGGER.	resents the i	most direct r	oute to
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No change required to existing arrangements for Controlled Airspace.			
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Option to route to the south of the airport to route to AGGER – to be assessed as an alternative SID option.			
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Although this procedure is technically flyable, the design is not compliant with the criteria laid down in PANS-OPS 8168 Vol II Construction of Visual and Instrument Flight Procedures and has therefore been rejected. The design was however, taken forward and presented to the stakeholders as this design most closely replicates the current route flown. Clarification regarding non-compliance interpretation was sought from the CAA but was not received. Consequently, this option must be rejected due to non-compliance and will not be taken forward to Design Options Appraisal.

The criteria on which the procedure was rejected is detailed below:

It is assumed, for design purposes, that at the start of a departure procedure, the aircraft will be at an altitude of 5m above the Departure End of the Runway (DER). Aircraft will then be required to achieve a height of 500 ft above aerodrome level (aal) before starting any turns. The DER is defined as the end of the Take-Off Distance Available (TODA) for any particular runway, which includes the length of the runway plus the length of the Clearway. The Clearway is an area beyond the paved runway which is free of obstructions to ensure clearance for heavier aircraft when taking off.

Due to the position of LJLA's runway adjacent to the River Mersey, the declared TODA for Runway 27 is 11,247 ft, against a runway length of 7,497 ft. This means that the DER is over the River Mersey, 3,700 ft beyond the end of the runway. Although in practical terms all aircraft are already established in a climb after take-off at this point, for planning purposes it has to be assumed that aircraft start their climb to 500 ft at this point before being able to turn, therefore extending the planned track further to the west. The clarification sought from the CAA was to allow planning to be based on the DER positioned at the end of the paved runway surface; this would allow turns to be completed earlier, and over the River Mersey.

Design Principle Evaluation		OPTION NO): SID 2
<i>Option Name:</i> Runway 27 SID AGGER Option 2		ACCE	PT
Description of Option: Climb straight ahead then turn right to flyby waypoints 270501, 270502, 270503 and GPN03 then direct to overfly AGGER, achieving an altitude of FL 110 (approximately 11,000 ft) by AGGER.	An offen of the second	CIAN DE 23 CIAN DE 23	TTWA A 5500- IN 100 - 1
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance but is not the most direct routing to AGGER. If procedure design allows, an earlier turn to allow more direct routing would reduce aircraft emissions but may adversely affect DP 3 and DP 4a.			
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Eastham Country Park after departure, 3.2 nm on the extended centreline. Current departing aircraft from Runway 27 follow this routing and are above 2, 000 ft over the Park. A fixed Noise Monitoring Terminal is located adjacent to Eastham Country Park. A school and a hospital, within built-up areas, are close to the planned flightpath; aircraft will be above 2,000 ft and 4,000 ft respectively at these points. If procedure design allows, an earlier turn may avoid Eastham Country Park but may adversely affect DP 2 and DP 4a.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is desclimb profile to minimise the impact of noise. Routing tak areas of Bebington and Liverpool. Routing to avoid popule effect on DP 2 and DP 9.	igned to inc tes the aircra ated areas w	orporate a co aft over popu vould have a	ontinuous Ilated n adverse

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incor	porates a co	ntinuous clii	nb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	itained with	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Although this is not t is the shortest route that allows the aircraft to fly at optim PANS-OPS compliant in design.	he most dire 1um perform	ect route to A ance levels a	AGGER, it and is
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.			
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Option to route to the south of the airport to route to AGGER – to be assessed as an alternative SID option.			
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

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<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO): SID 3	
<i>Option Name:</i> Runway 27 SID AGGER Option 3		ACCE	РТ	
Description of Option: Climb straight ahead then turn left to flyby waypoints 270501, 270601, 270602 and 270603 then direct to overfly AGGER, achieving an altitude of FL 110 (approximately 11,000 ft)by AGGER. (Alternatively, flyby 270602 then GPN03 before direct to overfly AGGER). Both options are assessed together; the aircraft will be above approximately 7, 000 ft by the time the routes split so there will be minimal difference between the 2 options.	CIRC D SE CIRC D	QQ STREE 1000 C 2500 4000 4000 C 4500 2500 35000 Machine 10000 5000 Machine 10000 5000 Machine 10000 5000 Machine 10000 10000 Machine 10000 10000	TIMATA SOUT	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance but has increased distance to AGGER by turning left initially after take-off. A right turn after take-off would meet this DP, but this has been assessed as options 1 and 2 and may adversely affect DP 4a				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies Eastham Country Park after departure, 3.2 nm on the extended centreline. Current departing aircraft from Runway 27 follow this routing and are above 2, 000 ft over the Park. A fixed Noise Monitoring Terminal is located adjacent to Eastham Country Park. The procedure also overflies Capenhurst Nuclear Processing plant, a Restricted area up to 2,200 ft, at an altitude of approximately 4,000 ft. The route flies over school grounds in Ellesmere Port, at an altitude of approximately 4,500 ft. Routing to avoid all these sites would have further effect on DP 2 and DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. Routing takes the aircraft over populated areas of Bebington and Ellesmere Port but avoids the more densely populated south Liverpool. Any routing to decrease the impact of noise would have an adverse effect on DP 2 and DP 9.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flyal	ble and mair	itains	
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clir	nb profile.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is conboundaries.	itained withi	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for SII)s.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: By turning left about after take-off, this procedure is not the most direct routing to AGGER and therefore increases the number of track miles flown. The most direct routing would involve a right turn after take-off, which has been assessed as options 1 and 2.				
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.				
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	

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<i>Summary of Qualitative Assessment:</i> This option would provide respite should the chosen option route to the north of the airport.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN accurate route keeping meaning tracks over the ground fleeping meaning meaning tracks over the ground fleeping meaning meanin	procedures own will be	will lead to n more consist	nore tent.	
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: .This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.				

Design Principle Evaluation		OPTION NO): SID 4	
Option Name: Runway 27 SID WAL Option 1		ACCE	РТ	
Description of Option: Climb straight ahead then turn right to flyby waypoint GPW01 then direct to overfly WAL.	MERSEY LANE The Construction The Construction	452 473 497 497 497 497 497 497 497 497 497 497	VERPOOL SFC-2500 TF9850 (5000) WAN CTAL DE POUL LIPOOL LIPOOL CAR FACTOR 303(344) 300(35)/A1 426(130)/1 426(13	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b routing to WAL and incorporates a continuous climb prof	een designe ile.	d to be the m	iost direct	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies or is in the vicinity of a number of schools in residential areas of Bebington and Birkenhead, although this procedure is very similar to the current Wallasey SID currently in use. Routing to avoid all sensitive areas would have an adverse effect on DP 2, DP 4a and DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. Direct track to WAL follows extended routing over populated areas of Bebington and Birkenhead. Minimising the impact of noise would have an adverse effect on DP 2 and DP 9.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clir	nb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained withi	in existing ai	irspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure repre- WAL.	esents the m	ost direct ro	uting to
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	s for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option could probut will increase the numbers overflown, having an advert	ovide respite se effect on l	e to the chos DP 2, DP 3 an	en option nd DP 4a.
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to integrate with the en-route structure reducing the required input from ATC.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET

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<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO): SID 5
Option Name: Runway 27 SID WAL Option 2		ACCE	PT
Description of Option: Climb straight ahead then turn right to flyby waypoint NEW6 then direct to overfly WAL.	South South	539 438 438 438 439 439 439 439 439 439 439 439	VRP POD STFEL MANN CTA D POD C THEROIN VRP THEROIN VRP CAR FACTORY RUNCORY RUNCORY Jacuar VRP VRP CAR FACTORY RUNCORY BRIDGE Jacuar VAP VRP Jacuar Jacuar VAP Jacuar Jacuar <td< td=""></td<>
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous climb profile and has been designed to be flown at optimum aircraft performance. Although this is not the most direct routing to WAL, the distance is only approximately 1 nm greater than the direct track, so the increase in emissions will be minimal. A reduction in track miles to reduce air pollution has been assessed as option 1, which would have an adverse effect on DP 4a.			
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Eastham Country Park after departure, 3.2 nm on the extended centreline. Current departing aircraft from Runway 27 follow this routing and are above 2, 000 ft over the Park. A fixed Noise Monitoring Terminal is located adjacent to Eastham Country Park. This route also flies in the vicinity of schools in Bebington. The routing is close to two major hospitals (Clatterbridge and Arrowe Park) in the Wirral. Routing to avoid all these sites would have further effect on DP 2, DP 4a and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. The routing follows the shortest possible route over populated areas of Bebington and avoids most of the populated areas of the Wirral.			
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clir	nb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained withi	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure does not follow the most direct routing to WAL but represents only approximately 1 nm greater than the most direct route. A reduction in track miles has been assessed as option 1, which would have an adverse effect on DP 4a.			
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.			
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option would provide respite should an alternative option be chosen.			

Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has b en-route structure reducing the required input from ATC.	een designed	d to integrate	e with the
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO	: SID 6
Option Name: Runway 27 SID TEMP2		ACCE	PT
Description of Option: Climb straight ahead then turn left to flyby waypoints NEW6 and NEW5 then direct to overfly TEMP2.	LILDE ENHEAD LCTA D LCTA D LCT	Притика ингиниа ингини ингини инг	PRODERS FERRY POWER STATION LASS UP FOLLERS FERRY UP FOLLERS FERRY POWER STATION LASS UP FOLLERS FERRY POWER STATION LASS UP FOLLERS FERRY UP
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has b optimum aircraft performance but is not the most direct r proximity of Capenhurst Nuclear Processing plant, a Restruct to the routing could have an adverse effect on DP 3 and D	een designe routing to TE ricted area u P 4a.	d to be flown EMP2 due to p to 2,200 ft.	at the A change
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Eastham Country Park after departure, 3.2 nm on the extended centreline. Current departing aircraft from Runway 27 follow this routing and are above 2, 000 ft over the Park. A fixed Noise Monitoring Terminal is located adjacent to Eastham Country Park. The procedure also flies in the vicinity of schools in Bebington. Routing to avoid all these sites would have further effect on DP 2, DP 4a and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. The routing flies over populated areas of Bebington and Raby Mere but follows the most direct route across the populated area. The route also avoids most of the populated areas in the southern part of the Wirral, including the densely populated Ellesmere Port.			

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flya	ble and mair	itains	
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clir	nb profile.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is comboundaries.	itained withi	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for SII)s.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure does to TEMP2. A change to the routing could have an adverse	not follow t effect on DP	he most dire 3 and DP 4a	ct routing a.	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No alternative options have been developed for this SID, as there are no practical alternatives. Any alternate options may have an adverse effect on DP 3, DP 4a and DP 9.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to integrate with the en-route structure reducing the required input from ATC.				

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO	: SID 7
Option Name: Runway 09 SID AGGER Option 1		ACCEF	Ϋ́Τ
Description of Option: Climb straight ahead then turn right to flyby waypoints 091601, 091602, 091603, GPN01 and GPN03 then direct to overfly AGGER.	CITE D SEC-2500 dy HP8450 (500) CITE D SEC-2500 dy HP8450 (500) CITE D SEC-2500 dy HP8450 (500) CITE D SEC-2500 CITE D	AGG D 25 EBB 00 DU COM COM COM COM COM COM COM COM	A Stort 7 10 10 10 10 10 10 10 10 10 10
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	eptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has b optimum aircraft performance but has increased distance after take-off. A more direct routing to AGGER would have DP 6, DP 7a and DP 12a.	een designe to AGGER b e an adverse	d to be flown y turning rigl e effect on DP	at ht initially 3, DP 4a,
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overf departure, 1.5 nm on the extended centreline. Due to its I Runway 09 departures overfly this position. The procedu Runcorn and Frodsham. Option 8 amends the routing to a and Frodsham.	lies Hale Pri ocation, all t re also over avoid sensiti	mary School he design op flies schools i ve areas in R	after tions for in uncorn
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure is desclimb profile to minimise the impact of noise. Routing tak Hale and populated areas of Runcorn, Frodsham and Hels avoid sensitive areas in Runcorn and Frodsham.	igned to inc es the aircra by. Option 8	orporate a co aft over the vi amends the	ontinuous illage of routing to

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incor	porates a co	ntinuous clir	nb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	ntained withi	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure has been designed to be flown in a clockwise direction around LJLA to enable aircraft to obtain the correct height prior to AGGER. Therefore, this is not the most direct routing to AGGER and increases the number of track miles flown. A more direct routing to AGGER would have an adverse effect on DP 3, DP 4a, DP 6, DP 7a and DP 12.			
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option would no options.	ot provide re	espite for alto	ernative
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.

Design Principle 15: Procedures should be designed to	NOT MET	PARTIAL	MET
include alternative routes to avoid other aviation			
operators.			

Summary of Qualitative Assessment: This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.

Design Principle Evaluation		OPTION NO	: SID 8	
<i>Option Name:</i> Runway 09 SID AGGER Option 2		ACCEI	РТ	
Description of Option: Climb straight ahead then turn right to flyby waypoints 091501, 091502, 091201, 091603, GPN01 and GPN03 then direct to overfly AGGER.	CTRY D SFC-2500 407 - 199250 (2000) 4050 - 1992 4050 - 19	Construction of the second sec	A C SSOOT 43 C C C C SSOOT 43 C C C C C C C C C C C C C C C C C C C	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	eptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b optimum aircraft performance but has increased distance after take-off. This is required to enable aircraft to obtain A more direct routing to AGGER would have an adverse ef and DP 12a.	een designe to AGGER b the correct ffect on DP 3	d to be flown y turning rig height prior 8, DP 4a, DP 6	at ht initially to AGGER. , DP 7a	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. Routing takes the aircraft over the village of Hale immediately after take-off. The proposed turn after take-off is as tight as PANS-OPS design criteria will allow to minimise the population centres overflown.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

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<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flya	ble and mair	ntains		
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous climb profile.					
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.					
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for SIDs.					
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> This procedure has been designed to be flown in a clockwise direction around LJLA to enable aircraft to obtain the correct height prior to AGGER. Therefore, this is not the most direct routing to AGGER and increases the number of track miles flown. A more direct routing to AGGER would have an adverse effect on DP 3, DP 4a, DP 6, DP 7a and DP 12.					
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.					
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No alternative options have been developed for this SID that would provide respite.					
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET		

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.						
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET			
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.						
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET			
Summary of Auglitative Assessment: Introduction of PBN procedures will lead to more						

Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.

Design Principle 15: Procedures should be designed to	NOT MET	PARTIAL	MET
include alternative routes to avoid other aviation			l
operators.			1

Summary of Qualitative Assessment: This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.
Design Principle Evaluation		OPTION NO	: SID 9
Option Name: Runway 09 SID CAVEN Option 1		ACCEF	Ϋ́Τ
Description of Option: Climb straight ahead then turn left to flyby waypoints 091601, 091001 and 091002 then direct to overfly CAVEN.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet acc	eptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance but is restricted to 5,000 ft maximum altitude. Aircraft will remain at this altitude for a number of track miles. This restriction is to comply with FASI (North) requirements.			
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position. The procedure also overflies schools in Widnes. Alternate routing would have an adverse effect on DP 2 and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise but has been restricted to a maximum altitude of 5,000 ft. Routing takes the aircraft over populated areas of Widnes, Huyton and Liverpool. The height restriction is to comply with FASI (North) requirements, alternate routing would have an adverse effect on DP 2 and DP 9.			

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains	
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure incorbut is limited to a maximum altitude of 5,000 ft, which air This restriction is to comply with FASI (North) requirement	porates a co craft will ach ents.	ntinuous clin nieve prior to	nb profile o CAVEN.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained with	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for SII	Ds.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure reproCAVEN.	esents the m	ost direct ta	ck to	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.				
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This option would provide respite should the chosen option route to the south of the airport.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO	: SID 10	
<i>Option Name:</i> Runway 09 SID CAVEN Option 2		ACCE	РТ	
Description of Option: Climb straight ahead then turn right to flyby waypoints 091601, 091602 and 091603 then direct to overfly CAVEN.	C (410) 497 (559) (100) 457 (57) (100) 452 (300) 457 (100) 497 (100) 497 (10	HISO (SOBO) MAN CTA D 25 OP THE POOLAR VRP URP URP OCAR VRP URP URP OCAR VRP URP URP OCAR VRP URP URP OCAR VRP URP URP OCAR VRP URP OCAR VRP VRP VRP VRP VRP VRP VRP VRP VRP VR	193850 1938500 1938500 1938500 1938500 1938500 1938500 1938500 1938500 1938500 1938500 1938500 19385000 19385000 19385000 1938500 19385000 19	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to meet acceptable levels of flight safety.				
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance but is restricted to 5,000 ft maximum altitude. Aircraft will remain at this altitude for a number of track miles. The distance to CAVEN is increased by turning right initially after take-off. The height restriction is to comply with FASI (North) requirements. Turning left after take-off to reduce track miles is assessed as options 9 and 12.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position. The procedure also overflies schools in Runcorn, Frodsham and Ellesmere Port. Option 12 amends the routing to avoid sensitive areas in Runcorn and Frodsham. Alternative routing to also avoid Ellesmere Port would have an adverse effect on DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	

Summary of Qualitative Assessment: The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise, but is restricted to 5,000 ft maximum altitude for en-route requirements. Routing takes the aircraft over the village of Hale and populated areas of Runcorn, Frodsham, Helsby and Ellesmere Port. The height restriction is to comply with FASI (North) requirements. Alternate routing to reduce track miles is assessed as options 9, 11 and 12.

Design Principle 4b: Procedures should be designed to	NOT MET	PARTIAL	MET
be technically flyable and maintain existing operational			
performance, and capacity.			

Summary of Qualitative Assessment: The procedure is technically flyable and maintains existing operational performance, and capacity.

Design Principle 6: Procedures should be designed to	NOT MET	PARTIAL	MET
enable more continuous climbs.			1

Summary of Qualitative Assessment: The procedure incorporates a continuous climb profile but is limited to a maximum altitude of 5,000 ft, which aircraft will achieve prior to CAVEN. This restriction is to comply with FASI (North) requirements.

Design Principle 7a: Procedures should be designed to	NOT MET	PARTIAL	MET
fit within existing airspace constraints and boundaries.			

Summary of Qualitative Assessment: The procedure is contained within existing airspace boundaries.

Design Principle 7b: Procedures should be designed to	NOT MET	PARTIAL	MET
enable more continuous descents.			

Summary of Qualitative Assessment: Not evaluated for SIDs.

Design Principle 9: Procedures should be designed	NOT MET	PARTIAL	MET
that minimise the number of track miles flown.			

Summary of Qualitative Assessment: By turning right after take-off, this procedure is not the most direct routing to CAVEN and therefore increases the number of track miles flown. Turning left after take-off to reduce track miles is assessed as options 9 and 12.

Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.				
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> This option could provide respite should the chosen option route to the north of the airport.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN accurate route keeping meaning tracks over the ground fleeping meaning meaning tracks over the ground fleeping meaning meanin	procedures own will be	will lead to n more consist	nore tent.	
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.				

Design Principle Evaluation		OPTION NO	SID 11
Option Name: Runway 09 SID CAVEN Option 3		ACCE	PT
Description of Option: Climb straight ahead then turn right to flyby waypoints 091501, 091502, 091201 and 091603 then direct to overfly CAVEN.	437 437 4397 5,000 ft 5,000 ft 6,000 ft	AB9850 (500) MMAN CHA, D 25 PC DL - FL200LAB VPD URP - MAROCK VPD - FL200LAB VPD - FL200LAB VPD - MAROCK VPD - MAROCK V	00-3500 BURTOWN 198800 WARRI 198800 WARRI 19800 WARRI 19900 RANGE 19900 RANGE
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	ed to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance but is restricted to 5,000 ft maximum altitude. Aircraft will remain at this altitude for a number of track miles. The distance to CAVEN is increased by turning right initially after take-off. The height restriction is to comply with FASI (North) requirements. Turning left after take-off to reduce track miles is assessed as options 9 and 12.			
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position. The procedure also overflies schools in Ellesmere Port. Alternate routing would have an adverse effect on DP 2, DP 4a and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise, but is restricted to 5,000 ft maximum altitude for en-route requirements. Routing takes the aircraft over the village of Hale and populated areas of Ellesmere Port. The height restriction is to comply with FASI (North) requirements. Alternate routing would have an adverse effect on DP 2, DP 3 and DP 9.			

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	itains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incor but is limited to a maximum altitude of 5,000 ft, which air This restriction is to comply with FASI (North) requireme	porates a co craft will ach nts.	ntinuous clin nieve prior to	nb profile o CAVEN.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	itained with	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after most direct routing to CAVEN and therefore increases the Turning left after take-off to reduce track miles is assessed	r take-off, th number of t d as options	is procedure rack miles fl 9 and 12.	e is not the own.
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option could provide respite should the chosen option route to the north of the airport.			
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

operators.

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.

Design Principle Evaluation		OPTION NO	: SID 12
<i>Option Name:</i> Runway 09 SID CAVEN Option 4		ACCE	РТ
<i>Description of Option:</i> Climb straight ahead then turn left to flyby waypoints 091501, 09xx02, 091001 and 091002 then direct to overfly CAVEN. This option is an amendment to Option 1 to avoid the densely populated areas overflown by that option.	CTR D 497 He (559) LIVERPO 452(305) 467 (320) 467 (320) CAR VRP ON CAR VRP ON CAR VRP ON CAR Control CAR VRP ON CAR CARSTON CAR VAR CAR STATA CAR <td>SFC-2500 46(355) 1850 (3060) MAIN CTA-D 250 1 TABOCK 9 TA</td> <td>0'-3500' BURTOW 149:850 URPS 6060) 6060 URPS FIDDLERS FERRY POWER STATION URP URP MS6.111 VRP MS6.111 VRP</td>	SFC-2500 46(355) 1850 (3060) MAIN CTA-D 250 1 TABOCK 9 TA	0'-3500' BURTOW 149:850 URPS 6060) 6060 URPS FIDDLERS FERRY POWER STATION URP URP MS6.111 VRP MS6.111 VRP
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be optimum aircraft performance but is restricted to 5,000 ft remain at this altitude for a number of track miles. The di slightly by routing via the gap between Widnes and Warri comply with FASI (North) requirements. Alternate routin DP 2 and DP 4a.	een designe maximum stance to CA ngton. The g would hav	d to be flowr altitude. Airc AVEN is incre height restri ve an adverse	a at craft will eased ction is to e effect on
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overfl departure, 1.5 nm on the extended centreline. Due to its lo Runway 09 departures overfly this position.	lies Hale Pri ocation, all t	mary School he design op	after tions for
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure is desclimb profile to minimise the impact of noise but has been of 5,000 ft. Routing takes the aircraft over populated area height restriction is to comply with FASI (North) requirem have an adverse effect on DP 2 and DP 9.	igned to inc restricted s of Huyton rents. Alter	corporate a co to a maximur and Liverpo nate routing	ontinuous n altitude ol. The would

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure incor but is limited to a maximum altitude of 5,000 ft, which air This restriction is to comply with FASI (North) requireme	porates a co craft will ach nts.	ntinuous clin nieve prior to	nb profile o CAVEN.		
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	itained with	in existing ai	rspace		
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for SII	Ds.				
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: The number of track delaying the initial left-hand turn to avoid overflying populaternative routing would have an adverse effect on DP 4a	miles flown ılated areas a.	is increased of Widnes.	by		
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for		
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> This option could prooption route to the south of the airport.	ovide respite	e should the	chosen		
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET		

<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO	: SID 13	
<i>Option Name:</i> Runway 09 SID CORKA Option 1		ACCE	PT	
Description of Option: Climb straight ahead then turn right to flyby waypoints 091601 and 091301 then direct to overfly CORKA.	452(805) 467(329) Cathedral 2500-35001; Lacer Carston WPP Docks Litrat LUCERPOOL Edgen to 350 111/2.2 WPP MSN 100 250 200 200 200 200 200 200 2	VRP C 60001 TARADOKI VRP C TARADOKI VRP C TORY I RENDERI VRP C 300 (633)/A LPL C 226 (410) 21 HWRP C 311 41 HWRP C 321 41 HWRP C 331 41 HWRP C 331 41 HWRP C 331 41 HWRP C 311 41 HWRP C 323 41 HWRP C 331 41 HWRP C	VRP STATES INC. ISSN 1000	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet ac	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b optimum aircraft performance and includes a continuous	een designe climb profil	d to be flowr e.	ı at	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position. The procedure also overflies schools in Runcorn and Frodsham. Option 15 amends the routing to avoid sensitive areas in Runcorn and Frodsham.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. Routing takes the aircraft over the village of Hale and populated areas of Runcorn and Frodsham. Option 15 amends the routing to avoid sensitive areas in Runcorn and Frodsham.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clir	nb profile.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained with	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for SII	Ds.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure repro	esents the m	ost direct ro	ute to	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This option would provide respite should the chosen option route to the north of the airport.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.				

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.				

Design Principle Evaluation		OPTION NO	: SID 14
<i>Option Name:</i> Runway 09 SID CORKA Option 2		ACCE	РТ
Description of Option: Climb straight ahead then turn left to flyby waypoints 091601, 091001, 091002 and CAVEN then direct to overfly TEMP2. (Planned procedure uses waypoint TEMP2 not CORKA)	497 497 452,305 467 (291 467 (29	MAN CTA D 2200 MAN CTA D 2200 DU D repointed Internet Plant of the second Plant of the	3500 BURTONWOOD 054 054 054 054 054 054 054 054
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be optimum aircraft performance but has increased distance after take-off. Turning right after take-off to reduce the di options 13 and 15.	een designe to TEMP2 ł stance flow	d to be flown by turning lef n has been as	at t initially ssessed as
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies Hale Primary School after departure, 1.5 nm on the extended centreline. Due to its location, all the design options for Runway 09 departures overfly this position. The procedure also overflies schools in Widnes. Alternate routing would have an adverse impact on DP 2 and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is des climb profile to minimise the impact of noise. Routing tak areas of Widnes, Huyton and Liverpool. Alternate routing DP 2 and DP 9.	igned to inc es the aircr would have	corporate a co aft over popu e an adverse	ontinuous Ilated impact on

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clii	mb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained with	in existing a	irspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> By turning left about not the most direct routing to CORKA and therefore increaflown. Turning right after take-off to reduce the number of assessed as options 13 and 15.	after take-o ases the num of track mile	ff, this proce iber of track s flown has l	edure is miles been
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	s for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option would propriate to the south of the airport.	rovide respit	e should the	e chosen
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> The procedure has been designed to integrate with the en-route structure reducing the required input from ATC.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No impact on other aviation operators.				

Design Principle Evaluation		OPTION NO	SID 15
Option Name: Runway 09 SID CORKA Option 3		ACCE	PT
Description of Option: Climb straight ahead then turn right to flyby waypoints 091501 and 091502 then direct to overfly TEMP2. This option is an amendment to Option 1 to avoid the densely populated areas overflown by that option.	hedral UVR 00-3500 CARFAC VRP STON TDME CR 1985 CR 197	ISLAND 479 VRP 479 VRP 479 Janer Innocaru Jago (353) /A P 3930 (353) /A 426 (410) /1 2426 (410) /1 P 311 P 201 HELSBY 201 HELSBY 201 HELSBY 202 576 22500' 11/9 850(50 VRP TARVIN STR TARVIN STR 50	FIDDLERS FERRY FUDLERS FERRY WRP WRP MS6 J11 HAM A 500 + 4 500 + 500 + 5
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be optimum aircraft performance and represents the most di	een designe irect track t	d to be flown o TEMP2.	at
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overfl departure, 1.5 nm on the extended centreline. Due to its lo Runway 09 departures overfly this position.	lies Hale Pri ocation, all t	mary School he design opt	after tions for
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is des climb profile to minimise the impact of noise. Routing tak Hale.	igned to inc	orporate a co aft over the v	ontinuous illage of
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flya	ble and main	itains

Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clii	nb profile.
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is conboundaries.	ntained with	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for SII	Ds.		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure repre- CORKA.	esents the m	ost direct ro	ute to
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	s for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option would proption route to the north of the airport.	rovide respit	e should the	chosen
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload. In addition, there may be potential conflict with this procedure and traffic inbound to Hawarden Runway 22.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.			

Design Principle Evaluation		OPTION NO	: Baseline	
Option Name: Transitions Baseline (Do Nothing)		REJECT		
<i>Description of Option:</i> Transitions are currently managed tactically by ATC. Aircraft are vectored to the IAF for the desired approach procedure. There are no defined routes for Transition; the DPE contained in this table applies to all tactical routes as the same results applied to each.				
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No change. Tactica	l vectoring	by ATC is cur	rently safe.	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The current transitions from STAR procedure to approach procedure is tactically managed by ATC. Track lengths and altitude profiles will depend on the local traffic picture at the time and may not be optimum.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Tactical routing doe locations in the local area.	es not take	into account	sensitive	
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Tactical routing does sensitive or residential areas.	es not take	into account	noise-	
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No Change. Current conventional procedures are technically flyable and maintain existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for T	ransitions.			

Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Routing and altitude profile will be tactically managed by ATC and will depend on the local air picture at the time. There is no guarantee that the procedures will be contained within CAS.				
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Descent clearances	s will be as d	irected by A	ГС.	
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Whilst ATC will enouting, actual routes will depend on the traffic situation	deavour to u n at the time	se the most	direct	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	d to existing	arrangemen	ts for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> There are no extan tactically managed by ATC.	t transition _]	procedures.	Routing is	
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> There are no extant transition procedures. Routing is tactically managed by ATC.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Routing is tactically dictated by the local air picture at the time.	y managed b	y ATC and w	rill be	

Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Routing is tactically managed by ATC and will be dictated by the local air picture at the time.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No change to existing arrangements.			

Design Principle Evaluation		OPTION NO:	TRANS 1	
Option Name: Trans 27 DIOUF		ACCE	РТ	
Description of Option: DIOUF @ FL120. Flyby CABRY, LATON (LATON @ FL100), NEW1 and NEW2. Flyby NEW3 at 4,000 ft then flyby IAF at LIV05 to join IAP.		SIS SIS SIS SIS SIS SIS SIS SIS	HERE AND	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has levels of flight safety.	been desig	ned to meet a	cceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has been designed to be flown at optimum aircraft performance and includes a continuous descent profile. The extended 'S' profile increases track miles flown but this is required to allow the improved descent profile given the aircraft's altitude at the beginning of the Transition. Height restrictions at NEW3 to deconflict from Manchester arrival traffic means the descent profile flown is not optimum. This restriction is to comply with FASI (North) requirements.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies residential areas of Crosby and Liverpool in the vicinity of a number of schools and close to hospitals, but at altitudes greater than 4,000 ft. The procedure also passes over two small country parks, above 2,000 ft. Alternate routing would have an adverse effect on DP 2, DP 4a, DL 7b and DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure pass Liverpool and Crosby, aircraft will be above 5,000 ft and power settings. Routing is planned over industrial areas higher ambient noise.	ses over res in the desc and close	sidential areas cent, so will ha	s of ave lower vays, with	

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is te existing operational performance, and capacity.	echnically fly	able and ma	intains		
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for T	'ransitions.				
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is co boundaries.	ontained wit	hin existing	airspace		
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to enable a more continuous descent but height restrictions at NEW3 to deconflict from Manchester arrival traffic means the descent profile flown is not optimum. This restriction is to comply with FASI (North) requirements.					
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The track miles flown is the minimum required for a continuous descent profile to be flown, given the aircraft's altitude at the beginning of the Transition.					
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.					
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: No alternative routes developed for this Transition. The procedure has been designed to comply with FASI (North) requirements.					

Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No impact on other aviation operators.				

Design Principle Evaluation	(OPTION NO:	TRANS 2	
Option Name: Trans 27 NOMSU		ACCE	PT	
<i>Description of Option:</i> Flyby NOMSU and NEW2. Flyby NEW3 at 4,000 ft then flyby IAF at LIV05 to join procedure.				
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet ac	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure represented NOMSU to the IAP. The procedure has been designed to b performance and includes an improved descent profile, al NEW3 due to Manchester arrival traffic restricts the use o This restriction is to comply with FASI (North) requiremented to the set of the set	esents the n e flown at o though heig f a continuc nts.	nost direct ro ptimum aircu ght restriction ous descent p	ute from raft ns at rofile.	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies residential areas of Liverpool in the vicinity of a number of schools and close to hospitals, but at altitudes greater than 4,000 ft. The procedure also passes over two small country parks, above 2,000 ft. Alternate routing would have an adverse effect on DP 2, DP 4a, DL 7b and DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedures routes over residential areas of Wallasey, Liverpool and Huyton during the descent, so will have lower power settings. Routing is planned over industrial areas and close to the motorways, with higher ambient noise.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for Tra	ansitions.			
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is conboundaries.	itained with	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to enable a more continuous descent. Height restrictions at NEW3 to deconflict from Manchester arrival traffic means the descent profile flown is not optimum. This restriction is to comply with FASI (North) requirements.				
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure is almost the most direct route from NOMSU to the IAP, although routing in a direct line would only reduce the track distance flown by approximately 500m.				
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No alternative routes The procedure has been designed to comply with FASI (N	s developed orth) require	for this Tran ements.	sition.	
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO:	TRANS 3
Option Name: Trans 27 VEGUN		ACCE	РТ
Description of Option: Flyby VEGUN then flyby NEW7 at 3,000 ft. Flyby IAF at NEW8 to join procedure.	LASE CONTRACTOR OF CONTRACTOR	And and a second	AND
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een design	ed to meet ac	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure reprevented VEGUN, minimising the track miles flown. The height rest required to separate from Manchester departures and her continuous, requiring an increased engine power setting. FASI (North) requirements.	esents the n triction of 3 nce the des This restric	nost direct ron 2,000 ft at NEV cent profile is ction is to com	uting from N7 is not iply with
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure route and Chester, but at heights in excess of 3,000 ft. The proc Park. Alternate routing would have an adverse effect on I	es close to s edure over DP 2 and DI	chools in Bro flies Delamer 99.	ughton e Forest
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure route the exception of residential areas in Broughton and Chest above, 3,000 ft. The procedure does not incorporate a con height restriction of 3,000 ft at NEW7 to deconflict from M an increased engine power setting. This restriction is to co requirements.	es over main er, where a ntinuous de Manchester omply with	nly rural locat ircraft will be scent profile departures, r FASI (North)	ions, with at, or due to a equiring

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for Tra	ansitions.		
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained with	in existing ai	rspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> A height restriction of separate from Manchester departures and hence the proc continuous descent profile. This restriction is to comply w	of 3,000 ft at edure does n vith FASI (No	NEW7 is red not fully follo orth) require	quired to ow a ements.
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure reprofrom VEGUN to the IAP.	esents the m	ost direct fly	able route
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This option would provide respite should an alternative option be chosen.			
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure has the potential to impact on Hawarden operations. ATC intervention may be required to ensure deconfliction between LJLA traffic and aircraft inbound to Hawarden Runway 22.			

Design Principle Evaluation		OPTION NO:	TRANS 4
Option Name: Trans 27 VEGUN (CC05)		ACCEPT	
Description of Option: VEGUN @ FL90. Flyby NEW2 then flyby NEW3 at 4,000 ft and flyby IAF at LIV05 to join procedure.	Provide a construction of the second se	De la casa	COURT NOT COURSE OF COURSE
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to meet acceptable levels of flight safety.			
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure routes to the north of the airport, increasing the track miles flown. A height restriction of 4,000 ft at NEW3 due to Manchester arrival traffic restricts the use of a continuous descent profile. This routing is required when Manchester Airport is operating on Runway 05 to deconflict with Manchester arrivals. The height restriction is to comply with FASI (North) requirements. Alternate routing would have an adverse effect on DP 4a and DP 9.			
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure overflies two schools and the periphery of Clatterbridge Hospital in the Wirral, although aircraft will be above 5,000 ft at this point. The procedure also overflies residential areas of Liverpool in the vicinity of a number of schools and close to hospitals, but at altitudes greater than 4,000 ft. The procedure passes over two small country parks, above 2,000 ft. Alternate routing would have an adverse effect on DP 2, DP 4a and DP 9.			
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET

Summary of Qualitative Assessment: The procedure routes over residential areas of Birkenhead, Liverpool and Huyton. A height restriction of 4,000 ft at NEW3 due to Manchester arrival traffic restricts the use of a continuous descent profile, requiring an increased engine power setting. Increased track miles by routing to the north increases the time below 7,000 ft. This routing is required when Manchester Airport is operating on Runway 05 to deconflict with Manchester arrivals. The height restriction is to comply with FASI (North) requirements. Alternate routing would have an adverse effect on DP 2 and DP 9.

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.			
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for Transitions.			
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.			
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been designed to enable a more continuous descent. However, extended track miles and a height restriction of 4,000 ft at NEW3 to deconflict from Manchester arrival traffic means the descent profile flown is not optimum. This restriction is to comply with FASI (North) requirements.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure routes to the north of the airport, increasing the track miles flown. This routing is required when Manchester Airport is operating on Runway 05 to deconflict with Manchester arrivals.			
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to existing arrangements for Controlled Airspace.			

Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> This option would provide respite should an alternative option be chosen.					
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.					
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.					
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.					
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: No impact on other aviation operators.					
Design Principle Evaluation		OPTION NO:	TRANS 5		
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Option Name: Trans 09 DIOUF		ACCE	РТ		
Description of Option: DIOUF @ FL120. Flyby CABRY, LATON (LATON @ FL100and LIV20. Flyby IAF at LIV11 to join procedure.	A Constant of the second secon	State of the second sec	HILD HILD HILD HILD HILD HILD HILD HILD		
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT ME	T PARTIAL	MET		
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een desigi	ned to meet ac	ceptable		
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT ME	T PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> This procedure incomposite and is the optimum distance for that profile.	rporates a	continuous de	scent		
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT ME	T PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The routing of this procedure is in the vicinity of several schools, in particular in the Crosby area. However, at this stage aircraft will be at, or above, 7,000 ft.					
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT ME	T PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Aircraft will descend below 7,000 ft in the vicinity of Crosby, just prior to coasting out. Aircraft will be a continuous descent so will have a minimum engine power setting. The aircraft will remain over the sea for the remainder of the Transition to the IAP.					
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT ME	T PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically fl	yable and mair	ntains		

Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for Transitions.					
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	itained with	in existing ai	rspace		
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> This procedure has be continuous descent.	oeen designe	d to enable a	à		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> A more direct track could reduce the number of track miles flown by approximately 4 nm but would require more turns by the aircraft during a busy period of the flight, so could have an adverse effect on DP 1.					
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for		
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No alternative routes have been developed for this Transition. The procedure has been designed to comply with FASI (North) requirements.					
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. This procedure has been designed to integrate with the en-route structure and arrival procedures, reducing the required input from ATC.					
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET		

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No impact on other aviation operators.				

Design Principle Evaluation		OPTION NO:	TRANS 6
Option Name: Trans 09 NOMSU		ACCE	РТ
Description of Option: Flyby NOMSU then flyby IAF at LIV11 to join procedure.	SPC-FL4S MEEC2200004 CTA 0.500 CTA 0.5000 CTA	COURSE OF COURSE	ACCORDENT OF A CONTRACT OF A C
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT ME'	Γ PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be levels of flight safety.	een desigr	ned to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT ME'	Г PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incorp profile at optimum aircraft performance and minimises th	porates a o e track mi	continuous des lles flown.	scent
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT ME'	Γ PARTIAL	MET
Summary of Qualitative Assessment: The procedure remai	ns over th	ie sea at all tim	ies.
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT ME'	Г PARTIAL	MET
Summary of Qualitative Assessment: The procedure remai	ns over th	ie sea at all tim	ies.
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT ME'	Γ PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	nnically fly	vable and mair	itains
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT ME	Г PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for Tra	insitions.		

Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	itained with	in existing ai	irspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure incorprofile.	porates a co	ntinuous des	scent
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> This procedure represented NOMSU to the IF for the IAP.	esents the m	ost direct ro	ute from
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	s for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure rema requirement for respite.	ins over the	sea at all tim	nes. No
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> All aircraft arrivals h routing from ATC from STAR to IAP. This procedure has h en-route structure and arrival procedures, reducing the re	ave previous been designe equired inpu	sly required ed to integra t from ATC.	tactical te with the
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN accurate route keeping meaning tracks over the ground fl	procedures own will be	will lead to r more consis	nore tent.
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other a	viation oper	ators.	

Design Principle Evaluation	C	OPTION NO:	TRANS 7		
Option Name: Trans 09 VEGUN		ACCE	PT		
Description of Option: Flyby VEGUN and LIV12 and flyby IAF at LIV11 to join procedure.	A DO - 3000 A DO	ATA D 2500 (329) TA D 2500 (3500 (24) Carbon 2000 (24) Carbon 2	Instant Prop. VPP Prop. Score Prop. VPP Prop. V		
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een designe	d to meet ac	ceptable		
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure incorporties of the profile at optimum aircraft performance and minimises the performance and minim	porates a co e track mile	ontinuous des es flown.	scent		
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure does not overfly any sensitive areas but routes in the vicinity of a number of schools in rural villages. Alternate routing would have an adverse effect on DP2, DP 4a and DP 9.					
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous descent profile to reduce engine power settings. The route represents the minimum practicable route to reduce track miles flown although the route passes over several small village locations at approximate altitudes of 3,000 ft and above. Alternate routing would have an adverse effect on DP2 and DP 9.					
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET		

<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flyal	ble and mair	itains	
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for Tra	ansitions.			
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained withi	n existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure incor profile.	porates a co	ntinuous des	scent	
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure represent routing to the IAF for the IAP.	esents the m	inimum prad	cticable	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing ar	rangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No alternative routes have been developed for this Transition. The procedure has been designed to comply with FASI (North) requirements.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> All aircraft arrivals have previously required tactical routing from ATC from STAR to IAP. This procedure has been designed to integrate with the en-route structure and arrival procedures, reducing the required input from ATC.				

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.					
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.					
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: No impact on other aviation operators.					

Design Principle Evaluation		OP	TION NO:	Baseline 1		
Option Name: Conventional Approaches Baseline (Do Not	thing)		REJE	СТ		
<i>Description of Option:</i> Retain the current conventional approach procedures which utilise ground-based infrastructure to guide the aircraft to a position from which a successful landing can be achieved. The Missed Approach Procedure also utilises ground-based navigational equipment (NDB).						
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT M	1ET	PARTIAL	MET		
Summary of Qualitative Assessment: No change. Current	procedu	ires a	are safe.			
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT M	1ET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Although a direct approach from ATC vectoring can be flown, this may not always be available so the procedures rely on routing aircraft via the LPL NDB at 2,500 ft, followed by a 'teardrop' flight path to intercept the final approach.						
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT M	1ET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Current procedures account sensitive areas. The requirement to be lined-up for inevitable that some schools will be overflown during the	were no or final proced	ot des appr ure.	igned to ta oach mean	ke into s that it is		
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT M	1ET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Although a direct approach from ATC vectoring can be flown, this may not always be available so the procedures rely on routing aircraft via the LPL NDB at 2,500 ft, followed by a 'teardrop' flight path to intercept the final approach.						
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT M	1ET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.						
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT M	1ET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for approach procedures.						

Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.				
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedures do n profile.	ot enable a c	continuous d	escent	
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Although a direct app flown, this may not always be available so the procedures NDB at 2,500 ft, followed by a 'teardrop' flight path to inte	proach from rely routing ercept the fin	ATC vectori aircraft via al approach	ng can be the LPL	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Alternate procedure approach procedures.	s are not dev	veloped for in	ndividual	
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedures rely on ATC intervention to establish on the procedure.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Although the ground-based beacons are more accurate at closer ranges, the conventional procedures still rely on the pilot interpreting the information received and don't represent actual tracks flown.				

Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Regardless of the type of approach flown, the procedures are basically the same and follow the same planned routing.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No change to existing arrangements.				

Design Principle Evaluation		OP	TION NO: H	Baseline 2
Option Name: Current GNSS Approaches Baseline (Do No	thing)	ACCEPT		
<i>Description of Option:</i> Current GNSS approaches are available for each runway direction which are straight-in approaches from fixed points on the extended centreline. The Missed Approach Procedures for the RNAV approaches reference the NDB and would not be available to use if the NDB was unavailable.				
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT N	1ET	PARTIAL	MET
Summary of Qualitative Assessment: No change. Current	procedu	ires a	are safe.	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT M	1ET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The GNSS procedure land, minimising the distance flown by aircraft.	s follow	r a sti	raight-in app	proach to
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT M	1ET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Current procedures were not designed to take into account sensitive areas. The requirement to be lined-up for final approach means that it is inevitable that some schools will be overflown during the procedure.				e into that it is
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT N	1ET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The GNSS procedures follow a straight-in approach to land.				proach to
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT M	1ET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT M	1ET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for approach procedures.				
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT M	1ET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.				
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> ATC vectoring to the aircraft to fly a continuous descent profile.	straight-in a	approach ma	y allow	
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The GNSS procedure land, minimising the distance flown by aircraft.	s follow a st	raight-in app	proach to	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Alternate procedure approach procedures.	s are not dev	veloped for in	ndividual	
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> ATC vectoring is requapproach.	uired to esta	blish on the	final	
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> GNSS procedures allow more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Regardless of the type of approach flown, the procedures are basically the same and follow the same planned routing.				

Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No change to existing arrangements.			

Design Principle Evaluation	(OPTION NO:	APPCH 1
Option Name: Approach 27 Option 1		ACCE	РТ
Description of Option: Join the procedure not below 3,000 ft via the IAF at LIV05 or NEW8. Flyby waypoint LIV02 onto final approach. MAP – Climb straight ahead to 2,000 ft. Turn right to flyby waypoints 0127GPM01, 0127GPM02 and 0127GPM03 then direct to hold at 0127LPL, not below 2,000 ft.	413 453 447 3184 453 401 473 402 473 402 474 400 474 400 400 4000 400 400 400 400 400 400 400 400 400 400 4	550 (500) MAN CTAP 2 2500 357 2005 L PO 2 5500 457 2005 L PO 2 5500 457 2005 L PO 2 5500 457 2006 L PO 2 500 457 2006 L PO 2 500 457 2006 L PO 2 500 457 2007 L PO 2 5	U EURTONWOOD TVARRINGTON ULERS ERRIN VYRP ULERS ERRIN VYRP USS JTO ULERS ERRIN VYRP USS JTO ULERS ERRIN VYRP USS JTO ULERS ERRIN VYRP USS JTO USS JTO
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be levels of flight safety.	een designe	ed to meet acc	ceptable
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has be optimum aircraft performance and with the minimum pra	een designe cticable tra	ed to be flowr ck miles flow	n at m.
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure flies of schools in the built-up areas of Warrington and Runcorn of approach procedure routes in the vicinity of a number of s at 2,000 ft.	over, or clos on final appi schools and	e to, a numbe roach. The m hospitals in i	er of iissed Liverpool
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown. The missed approach procedure overflies residential areas of Liverpool.			
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flya	ble and mair	itains

Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	itained with	in existing ai	irspace
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile.	een designee	d to enable a	L
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> The procedure represents the minimum practicable track miles flown.			
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	s for
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Alternate procedures approach procedures.	s are not dev	veloped for i	ndividual
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Aircraft carrying out the Missed Approach Procedure are likely to be in direct conflict with aircraft carrying out an approach procedure. The hold point is the same as is currently used, so although ATC tactical intervention will be required, it will be no different to current procedures.			
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.			
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No impact on other aviation operators.			

Design Principle Evaluation		OPTION NO:	APPCH 2	
Option Name: Approach 27 Option 2		REJE	СТ	
Description of Option: Join the procedure not below 3,000 ft via the IAF at LIV05 or NEW8. Flyby waypoint LIV02 onto final approach. MAP – Climb straight ahead to 2,000 ft. Turn left to flyby waypoints 0227GPM01, 0227GPM02 and 0227GPM03 then direct to hold at 0227LPL, not below 2,000 ft.	A Gainer Control of Co	MIAN CTA D 2500-35 W ADDA A COMPARENT UPP COMPARE	OUT BURTONWOOD VAREINGTON SOUTH STATES SOUTH STATES SO	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has be levels of flight safety.	een design	ed to meet ac	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has be optimum aircraft performance. Extended track miles are Area R311. Alternate routing has been assessed as option	een design flown due t 1.	ed to be flowr to avoiding Re	at estricted	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure flies over, or close to, a number of schools in the built-up areas of Warrington and Runcorn on final approach. The missed approach procedure routes in the vicinity of a number of schools in Bebington at 2,000 ft.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to be flown at optimum aircraft performance. The missed approach procedure briefly overflies a residential area of Bebington. The majority of the missed approach procedure is flown over rural or industrial areas.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.		
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The missed approach the south, although at this point it enters Hawarden ATZ a	n procedure and RMZ.	exits CAS at	2,000 ft to	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile.	een designee	d to enable a		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The missed approach routing in order to avoid Restricted Area R311.	n procedure	follows exte	nded	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Alternate procedures are not developed for individual approach procedures.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Aircraft carrying out the Missed Approach Procedure are likely to be in direct conflict with aircraft carrying out an approach procedure. The hold point is the same as is currently used, so although ATC tactical intervention will be required, it will be no different to current procedures.				

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The missed approach procedure impacts on Hawarden ATZ and RMZ.				

The Missed Approach Procedure for this approach exits LJLA controlled airspace and infringes on the Hawarden RMZ, which would have an adverse effect on Hawarden operations and is unlikely to be mitigated through agreed procedures. This procedure would not meet the Technical Criteria of CAP 1616 Appendix F so has therefore been rejected.

Design Principle Evaluation	(OPTION NO:	APPCH 3	
Option Name: Approach 27 Option 3		ACCE	РТ	
Description of Option:Join the procedure notbelow 2,000 ft via the IAF at 0327IAF1 or0327IAF2.Flyby existing GNSS waypointINVEB onto final approach.MAP – Climb straight ahead to 2,000 ft. Turn	407 119350 (359) MA 452 (365) 452 (355) 452 (365) 452 (3	CTA D 2500 3500 1007 A 2500 3500 1007 A 2500 3500 1007 A 2500 3500 1007 A 2500 453 1007 A 2500 450 1007 A 2500 4500 1007 A 2500 450	EURIPOWOOD WARLINGTON CARPS ELES FERRY INTIALIZATION TATION CARPS 2 2	
right to flyby waypoints 0327GPM01, 0327GPM02 and 0327GPM03 then direct to hold at 0327LPL, not below 2,000 ft (MAP replicates Approach 27 Option 1).	CUPERPOOL Control Control Con	90 (83) (A) (99 5) 426 (910 H) (97 H)	VRP LOW LEVEL 2001	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet ac	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> This procedure uses Intermediate Fix, thus increasing the number of track mile potential for aircraft to spend extended periods in level fli The missed approach procedure represents the minimum	the existing es flown. Th ight at 2,000 practicable	waypoint IN here is also th) ft on the ap htrack miles	VEB as an ne proach. flown.	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure flies over, or close to, a number of schools in the built-up areas of Weaverham, Warrington and Runcorn on final approach. The missed approach procedure routes in the vicinity of a number of schools and hospitals in Liverpool at 2,000 ft.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure overflies residential areas of Warrington and Runcorn, potentially in level flight at 2,000 ft. The missed approach procedure overflies residential areas of Liverpool, also at 2,000 ft.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.		
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is cor boundaries.	ntained withi	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The initial approach for the procedure has the potential to be flown at a level altitude of 2,000 ft, depending on clearances.				
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> By using the existing waypoint INVEB, the number of track miles flown is higher than the minimum.				
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Alternate procedures approach procedures.	<i>Summary of Qualitative Assessment:</i> Alternate procedures are not developed for individual approach procedures.			
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Aircraft carrying out the Missed Approach Procedure are likely to be in direct conflict with aircraft carrying out an approach procedure. The hold point is the same as is currently used, so although ATC tactical intervention will be required, it will be no different to current procedures.				

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: No impact on other aviation operators.				

Design Principle Evaluation	(OPTION NO:	APPCH 4						
Option Name: Approach 09 Option 1		ACCE	РТ						
 Description of Option: Join the procedure not below 2,500 ft via the IAF at LIV12 or LIV20 or the IF at LIV11. Flyby waypoint LIV11 onto final approach. MAP – Climb straight ahead to 2,500 ft. Turn right to flyby waypoints 0109GPM01, 0109GPM02 and 0109GPM03 then direct to hold at 0109LPL, not below 2,500 ft. 	And		23500 EUROWOOT Messor Parameters Provestigation Provestigation User Parameters User Parameters						
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has b levels of flight safety.	een designe	ed to meet acc	ceptable						
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.									
<i>Summary of Qualitative Assessment:</i> The procedure incor profile, to be flown at optimum aircraft performance and path.	porates a co represents	ontinuous des the most dire	scent ct flight						
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.NOT METPARTIAL									
<i>Summary of Qualitative Assessment:</i> The procedure flies of schools in residential areas of Heswall and Bebington on a approach procedure routes in the vicinity of a number of not below 2,500 ft.	over, or clos final approa schools in R	e to, a numbe ch. The miss uncorn and F	er of ed Frodsham,						
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile and represents the most direc flown.	een designe t routing to	ed to incorpo minimise tra	rate a ck miles						
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	able and mair	ntains						

Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET							
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.								
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.										
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to enable a continuous descent profile.										
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The final and missed approach procedure represents the minimum number of track miles flown.										
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for							
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> Alternate procedures approach procedures.	s are not dev	veloped for in	ndividual							
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET							
Summary of Qualitative Assessment: Aircraft carrying out are likely to be in direct conflict with aircraft carrying out point is the same as is currently used, so although ATC tac it will be no different to current procedures.	t the Missed an approach tical interve	Approach Pi 1 procedure. ntion will be	rocedure The hold e required,							
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET							

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.								
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET					
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.								
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET					
<i>Summary of Qualitative Assessment:</i> Aircraft carrying out are likely to be in direct conflict with Manchester operation required to ensure deconfliction between LJLA and Manchester Manchester Confliction between LJLA and Manchester Manchester Confliction between LJLA and Manchester Co	the Missed ons. ATC intenester traffic	Approach Pr ervention ma	ocedure ay be					

Design Principle Evaluation		OPTION NO:	APPCH 5						
Option Name: Approach 09 Option 2		ACCE	PT						
Description of Option:Join the procedure not below 2,500 ft via the IAF at LIV12 or LIV20 or the IF at LIV11. Flyby waypoint LIV11 onto final approach.MAP – Climb straight ahead to 2,500 ft.Turn left to flyby waypoints 0209GPM01, 0209GPM02 and 0209GPM03 then direct to hold at 0209LPL, not below 2,500 ft.	And the second s	A SALE AND	13500 Currentwood Current Massade Currentwood Currentwood Current Massade Currentwood Currentwood Current Massade Currentwood Currentwood Current Massade Currentwood Curr						
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has be levels of flight safety.	een designe	ed to meet ac	ceptable						
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.									
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path.									
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites. NOT MET PARTIAL N									
<i>Summary of Qualitative Assessment:</i> The procedure flies of schools in residential areas of Heswall and Bebington on f approach procedure routes in the vicinity of a number of s and Widnes, not below 2,500 ft.	over, or clos inal approa schools in R	se to, a numbe ach. The miss Runcorn, War	er of ed rington						
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has be continuous descent profile and represents the most direct flown, but overflies residential areas of Runcorn, Warring	een designe t routing to ton and Wie	ed to incorpor minimise tra dnes.	rate a ck miles						
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure is tech existing operational performance, and capacity.	hnically flya	able and mair	ntains						

Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET							
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.								
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure is contained within existing airspace boundaries.										
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to enable a continuous descent profile.										
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The final and missed approach procedure represents the minimum number of track miles flown.										
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	s for							
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> Alternate procedures approach procedures.	s are not dev	veloped for in	ndividual							
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET							
Summary of Qualitative Assessment: Aircraft carrying out are likely to be in direct conflict with aircraft carrying out point is the same as is currently used, so although ATC tac it will be no different to current procedures.	t the Missed an approach tical interve	Approach Pi 1 procedure. ntion will be	rocedure The hold e required,							
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET							

<i>Summary of Qualitative Assessment:</i> Introduction of PBN accurate route keeping meaning tracks over the ground fle	procedures v own will be i	will lead to n more consist	nore cent.					
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET					
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.								
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET					
Summary of Qualitative Assessment: No impact on other a	viation oper	ators.						

Design Principle Evaluation	(OPTION NO:	APPCH 6							
Option Name: Approach 09 Option 3		ACCE	PT							
 Description of Option: Join the procedure not below 2,500 ft via the IAF at LIV12 or LIV20 or the IF at LIV11. Flyby waypoint LIV11 onto final approach. MAP – Climb straight ahead to 2,500 ft. Turn left to flyby waypoints 0209GPM01, 0209GPM02 and 0209GPM03 then direct to hold at LIV11(2), not below 2,500 ft. 	Internet of the second	Arrow Tanada Caralana (Caralana (Caralanaa (Caralana (Cara)a)))))) (a) a) a	A STOLEN TO MEND OF THE STOLENT OF THE STOLE							
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET							
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet ac	ceptable							
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.NOT METPARTIAL										
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path. The Missed Approach Procedure routes the aircraft back to the re-join the approach procedure.										
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure flies over, or close to, a number of schools in residential areas of Heswall and Bebington on final approach. The missed approach procedure routes in the vicinity of a number of schools in Runcorn, Warrington, Huyton, Liverpool and Birkenhead, and over or close to hospitals in Prescot and Liverpool, including Alder Hey Children's Hospital, not below 2,500 ft.										
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET							
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile and represents the most direc flown, but overflies residential areas of Runcorn, Warring Birkenhead, not below 2,500 ft.	een designe t routing to ton, Huyton	d to incorpor minimise tra , Liverpool a	rate a ck miles nd							
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET							

<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	itains						
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET						
Summary of Qualitative Assessment: Not evaluated for ap	proach proce	edures.							
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	ntained withi	in existing ai	rspace						
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has been designed to enable a continuous descent profile.									
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The approach procedure represents the minimum number of track miles flown. Although the Hold for the Missed Approach Procedure is further than the current conventional hold position, the routing directs the aircraft back towards the approach procedure.									
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	for						
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> Alternate procedure approach procedures.	s are not dev	veloped for in	ndividual						
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET						
<i>Summary of Qualitative Assessment:</i> The procedure has b required input from ATC.	een designed	d to minimis	e the						

Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET								
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.											
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET								
Summary of Qualitative Assessment: Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.											
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET								
Summary of Qualitative Assessment: No impact on other a	viation oper	ators.									



4 Technical Criteria Evaluation of Design Options

4.1 Technical Criteria Evaluation

The technical criteria detailed in Appendix F to CAP 1616 form the basic structure on which the change sponsor builds a formal airspace change proposal. The tables in this section show how each of the developed options complies with the technical criteria detailed in Appendix F to CAP 1616, identifying where plans will need to be established to resolve any issues that may arise, as follows:

- A green box indicates that the specified option is **compliant** with or has no impact on the relevant technical criteria.
- An orange box means that the specified option is **not fully compliant** with the relevant technical criteria but mitigation is possible through agreed operating procedures or agreements.
- A red box indicates that the specified option is **not compliant** with the relevant technical criteria and that there will be no possible plans available to mitigate the issue.



4.2 Standard Instrument Departures

Oper	ational Impact	SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
	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/ mitigation													
а	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area															
b	Impact on VFR operations (including VFR routes where applicable)															

ter. Easier.	Friendlier.															
		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
C	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds															
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	1	1	1, 2	1	1	1, 2	1	1	1	1,2	1,2	1	1	1	1
e	Any flight planning restrictions and/or route requirements															
Supp	oorting Infrastructure/Resources															
	General Requirements					Evic	lence	of con	npliar	ıce/ n	nitiga	tion				
а	Evidence to support RNAV and conventional navigation as appropriate															
b	Evidence to support primary and secondary surveillance radar (SSR)															

¹ Operating agreements required with Manchester Airport and NATS ² Operating agreement may be required with Hawarden

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		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
С	Evidence of communications infrastructure including R/T coverage															
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
f	A clear statement on SSR code assignment requirements															
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change															
Airsp	bace and Infrastructure															

³ Operating procedures will need to be developed in case of failures ⁴ Operating procedures will need to be developed in case of failures

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		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
	General Requirements					Evid	lence	of con	npliar	nce/ n	nitiga	tion				
;	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															
	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.															
	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															

		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
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															
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable															
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation															
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															

		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
h	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace															
i	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	5	5	5, 6	5	5	5, 6	5	5	5	5, 6	5, 6	5	5	5	5
j	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															
	ATS Route Requirements					Evic	lence	of cor	npliar	nce/ n	nitiga	tion				

⁵ Operating agreements required with Manchester Airport and NATS ⁶ Operating agreement may be required with Hawarden

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		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
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/Eurocontrol standards															
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task															
с	All new routes should be designed to accommodate P-RNAV navigational requirements															
	Terminal Airspace Requirements					Evid	lence	of con	npliar	nce/ n	nitiga	tion				
а	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas															

 Edsief.		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
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)															
С	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure															
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															
е	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)															

		SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
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															
g	There shall be suitable availability of radar control facilities															
h	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure															
	Off-Route Airspace Requirements					Evid	lence	of con	npliar	nce/ n	nitiga	tion				
a	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered															

r. Easier. 1	Friendlier.																
			SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
b	Should there be a (military low flyi microlight site et airspace structur operating agreen procedures can b sponsor shall act interests	any other aviation activity ng, gliding, parachuting, cc) in the vicinity of the new re and no suitable nents or air traffic control be devised, the change to resolve any conflicting															
Envii	ronmental Assess	sment															
	Theme	Content						As	sessm	ent o	f Impa	act					
а	Assessment of noise impacts	Consideration of noise impacts	7	8		9			10		11	10		12	10	11	
b	Assessment of CO ₂ emissions	Consideration of the impacts on CO ₂ emissions															

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⁷ Initial turn immediately after take-off will require high engine power setting to achieve

 ⁸ Routing over Liverpool city
⁹ Extended routing over Birkenhead

¹⁰ Routing over Runcorn immediately after take-off

¹¹ Routing over Widnes, Huyton and Liverpool city ¹² Routing over Huyton and Liverpool city

er. Euster.			SID 27 AGGER Option 1	SID 27 AGGER Option 2	SID 27 AGGER Option 3	SID 27 WAL Option 1	SID 27 WAL Option 2	SID 27 TEMP2	SID 09 AGGER Option 1	SID 09 AGGER Option 2	SID 09 CAVEN Option 1	SID 09 CAVEN Option 2	SID 09 CAVEN Option 3	SID 09 CAVEN Option 4	SID 09 CORKA Option 1	SID 09 CORKA Option 2	SID 09 CORKA Option 3
С	Assessment of local air quality	Consideration of the impacts on local air quality															
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on AONB or National Parks															

Table 4 – Technical Criteria Evaluation of Standard Instrument Departures

Оре	rational Impact	Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
	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:]	Eviden	ce of co	mplian	ice/ mi	tigation	1
а	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area							
b	Impact on VFR operations (including VFR routes where applicable)							
С	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds							
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	13	13	13	13	13	13	13
e	Any flight planning restrictions and/or route requirements							
Supp	orting Infrastructure/Resources							

¹³ Operating agreements required with Manchester Airport and NATS

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Engine F	riondlier							
Eαsier. F	riendlier.	Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
	General Requirements	I	Evidend	ce of co	mplian	ce/ mi	tigation	l
а	Evidence to support RNAV and conventional navigation as appropriate							
b	Evidence to support primary and secondary surveillance radar (SSR)							
С	Evidence of communications infrastructure including R/T coverage							
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered							
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out							
f	A clear statement on SSR code assignment requirements							
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change							
Airsp	ace and Infrastructure							
	General Requirements	l	Evidend	ce of co	mplian	ce/ mi	tigation	1

		Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
а	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							
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.							
С	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							
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							
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable							
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation							

. basier. r	nendlier.	Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
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							
h	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace							
i	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	14	14	14	14	14	14	14
j	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							
	ATS Route Requirements	J	Evideno	ce of co	mplian	ce/ mi	tigatior	1
а	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/Eurocontrol standards							

¹⁴ Operating agreements required with Manchester Airport and NATS

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		Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task							
С	All new routes should be designed to accommodate P-RNAV navigational requirements							
		Evidence of compliance/ mitigation						
	Terminal Airspace Requirements]	Eviden	ce of co	mplian	ce/ mi	tigatior	ı
а	Terminal Airspace RequirementsThe airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas]	Eviden	ce of co	mplian	ce/ mi	tigatior	1
a b	Terminal Airspace RequirementsThe airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areasThere 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)		Eviden	ce of co	mplian	ce/ mit	tigatior	1
a b c	Terminal Airspace RequirementsThe airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areasThere 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)Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure		Eviden	ce of co	mplian	ce/ mit	tigatior	1

	riendlier.	Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
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)							
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							
g	There shall be suitable availability of radar control facilities							
h	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure							
	Off-Route Airspace Requirements		Evidenc	ce of co	mplian	ce/ mit	tigation	1
а	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered							

ər. Easier. F	riendlier.		Trans 27 DIOUF	Trans 27 NOMSU	Trans 27 VEGUN	Trans 27 VEGUN (CC05)	Trans 09 DIOUF	Trans 09 NOMSU	Trans 09 VEGUN
b	Should there be any other aviat parachuting, microlight site etc and no suitable operating agree devised, the change sponsor sh	tion activity (military low flying, gliding, c) in the vicinity of the new airspace structure ements or air traffic control procedures can be all act to resolve any conflicting interests							
Envir	onmental Assessment								
	Theme	Content		I	Assessr	nent of	Impac	t	
а	Assessment of noise impacts	Consideration of noise impacts							
b	Assessment of CO ₂ emissions	Consideration of the impacts on CO ₂ emissions							
С	Assessment of local air quality	Consideration of the impacts on local air quality							
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks							

Table 5 – Technical Criteria Evaluation of Transitions

LiverpoolJohn LennonAirport

4.4 Instrument Approach Procedures

		Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
Ope	rational 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:	Evid	ence of	f comp	liance/	' mitiga	ition
а	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area						
b	Impact on VFR operations (including VFR routes where applicable)						
С	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds						
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace		15				
e	Any flight planning restrictions and/or route requirements						
Supp	orting Infrastructure/Resources						

¹⁵ Operating arrangements with Hawarden will be required to facilitate Missed Approach Procedure

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i. Edster, r		Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
	General Requirements	Evid	ence of	f comp	liance/	' mitiga	tion
а	Evidence to support RNAV and conventional navigation as appropriate						
b	Evidence to support primary and secondary surveillance radar (SSR)						
с	Evidence of communications infrastructure including R/T coverage						
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered						
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out						
f	A clear statement on SSR code assignment requirements						
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change						
Airsp	ace and Infrastructure						
	General Requirements	Evid	ence of	f comp	liance/	' mitiga	tion

		Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
а	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		16				
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.		17				
С	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						
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						
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable						
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation						

 ¹⁶ MAP not fully contained within CAS
¹⁷ No additional airspace available; procedure infringes Hawarden ATZ/RMZ

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. busiei. r		Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
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						
h	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace						
i	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	18	18, 19	18	18	18	18
j	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		19				
	ATS Route Requirements	Evidence of compliance/ mitigation				tion	
а	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/Eurocontrol standards						
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task						

 ¹⁸ Operating agreements required with Manchester Airport and NATS
¹⁹ Operating arrangements with Hawarden will be required to facilitate Missed Approach Procedure

LJLA Airspace Transition | Technical Criteria Evaluation of Design Options

		Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
с	All new routes should be designed to accommodate P-RNAV navigational requirements						
	Terminal Airspace Requirements	Evidence of compliance/ mitigati			ition		
а	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas		20				
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)						
С	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure						
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						
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)						

²⁰ MAP not fully contained within CAS

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			Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
f	The change sponsor shall ensu within or adjacent to the subjec arrivals, departures and transi	re that sufficient visual reference points are established ct airspace to facilitate the effective integration of VFR cs of the airspace with IFR traffic						
g	There shall be suitable availabi	lity of radar control facilities						
h	All new procedures should, wh Approach (CDA) profiles after a procedure	erever possible, incorporate Continuous Descent aircraft leave the holding facility associated with that						
	Off-Route Airspace Requiren	ients	Evid	ence of	f compl	liance/	mitiga	tion
а	If the new structure lies close t airspace structure, the need for	o another airspace structure or overlaps an associated operating agreements shall be considered		21				
b	Should there be any other avia microlight site etc) in the vicin operating agreements or air tra sponsor shall act to resolve any	cion activity (military low flying, gliding, parachuting, ty of the new airspace structure and no suitable affic control procedures can be devised, the change conflicting interests						
Envir	onmental Assessment							
	Theme Content Assessment of Impact							

²¹ Operating arrangements with Hawarden will be required to facilitate Missed Approach Procedure

			Approach 27 Option 1	Approach 27 Option 2	Approach 27 Option 3	Approach 09 Option 1	Approach 09 Option 2	Approach 09 Option 3
а	Assessment of noise impacts	Consideration of noise impacts	22		23		24	25
b	Assessment of CO ₂ emissions	Consideration of the impacts on CO_2 emissions						
С	Assessment of local air quality	Consideration of the impacts on local air quality						
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks						

Table 6 – Technical Criteria Evaluation of Instrument Approach Procedures

²² The Missed Approach Procedure overflies residential areas of Liverpool

²³ Current procedures route via NDB(L) LPL and include 'teardrop' routing onto approach

²⁴ The Missed Approach Procedure overflies residential areas of Runcorn, Warrington and Widnes

²⁵ The Missed Approach Procedure overflies residential areas of Runcorn, Warrington, Liverpool and Birkenhead

LJLA Airspace Transition | Technical Criteria Evaluation of Design Options

5 Updated Designs Following Engagement

5.1 Stakeholder Evaluation of Design Options

Following a review of the design options by the stakeholders that had contributed to the development of the Design Principles, 3 alternate options have been developed and included in the Design Principle Evaluation and Technical Criteria Evaluation. Table 7 contains a summary of the post-engagement options under consideration.

Procedure	Basic Description
Post-Engagement SID 27 AGGER	This option includes a right hand turn direct to AGGER that remains over the River Mersey during the initial turn after take-off. The nominal routing is between the routing taken by SID 27 AGGER options 1 and 2.
Post-Engagement Approach 27	The initial approach remains the same as Approach 27 options 1 and 2. The position of the hold has been moved to a position over the sea to the west of LJLA in the vicinity of Wallasey.
Post-Engagement Approach 09	This procedure is the same as Approach 09 option 3 except that the direction of the hold has been adjusted so that the aircraft will remain over the sea when in the hold.

Table 7 – Summary of Post-Engagement Options Under Consideration

A summary of how these options have responded to the Design Principles is included at Table 8 below.

	Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
DP 1			
DP 2			
DP 3			
DP 4a			
DP 4b			
DP6			
DP 7a			
DP 7b			
DP 9			
DP 10			
DP 11			
DP 12a			
DP 12b			
DP 14			
DP 15			

Table 8 – Design Principle Evaluation Overview of Post-Engagement Options

5.2 Design Principle Evaluation of Post-Engagement Design Options

Design Principle Evaluation		OPTION NO	D: PE 1	
Option Name: Runway 27 SID AGGER Post-Engagement		ACCE	PT	
<i>Description of Option:</i> Climb straight ahead then turn right to fly direct to overfly AGGER, achieving a height of approximately 11,000 ft by AGGER.	CTIRN D SEC 497 CHARGO (SO 497 CHARGO (SO 4	LESPIELENS SOUNDESS DESSION TA-D25 LESPIELENS TA-D25 LESPIELENS TABOCK SLAD T	TIMA A 3500+ ELLO AREINGTON AREINGTON CONSTRUCTION CO	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b optimum aircraft performance and represents the most d	een designe irect routing	d to be flowr g to AGGER.	ı at	
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure remative the initial right hand turn after take-off. A school and a hoc close to the planned flightpath; aircraft will be above approximation of the planned flightpath and the planned flightpath are close to the planned flightpath	ins over the ospital, withi oximately 4	River Merse in built-up ar ,000 ft at the	y during reas, are ese points.	
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is designed to incorporate a continuous climb profile to minimise the impact of noise. Routing takes the aircraft over populated areas of Liverpool but will be above approximately 4,000 ft before flying over this area. Routing to avoid populated areas would have an adverse effect on DP 2 and DP 9.				
Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.				
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure incor	porates a co	ntinuous clii	nb profile.	
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	itained with	in existing ai	rspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for SII	Ds.			
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: This route represent	s the most d	irect track to	O AGGER.	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Option to route to th AGGER – to be assessed as an alternative SID option.	e south of th	e airport to	route to	
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Although the procedure has been designed to integrate with the en-route structure, the size and complexity of the airspace around LJLA means that there is potential conflict between this SID and other LJLA procedures, which may lead to an increase in ATC workload.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	

г

<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No impact on other aviation operators.				

Design Principle Evaluation		OPTION NO): PE 2	
Option Name: Approach 27 Post-Engagement		ACCE	PT	
Description of Option: Join the procedure not below 3,000 ft via the IAF at LIV05 or NEW8. Flyby waypoint LIV02 onto final approach. MAP – Climb straight ahead to 2,500 ft. Turn right direct to hold oversea, not below 2,500 ft.	FC-390 FC-390		Constant and a second s	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Positioning the hold over the sea to the west will mean an increase in track miles flown. However, the climb straight ahead after the missed approach will reduce the cockpit workload, allowing the pilots the time to deal with any issues that may have caused an unsuccessful landing. Amending the position of the hold would have an adverse effect on DP 3 and DP 4a.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure flies over, or close to, a number of schools in the built-up areas of Warrington and Runcorn on final approach. The missed approach procedure routes over Eastham Country Park and in the vicinity of a number of schools in Bebington and Birkenhead at or above 2,500 ft. Amending the position of the hold would have a different effect on this DP as well as an adverse effect on DP 2 and DP 4a.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment The procedure has be optimum aircraft performance. The missed approach pro residential area of Bebington and Birkenhead. The major procedure is flown over rural parts of the Wirral and the I Amending the position of the hold would have a different	en designed cedure brief ity of the mis nold is positi effect on DP	to be flown ly overflies a ssed approad oned over th 2 and DP 3.	at ch ne sea.	

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is technically flyable and maintains existing operational performance, and capacity.					
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET		
Summary of Qualitative Assessment: Not evaluated for app	proach proc	edures.			
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure is comboundaries.	ntained withi	in existing ai	irspace		
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile.	een designee	d to enable a	l		
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Positioning the hold over the sea to the west will mean an increase in track miles flown. However, the climb straight ahead after the missed approach will reduce the cockpit workload, allowing the pilots the time to deal with any issues that may have caused an unsuccessful landing. Amending the position of the hold would have a different effect on this DP as well as an adverse effect on DP 2, DP 3 and DP 4a.					
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> No change required to Controlled Airspace.	to existing a	rrangements	s for		
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET		
<i>Summary of Qualitative Assessment:</i> Alternate procedures are not developed for individual approach procedures.					
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET		

<i>Summary of Qualitative Assessment:</i> The procedure has been designed to minimise the required input from ATC.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No impact on other aviation operators.				

Design Principle Evaluation		OPTION NO	D: PE 3	
Option Name: Approach 09 Post-Engagement		ACCE	PT	
<i>Description of Option:</i> Join the procedure not below 2,500 ft via the IAF at LIV12 or LIV20 or the IF at LIV11. Flyby waypoint LIV11 onto final approach.	FIGURE CONTRACTOR		Sector Control of Cont	
MAP – Climb straight ahead to 2,500 ft. Turn left direct to hold oversea, not below 2,500 ft.	CALL OF A CALL O		The state of the s	
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b levels of flight safety.	een designe	d to meet acc	ceptable	
Design Principle 2: Procedures must be designed to minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure incorporates a continuous descent profile, to be flown at optimum aircraft performance and represents the most direct flight path. The Missed Approach Procedure routes the aircraft back to the re-join the approach procedure with the hold positioned over the sea.				
Design Principle 3: Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure flies over, or close to, a number of schools in residential areas of Heswall and Bebington on final approach. The missed approach procedure routes in the vicinity of a number of schools in Runcorn, Warrington, Huyton, Liverpool and Birkenhead, and over or close to hospitals in Prescot and Liverpool, including Alder Hey Children's Hospital, not below 2,500 ft. Alternate routing to the hold would have an adverse effect on DP 2, DP 4a and DP 9.				
Design Principle 4a: Procedures must be designed to minimise the impact of noise below 7,000ft.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has a continuous descent profile and represents the most direct flown, but overflies residential areas of Runcorn, Warring Birkenhead, not below 2,500 ft. The hold is positioned so Alternate routing would have an adverse effect on DP 2, I	een designe t routing to r gton, Huyton, aircraft rem OP 3 and DP 9	d to incorpor ninimise tra Liverpool a ain over the 9.	rate a ck miles nd sea.	

Design Principle 4b: Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is tec existing operational performance, and capacity.	hnically flya	ble and mair	ntains	
Design Principle 6: Procedures should be designed to enable more continuous climbs.	NOT MET	PARTIAL	MET	
Summary of Qualitative Assessment: Not evaluated for ap	proach proc	edures.		
Design Principle 7a: Procedures should be designed to fit within existing airspace constraints and boundaries.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure is corboundaries.	ntained with	in existing ai	irspace	
Design Principle 7b: Procedures should be designed to enable more continuous descents.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The procedure has b continuous descent profile.	een designee	d to enable a	L	
Design Principle 9: Procedures should be designed that minimise the number of track miles flown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> The approach proceed number of track miles flown. Although the Hold for the M further than the current conventional hold position, the rectowards the approach procedure.	dure represe lissed Appro outing direct	nts the mini ach Procedu s the aircraf	mum re is t back	
Design Principle 10: If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No change required Controlled Airspace.	to existing a	rrangements	s for	
Design Principle 11: Procedures should be developed to allow for alternative routes to offer respite.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Alternate procedures are not developed for individual approach procedures.				
Design Principle 12a: Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	NOT MET	PARTIAL	MET	

<i>Summary of Qualitative Assessment:</i> The procedure has been designed to minimise the required input from ATC.				
Design Principle 12b: Procedures should be designed to concentrate routes to minimise the numbers overflown.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 14: Procedures should be designed to ensure predictability of tracks for consistency of operations.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> Introduction of PBN procedures will lead to more accurate route keeping meaning tracks over the ground flown will be more consistent.				
Design Principle 15: Procedures should be designed to include alternative routes to avoid other aviation operators.	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment:</i> No impact on other aviation operators.				



5.3 Post-Engagement Design Options Technical Criteria Evaluation

		Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
Ope	rational 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 mitigation		oliance/
а	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area			
b	Impact on VFR operations (including VFR routes where applicable)			
С	Consequential effects on procedures and capacity, i.e. on SIDs, STARs, and/or holding patterns. Details of existing or planned routes and holds			
d	Impact on aerodromes and other specific activities within or adjacent to the proposed airspace	26		
e	Any flight planning restrictions and/or route requirements			
Supp	Supporting Infrastructure/Resources			
	General Requirements	Evidenc mitigati	e of comp on	oliance/

²⁶ Operating agreements required with Manchester Airport and NATS

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		Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
а	Evidence to support RNAV and conventional navigation as appropriate			
b	Evidence to support primary and secondary surveillance radar (SSR)			
с	Evidence of communications infrastructure including R/T coverage			
d	The effects of failure of equipment, procedures and/or personnel with respect to the overall management of the airspace must be considered	27		
е	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out	28		
f	A clear statement on SSR code assignment requirements			
g	Evidence of sufficient numbers of suitably qualified staff required to provide air traffic services following the implementation of a change			
Airsp	Airspace and Infrastructure			
	General Requirements	Evidenc mitigati	e of comp on	oliance/

 ²⁷ Operating procedures will need to be developed in case of failures
²⁸ Operating procedures will need to be developed in case of failures

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		Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
а	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			
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.			
С	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			
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			
e	Within the constraints of safety and efficiency, the airspace classification should permit access to as many classes of user as practicable			
f	There must be assurance, as far as practicable, against unauthorised incursions. This is usually done through the classification and promulgation			
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			
h	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace			

		Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
i	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered	29	29	29
j	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			
	ATS Route Requirements	Evidence of compliance/ mitigation		
а	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/Eurocontrol standards			
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task			
с	All new routes should be designed to accommodate P-RNAV navigational requirements			
		Evidence of compliance/ mitigation		
	Terminal Airspace Requirements	Evidenc mitigati	e of comp on	oliance/

²⁹ Operating agreements required with Manchester Airport and NATS

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		Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09
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)			
С	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure			
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			
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)			
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			
g	There shall be suitable availability of radar control facilities			
h	All new procedures should, wherever possible, incorporate Continuous Descent Approach (CDA) profiles after aircraft leave the holding facility associated with that procedure			
	Off-Route Airspace Requirements	Evidence of compliance/ mitigation		

			Post-Engagement SID27 AGGER	Post-Engagement Approach 27	Post-Engagement Approach 09		
а	If the new structure lies close t structure, the need for operation						
b	Should there be any other aviation activity (military 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						
Environmental Assessment							
	Theme	Content	Assessment of Impact				
a	Assessment of noise impacts	Consideration of noise impacts					
b	Assessment of CO ₂ emissions	Consideration of the impacts on CO ₂ emissions					
С	Assessment of local air quality	Consideration of the impacts on local air quality					
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks					

Table 9 – Technical Criteria Evaluation of Post-Engagement Design Options