RSP | Manston Airport

Manston Airport Airspace Design and Procedures

Design Principles Evaluation

Issue 2

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Glossary

Acronym	Meaning
aal	above aerodrome level
ACP	Airspace Change Proposal
agl	above ground level
amsl	above mean sea level
ANO	Air Navigation Order
AONB	Area of Outstanding Natural Beauty
ATC	Air Traffic Control
ATZ	Aerodrome Traffic Zone
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CAS	Controlled Airspace
CTA	Control Area
FASI-S	Future Airspace Strategy Implementation - South
FIR	Flight Information Region
ft	feet
GA	General Aviation
GNSS	Global Navigation Satellite System
ILS	Instrument Landing System
LOA	Letter of Agreement
MAP	Missed Approach Procedure
MOU	Memorandum of Understanding
NATS	formerly National Air Traffic Services

Glossary (continued)

Acronym	Meaning
NDB	Non-Directional Beacon
RNAV	Area Navigation
RSP	RiverOak Strategic Partners Ltd
SID	Standard Instrument Departure
SSSI	Site of Special Scientific Interest
TMA	Terminal Manoeuvring Area
VFR	Visual Flight Rules

1. Introduction

1.1 Background

The Manston Airport Airspace Design and Procedures project is currently at Stage 2 – Develop and Assess – of the CAP 1616 Airspace Design process. Step 2A requires the change sponsor to develop a comprehensive list of options that each address the Statement of Need and that align with the Design Principles developed in Stage 1. As the change sponsor, RiverOak Strategic Partners (RSP) has tested these options with those stakeholders that were invited to contribute to the development of the Design Principles. The Design Principle Evaluation shows to what extent the options meet the Design Principles.

This document articulates the evaluation of each of the options against each of the Design Principles developed during Stage 1, and forms part of the document set required as evidence to satisfy the Stage 2 Develop and Assess Gateway. This document should be read alongside the Manston Airport Airspace Design and Procedures Step 2A Options Development document which has also been uploaded to the Civil Aviation Authority (CAA) airspace portal at Step 2A:
https://airspacechange.caa.co.uk/PublicProposalArea?pID=112

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	Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it
3	Procedures should be designed to minimise the impact of noise below 7,000 feet
4	Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas
5	Designs should minimise the impact on other airspace users in the local area
6	Procedures should be designed that minimise aircraft emissions to reduce air pollution
7	Designs should make provision for multiple routes that can be used to spread the noise burden more equitably
8	Procedures should be designed to minimise the number of track miles flown

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 of options that will be taken forward to Stage 3 (Consultation). Options Appraisal is used as a tool throughout the CAP 1616 process to help refine the options from an initial long list, down to a shortlist and a final set of preferred options. The process is iterative with an Initial Options Appraisal used to whittle down the longlist in Step 2B, a Full Options Appraisal of the shortlist taking place in Stage 3 (Step 3A) prior to consultation, and the Final Options Appraisal supporting the submission of the Airspace Change Proposal (ACP) application to the CAA.

At the end of Step 2B, RSP will submit details of the options and the Initial Options Appraisal to the CAA for assessment at the Stage 2 Develop and Assess Gateway, currently programmed for 30th July 2021.

2. Long List of Options

2.1 Introduction

RSP is seeking to introduce arrival and departure procedures, including transitions, for aircraft arriving at and departing from, the airport. These procedures will allow aircraft to make the best use of the airspace, utilising Global Navigation Satellite System (GNSS) technology to make efficient use of the airspace around the airport by defining accurate routing for the way aircraft will approach and depart the airport, whilst ensuring acceptable levels of safety.

Table 2 below contains a summary of the list of options under consideration for the Design Principles Evaluation.

Procedure	Number of Options	Basic Description
Do Minimum Option		Prior to closure the aerodrome at Manston had conventional flight procedures and an Aerodrome Traffic Zone (ATZ) to offer protection to aircraft in the critical stages of flight. All such measures were removed when the aerodrome closed. This option represents the opening of the airport without any approved procedures or airspace.
Runway 28 departures to the south	3	All options include a left-hand turn after take-off, followed by 3 different overland routes towards DOVER (DVR) to join the en-route network.
Runway 28 departures to the north	9	All options include a right-hand turn after take-off, with 3 different overland routes followed by 3 different oversea alternates.
Runway 10 departures	3	All options go straight ahead until over the sea, followed by either a left-hand turn onto north or a right-hand turn onto south. The southern option then splits either east (towards FIR boundary) or west (towards DVR).
Runway 28 Transitions	5	Five separate routes from the en-route network to join the approach procedure.
Runway 10 Transitions	6	Three options for each of the different approach options. One option from the north utilising the existing London City Point Merge arrival procedure, and 2 southern options leaving the en-route network to join the approach procedure.
Runway 28 Approach	6	An ILS and an RNAV straight-in approach, each with 3 options (2 north and one south) for the Missed Approach Procedure.
Runway 10 Approach	8	Two ILS and 2 RNAV straight-in approaches; one of each from a 2,500 ft final descent and one of each from a 3,000 ft final descent. Each approach has 2 options (one north and one south) for the Missed Approach Procedure.
NDB Hold	3	Standard one-minute racetrack based on the NDB position, only for light GA aircraft.
Regulated Airspace	1	Aerodrome Traffic Zone (ATZ) to protect aircraft during the final critical stages of flight.

Table 2 - Long List of Design Options

3. Design Principles 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, and the individual 'Option' tables that follow, give 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.

Any options taken forward **must** be designed to meet acceptable levels of flight safety (Design Principle 1) and accord with the CAA's published Airspace Modernisation Strategy and any current or future plans associated with it (Design Principle 2). If an individual option is assessed as not meeting these highest priority Design Principles, they will not be taken forward to Step 2B. Regardless of how the individual options respond to the other Design Principles, if an option is assessed to meet Design Principles 1 and 2, it is considered to be a viable option and will be accepted to go forward to the Initial Options Appraisal. Regardless of how they have responded to the Design Principles, the Do Minimum options have been accepted and taken forward to the Initial Options Appraisal at Step 2B to allow comparative assessment of the options against the Do Minimum.

The Initial Options Appraisal, carried out at Step 2B, will be a qualitative assessment of the impacts of each of the individual procedure options to develop the short list of procedures that will be taken forward to Stage 3 (Consultation). During Consultation preparation in Stage 3, each of the individual route procedures will be evaluated in combinations with the aim of producing operationally viable combinations of procedures that serve as the individual Options to be taken further forward in the CAP 1616 process. These Options will be the subject of the fully developed quantitative assessments that will determine the costs and benefits of each alternative .

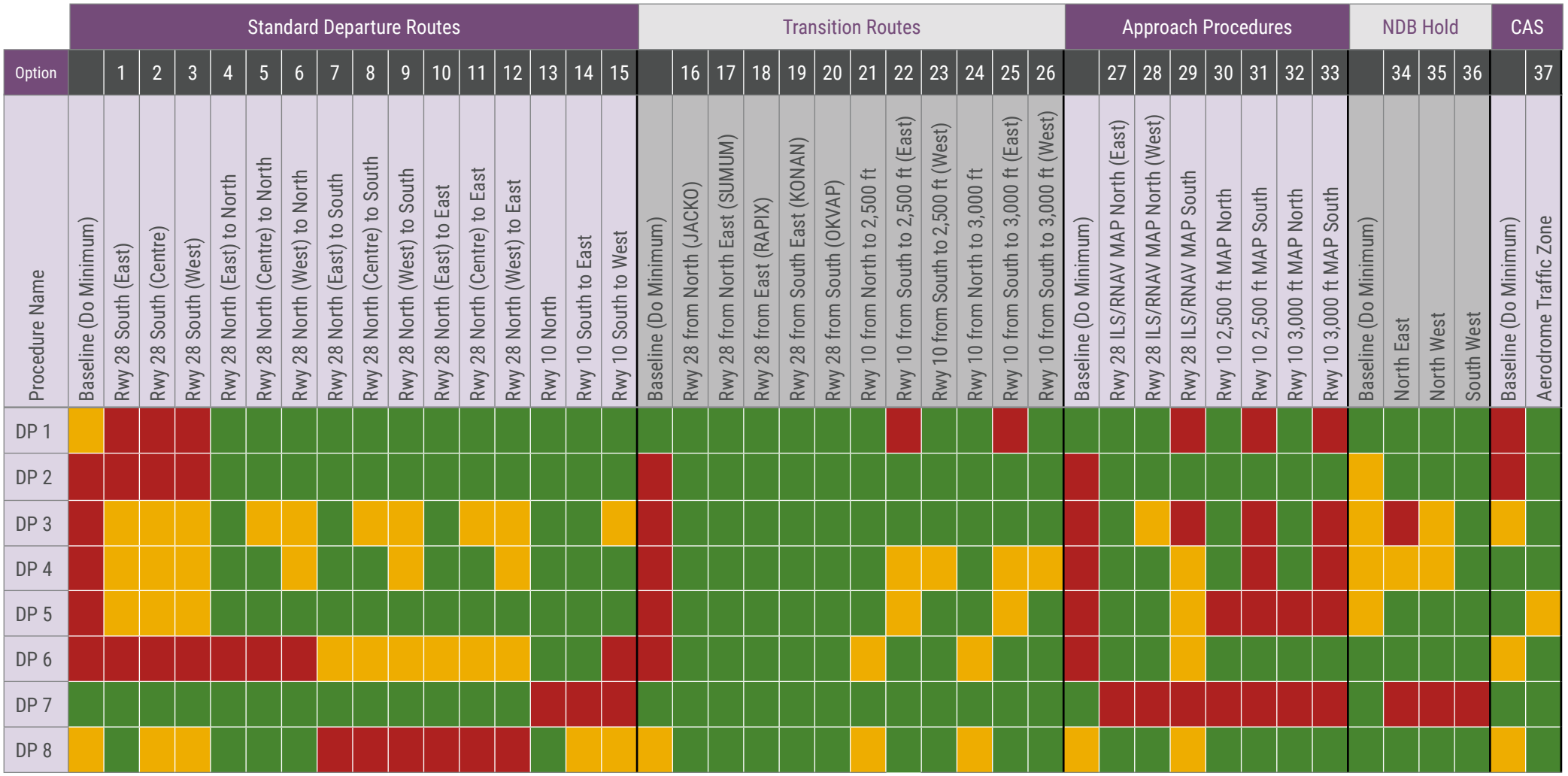


Table 3 - Design Principle Evaluation Overview

Design Principle Evaluation	OPTION NO: Baseline		
Option Name: SID Baseline (Do Minimum)	**ACCEPT**		
Description of Option: Aircraft routes would be dependent on en-route airways joining position. Routing outside of CAS could vary depending on the position of the joining point in relation to the airport.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: ATC monitoring would be required to provide safe separation from known or unknown traffic. Aircraft routing south towards DOVER (DVR) may conflict with gliders operating in Class G airspace. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation. Aircraft would only be able to depart in a direction that would not lead to conflict with gliders (over the sea).			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Key outcomes of Airspace Modernisation (efficient use of airspace and enabling integration, avoiding flight delays by better managing the airspace network and improving environmental performance by reducing emissions and by better managing noise) are unlikely to be met.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft routing would vary depending on the position of the airways joining point. The burden of noise is likely to be spread, reducing an individual's exposure, but the total population affected will be high.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would route according to the position of the airways joining point and would give no consideration to noise on particularly sensitive areas.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would route according to the position of the airways joining point and whilst tactical avoidance of other traffic could take please, the routes have no inherent consideration of other aviation in the local area.			

Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Lack of integration with the network airspace would not allow efficient climb profiles and aircraft are likely to be held at lower altitudes longer than necessary. Aircraft are more likely to require avoiding action against VFR aviation traffic, increasing track miles and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft flying routes dependent on the airways joining position would result in a spread of the noise burden. Tactical routing, including avoidance of other traffic would also spread the burden of noise.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Direct routing to airways joining points would be likely, reducing the number of track miles flown. However, aircraft are more likely to have avoiding action against other aviation if not following published and predictable routes, increasing the total track miles flown.			

3.1.1 SID Do Minimum Option Conclusion

The SID Do Minimum option raises significant safety concerns for some overland departure directions and would not meet key outcomes of the Airspace Modernisation Strategy, specifically reducing emissions and better noise management.

Design Principle Evaluation	OPTION NO: 1		
Option Name: Runway 28 South (East)	**REJECT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn left onto a southerly heading initially, before turning left again onto a south easterly heading, direct to the DOVER (DVR) reporting point. Aircraft will initially be capped at FL70 (approximately 7,000 ft). On approaching DVR, aircraft will turn right to follow the en-route network towards SANDY before further climb to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. Aircraft routing south towards DOVER (DVR) may conflict with gliders operating in Class G airspace. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme. Key outcomes of Airspace Modernisation (efficient use of airspace and improving environmental performance by reducing emissions and by better managing noise) are unlikely to be met.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route avoids large built-up areas, this rural area of Kent will have relatively low ambient noise and although the route aims to avoid direct overflight where possible, there are numerous small villages and hamlets that may be impacted by noise. Aircraft may need to remain at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures, which would have further impact on areas of south Kent, including Dover and Folkestone.			

Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in the vicinity of the flight path and these have been avoided where practicable. There is one school directly beneath the proposed route; aircraft will be at or above 4,000 ft at this point thus minimising noise. This route avoids overflight of any National Parks plus any local 'tranquil' areas that were identified through community engagement. However, aircraft may overfly the Kent Downs AONB whilst remaining at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, this area of Kent is used extensively for gliding operations, specifically from Waldershare Park and may have an impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, aircraft will not be able to perform Continuous Climb operations and will be capped at approximately 7,000 ft until separated to the west of the arrival route.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the north of the airport that could be combined with southern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route represents the most direct route, therefore minimum track miles for aircraft routing via DVR.			

3.1.2 SID Option 1 Conclusion

There was significant opposition from stakeholders to all Runway 28 departures that track south due to the amount of overland track and the noise disturbance that this would cause. There was also concern over the impact on other aviation users, specifically gliding operations. This option does not meet the highest priority Design Principles, with significant safety concerns and is considered to be a high workload option with heavy network interactions and unnecessary environmental and noise impacts.

Design Principle Evaluation	OPTION NO: 2		
Option Name: Runway 28 South (Centre)	**REJECT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn left onto a south westerly heading initially, before turning left again onto a south easterly heading, direct to the DOVER (DVR) reporting point. Aircraft will initially be capped at FL70 (approximately 7,000 ft). On approaching DVR, aircraft will turn right to follow the en-route network towards SANDY before further climb to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. Aircraft routing south towards DOVER (DVR) may conflict with gliders operating in Class G airspace. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme. Key outcomes of Airspace Modernisation (efficient use of airspace and improving environmental performance by reducing emissions and by better managing noise) are unlikely to be met.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route avoids large built-up areas, this rural area of Kent will have relatively low ambient noise and although the route aims to avoid direct overflight where possible, there are numerous small villages and hamlets that may be impacted by noise. Aircraft may need to remain at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures, which would have further impact on areas of south Kent, including Dover and Folkestone.			

Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in the vicinity of the flight path. The proposed route avoids overflight of any National Parks but is adjacent to Stodmarsh Nature Reserve and directly over Preston Marshes, both of which are Sites of Special Scientific Interest (SSSI). Aircraft will be at relatively low altitudes and manoeuvring in this location, increasing the noise impact. Aircraft may overfly the Kent Downs AONB whilst remaining at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, this area of Kent is used extensively for gliding operations, specifically from Waldershare Park and may have an impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, aircraft will not be able to perform Continuous Climb operations and will be capped at approximately 7,000 ft until separated to the west of the arrival route.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the north of the airport that could be combined with southern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although this is not the most direct route to DVR, it is only marginally longer than the previous option.			

3.1.3 SID Option 2 Conclusion

There was significant opposition from stakeholders to all Runway 28 departures that track south due to the amount of overland track and the noise disturbance that this would cause. The potential for damage, pollution and disruption to the Stodmarsh Nature Reserve SSSI due to the proximity of the proposed route was also a cause for concern from stakeholders. There was also concern over the impact on other aviation users, specifically gliding operations. This option does not meet the highest priority Design Principles, with significant safety concerns and is considered to be a high workload option with heavy network interactions and unnecessary environmental and noise impacts.

Design Principle Evaluation	OPTION NO: 3		
Option Name: Runway 28 South (West)	**REJECT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn left onto a south westerly heading initially, then turning left again onto a southerly heading before turning onto a south easterly heading, direct to the DOVER (DVR) reporting point. Aircraft will initially be capped at FL70 (approximately 7,000 ft). On approaching DVR, aircraft will turn right to follow the en-route network towards SANDY before further climb to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. Aircraft routing south towards DOVER (DVR) may conflict with gliders operating in Class G airspace. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme. Key outcomes of Airspace Modernisation (efficient use of airspace and improving environmental performance by reducing emissions and by better managing noise) are unlikely to be met.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route avoids large built-up areas, this rural area of Kent will have relatively low ambient noise and although the route aims to avoid direct overflight where possible, there are numerous small villages and hamlets that may be impacted by noise. Aircraft may need to remain at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures, which would have further impact on areas of south Kent, including Dover and Folkestone.			

Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in the vicinity of the flight path. The proposed route avoids overflight of any National Parks but is adjacent to Stodmarsh Nature Reserve and directly over Preston Marshes, both of which are Sites of Special Scientific Interest (SSSI). Aircraft will be at relatively low altitudes and manoeuvring in this location, increasing the noise impact. Aircraft will be at relatively low altitudes and manoeuvring in this location, increasing the noise impact. Aircraft may overfly the Kent Downs AONB whilst remaining at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, this area of Kent is used extensively for gliding operations, specifically from Waldershare Park and may have an impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, aircraft will not be able to perform Continuous Climb operations and will be capped at approximately 7,000 ft until separated to the west of the arrival route.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the north of the airport that could be combined with southern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although this is not the most direct route to DVR, it is only approximately 2.5 nautical miles longer than option 1.			

3.1.4 SID Option 3 Conclusion

There was significant opposition from stakeholders to all Runway 28 departures that track south due to the amount of overland track and the noise disturbance that this would cause. The potential for damage, pollution and disruption to the Stodmarsh Nature Reserve SSSI due to the proximity of the proposed route was also a cause for concern from stakeholders. One stakeholder objected to this option due to the extra track miles and the resultant higher exposure to pollution. There was also concern over the impact on other aviation users, specifically gliding operations. This option does not meet the highest priority Design Principles, with significant safety concerns and is considered to be a high controller workload option with heavy network interactions and unnecessary environmental impact.

Design Principle Evaluation	OPTION NO: 4		
Option Name: Runway 28 North (East) to North	**ACCEPT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft then turn left onto a northerly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the final turn onto north coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages. This procedure follows the shortest route to the coast.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, not only will aircraft not be able to perform Continuous Climb operations, but climb heights will need to be restricted to approximately 5,000 ft initially (over the sea) to remain clear of descending arrivals traffic.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route represents the minimum practicable track miles for aircraft departing to the north from a network design perspective.			

3.1.5 SID Option 4 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. However, the northern portion of the procedure is beneath the arrival procedure for Southend Airport so aircraft would be unable to perform a continuous climb but would be restricted to approximately 5,000 ft to ensure avoidance of aircraft descending on the arrival procedure. This would have a negative impact on the environmental assessment of this procedure.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 5		
Option Name: Runway 28 North (Centre) to North	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft then turn left onto a northerly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the final turn onto north coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages, although is closer to the village of St Nicholas-At-Wade than the previous option.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, not only will aircraft not be able to perform Continuous Climb operations, but climb heights will need to be restricted to approximately 5,000 ft initially (over the sea) to remain clear of descending arrivals traffic.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is marginally longer than the previous option so still represents the minimum practicable track miles for aircraft departing to the north from a network design perspective.			

3.1.6 SID Option 5 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. However, the northern portion of the procedure is beneath the arrival procedure for Southend Airport so aircraft would be unable to perform a continuous climb but would be restricted to approximately 5,000 ft to ensure avoidance of aircraft descending on the arrival procedure. This would have a negative impact on the environmental assessment of this procedure.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 6		
Option Name: Runway 28 North (West) to North	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a west north westerly heading initially, before turning right again onto a north westerly heading until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft turn left onto a northerly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the final turn onto north coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is mainly over a rural area of Kent and avoids large built-up areas but passes close abeam the village of St Nicholas-At-Wade, which is likely to result in some overflight of the village.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast. This route is closer to Reculver Country Park Nature Reserve than similar right turn options.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, not only will aircraft not be able to perform Continuous Climb operations, but climb heights will need to be restricted to approximately 5,000 ft initially (over the sea) to remain clear of descending arrivals traffic.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is slightly longer than the previous option, it still represents the minimum practicable track miles for aircraft departing to the north from a network design perspective.			

3.1.7 SID Option 6 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. However, the northern portion of the procedure is beneath the arrival procedure for Southend Airport so aircraft would be unable to perform a continuous climb but would be restricted to approximately 5,000 ft to ensure avoidance of aircraft descending on the arrival procedure. This would have a negative impact on the environmental assessment of this procedure.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 7		
Option Name: Runway 28 North (East) to South	**ACCEPT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft then turn right onto a south easterly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the turn onto south east coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages. This procedure follows the shortest route to the coast.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off, aircraft routing to the south east or south will have more track miles to fly, with the associated increase in fuel use and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off, aircraft routing to the south east or south will have a greater number of track miles to fly.			

3.1.8 SID Option 7 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. Although this a feasible option, this option is similar to option 10, described later on. However, option 10 would allow more commonality with procedures from Runway 10, which is preferred by NATS to ease controller workload.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 8		
Option Name: Runway 28 North (Centre) to South	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft then turn right onto a south easterly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the turn onto south east coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages, although is closer to the village of St Nicholas-At-Wade than the previous option.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off, aircraft routing to the south east or south will have more track miles to fly, with the associated increase in fuel use and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off, aircraft routing to the south east or south will have a greater number of track miles to fly. The initial overland portion is marginally longer than the previous option.			

3.1.9 SID Option 8 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. This route is closer to the village of St Nicholas-At-Wade so will have a greater noise impact. Stakeholders expressed a preference for the eastern option for the overland routing due to the least noise impact. The oversea portion of this procedure is virtually identical to the previous option, with the same considerations relating to route commonality with procedures from Runway 10.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 9		
Option Name: Runway 28 North (West) to South	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a west north westerly heading initially, before turning right again onto a north westerly heading until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. North abeam Margate, aircraft then turn right onto a south easterly heading to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy. The position of the turn onto south east coincides with the nominal 'Letterbox' position for Manston departures originally submitted to NATS.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is mainly over a rural area of Kent and avoids large built-up areas but passes close abeam the village of St Nicholas-At-Wade.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast. This route is closer to Reculver Country Park Nature Reserve than similar right turn options.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off, aircraft routing to the south east or south will have more track miles to fly, with the associated increase in fuel use and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off, aircraft routing to the south east or south will have a greater number of track miles to fly. The initial overland portion is longer than the previous options.			

3.1.10 SID Option 9 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. This route is closer to the village of St Nicholas-At-Wade so will have a greater noise impact. Stakeholders expressed a preference for the eastern option for the overland routing due to the least noise impact. The oversea portion of this procedure is slightly longer than the previous option, but has no difference in its impact. This option also has the same considerations relating to route commonality with procedures from Runway 10 as previous options.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 10		
Option Name: Runway 28 North (East) to East	**ACCEPT**		
Description of Option: On reaching 500 ft above aerodrome level (aal), aircraft turn right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. Aircraft continue on an easterly heading until 7,000 ft to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages. This procedure follows the shortest route to the coast.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off and extending to the east, aircraft will have more track miles to fly, with the associated increase in fuel use and therefore emissions. However, once separated to the east of the arrival routes, aircraft should be able to perform a continuous climb to reach cruising altitude sooner.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off and extending east, aircraft will have a greater number of track miles to fly.			

3.1.11 SID Option 10 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. Extending this procedure to the east until the aircraft reach 7,000 ft would allow a common departure route for aircraft departing Manston Airport on Runway 28 before splitting as required in the en-route network. This would also allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 11		
Option Name: Runway 28 North (Centre) to East	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a north westerly heading initially, until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. Aircraft continue on an easterly heading until 7,000 ft to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is over a rural area of Kent and avoids large built-up areas and villages, although is closer to the village of St Nicholas-At-Wade than the previous option.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off and extending to the east, aircraft will have more track miles to fly, with the associated increase in fuel use and therefore emissions. However, once separated to the east of the arrival routes, aircraft should be able to perform a continuous climb to reach cruising altitude sooner.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off and extending east, aircraft will have a greater number of track miles to fly. The initial overland portion is marginally longer than the previous option.			

3.1.12 SID Option 11 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. Extending this procedure to the east until the aircraft reach 7,000 ft would allow a common departure route for aircraft departing Manston Airport on Runway 28 before splitting as required in the en-route network. This would also allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload. The oversea portion of this procedure is virtually identical to the previous option. However, as this route is closer to the village of St Nicholas-At-Wade it will have a greater noise impact. Stakeholders expressed a preference for the eastern option for the overland routing due to the least noise impact.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 12		
Option Name: Runway 28 North (West) to East	**ACCEPT**		
Description of Option: After take-off, aircraft extend beyond the previous procedure, to approximately 750 ft above mean sea level (amsl) before turning right onto a west north westerly heading initially, before turning right again onto a north westerly heading until beyond the coast and over the sea. Aircraft then turn right onto an easterly heading. Aircraft continue on an easterly heading until 7,000 ft to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route is mainly over a rural area of Kent and avoids large built-up areas but passes close abeam the village of St Nicholas-At-Wade.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route avoids the majority of areas that are particularly sensitive to noise, although it does cross a narrow section of the Thanet Coast SSSI as it crosses the coast. This route is closer to Reculver Country Park Nature Reserve than similar right turn options.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: To ensure deconfliction from traffic descending on the Southend Airport arrival route, this procedure will have to include a 'not above' height restriction until clear to the east of the arrival's procedure. Aircraft may still be able to perform a Continuous Climb departure, depending on the climb gradient that can be achieved, but it cannot be guaranteed. By turning right after take-off and extending to the east, aircraft will have more track miles to fly, with the associated increase in fuel use and therefore emissions. However, once separated to the east of the arrival routes, aircraft should be able to perform a continuous climb to reach cruising altitude sooner.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are other departure options routing to the south of the airport that could be combined with northern departure routes to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By turning right after take-off and extending east, aircraft will have a greater number of track miles to fly. The initial overland portion is longer than the previous options.			

3.1.13 SID Option 12 Conclusion

Stakeholders expressed a preference for Runway 28 departures that turned right after take-off and aimed to get over the sea as soon as possible. A number of stakeholders acknowledged that this would probably result in greater track miles and the associated increase in fuel burn and emissions, but this would affect less of the population and minimise the number of people affected by noise. The right turn after take-off was also vastly preferable to controllers in terms of both traffic deconfliction and network connectivity. Extending this procedure to the east until the aircraft reach 7,000 ft would allow a common departure route for aircraft departing Manston Airport on Runway 28 before splitting as required in the en-route network. This would also allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload. The oversea portion of this procedure is slightly longer than the previous option, but has no difference in its impact. However, as this route is closer to the village of St Nicholas-At-Wade, it will have a greater noise impact. Stakeholders expressed a preference for the eastern option for the overland routing due to the least noise impact.

When assessing this route option against the Design Principles, Design Principle 7 is assessed as being 'Met' due to other Runway 28 departure options being available that could be utilised to spread the burden of noise more equitably. However, departure options to the south (left-hand turn after take-off) have been rejected at this stage due to significant safety concerns. The result of rejecting these options would mean that Design Principle 7 would now be 'Not Met' for this route option. There is not enough separation between overland options to the north (right-hand turn after take-off) to be able to provide reasonable respite for communities on the ground, hence this Design Principle will now be 'Not Met'.

Design Principle Evaluation	OPTION NO: 13		
Option Name: Runway 10 North	**ACCEPT**		
Description of Option: After take-off, aircraft continue straight ahead on runway heading for approximately 5 nautical miles before turning left onto north.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be over populated areas of Ramsgate before achieving the minimum necessary height to make any turns. Therefore continuing straight ahead until over the sea will minimise the impact of noise on the residents of Ramsgate.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in Ramsgate that are under or close to the departing flight path. The distance from the end of the runway to over the sea is only 2.3 nautical miles. It will not be possible to design a procedure that completely avoids all these locations. Aircraft climbing straight ahead without turns over the town will minimise the impact of noise on these areas.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By extending east before any turns are made, the procedure will avoid any conflict with the arrival routes for London airports therefore allowing Continuous Climb operations and direct routing, which will minimise aircraft emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: It is not possible to create multiple overland routes to spread the noise burden because the only option is for aircraft to fly straight ahead to reach the 500 ft minimum turn height.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure minimises the number of track miles flown.			

3.1.14 SID Option 13 Conclusion

Given the location of both the airport and the town of Ramsgate, it is not possible to design departure procedures from Runway 10 that avoid overflight of the town. The aim of this procedure is to keep the amount of overflight of populated areas to an absolute minimum and to reach the sea in the shortest possible distance. Extending the procedure to the east before any turns would also ensure clearance from the arrival routes for London airports in the area and allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload.

Design Principle Evaluation	OPTION NO: 14		
Option Name: Runway 10 South to East	**ACCEPT**		
Description of Option: After take-off, aircraft continue straight ahead on runway heading for approximately 5 nautical miles before turning right onto a southerly heading. Once abeam DVR, aircraft would turn left onto an easterly heading to route towards the FIR boundary.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be over populated areas of Ramsgate before achieving the minimum necessary height to make any turns. Therefore continuing straight ahead until over the sea will minimise the impact of noise on the residents of Ramsgate.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in Ramsgate that are under or close to the departing flight path. The distance from the end of the runway to over the sea is only 2.3 nautical miles. It will not be possible to design a procedure that completely avoids all these locations. Aircraft climbing straight ahead without turns over the town will minimise the impact of noise on these areas.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: By extending east before any turns are made, the procedure will avoid any conflict with the arrival routes for London airports therefore allowing Continuous Climb operations and direct routing, which will minimise aircraft emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: It is not possible to create multiple overland routes to spread the noise burden because the only option is for aircraft to fly straight ahead to reach the 500 ft minimum turn height.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Depending on the position that the route crosses the FIR boundary, there may be scope to design a more direct route to reduce the track miles.			

3.1.15 SID Option 14 Conclusion

Given the location of both the airport and the town of Ramsgate, it is not possible to design departure procedures from Runway 10 that avoid overflight of the town because they must fly straight ahead to 500ft before making any turn. The aim of this procedure is to keep the amount of overflight of populated areas to an absolute minimum and to reach the sea in the shortest possible distance. Extending the procedure to the east before any turns would also ensure clearance from the arrival routes for London airports in the area and allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload. Following discussion with NATS, this route could be amended to give a more direct route to the reporting point KONAN for crossing the FIR boundary into European airspace.

Design Principle Evaluation	OPTION NO: 15		
Option Name: Runway 10 South to West	**ACCEPT**		
Description of Option: After take-off, aircraft continue straight ahead on runway heading for approximately 5 nautical miles before turning right onto a southerly heading. Once abeam DVR, aircraft would turn right onto a westerly heading to route direct to DVR to join the en-route network.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be over populated areas of Ramsgate before achieving the minimum necessary height to make any turns. Therefore continuing straight ahead until over the sea will minimise the impact of noise on the residents of Ramsgate. Aircraft may need to remain at approximately 7,000 ft until laterally separated to the west of the London airport arrivals procedures, which would have further impact on areas of south Kent, including Dover and Folkestone.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes in Ramsgate that are under or close to the departing flight path. The distance from the end of the runway to over the sea is only 2.3 nautical miles. It will not be possible to design a procedure that completely avoids all these locations. Aircraft climbing straight ahead without turns over the town will minimise the impact of noise on these areas.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Due to the confliction with the arrival routes to London airports, aircraft will not be able to perform Continuous Climb operations and will be capped at approximately 7,000 ft until separated to the west of the arrival route in the vicinity of Dover.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: It is not possible to create multiple overland routes to spread the noise because the only option is for aircraft to fly straight ahead to reach the 500 ft minimum turn height.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Extending to the east before turning south will increase the number of track miles but not significantly.			

3.1.16 SID Option 15 Conclusion

Given the location of both the airport and the town of Ramsgate, it is not possible to design departure procedures from Runway 10 that avoid overflight of the town. The aim of this procedure is to keep the amount of overflight of populated areas to an absolute minimum and to reach the sea in the shortest possible distance. Extending the procedure to the east before any turns would also ensure lateral clearance from the arrival routes for London airports in the area and allow some commonality between Runway 28 and Runway 10 departure routes, which was preferred by NATS to ease controller workload. Following discussion with NATS, this route could be amended to extend the southern leg of the procedure before heading south west towards LYD. This will allow aircraft more space to climb, allowing Continuous Climb operations and avoiding any extended overland track over southern Kent.

Design Principle Evaluation	OPTION NO: Baseline		
Option Name: Transition Baseline (Do Minimum)	**ACCEPT**		
Description of Option: Aircraft would require ATC vectoring for transition from the en-route network to join the approach procedure.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: ATC monitoring would be required to provide safe separation from known or unknown traffic.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Key outcomes of Airspace Modernisation (efficient use of airspace and enabling integration, avoiding flight delays by better managing the airspace network and improving environmental performance by reducing emissions and by better managing noise) are unlikely to be met.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft routing would vary depending on where the aircraft have come from with the likelihood of flights over east Kent. The burden of noise is likely to be spread, reducing an individual's exposure, but the total number of population affected will be high.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would use the most direct routing available where possible with no consideration given to the impact on areas particularly sensitive to noise.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would use the most direct routing available where possible and would give no consideration to other aviation in the local area.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft are unlikely to be able to perform Continuous Descent operations with early descents and lower altitudes being likely. Aircraft are more likely to require avoiding action against VFR aviation traffic, increasing track miles and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft routing would vary depending on where the aircraft have come from with the likelihood of flights over east Kent, which would result in a spread of the noise burden.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Direct routing to join the approach procedure would be likely, reducing the number of track miles flown. However, aircraft are more likely to have avoiding action against other aviation if not following published and predictable routes, increasing the total track miles flown.			

3.1.17 Transition Do Minimum Option Conclusion

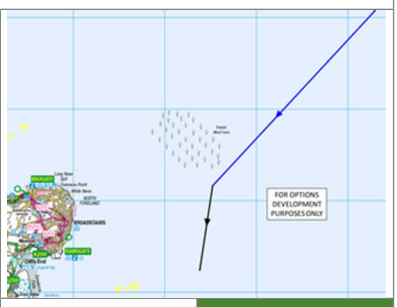
The Transition Do Minimum option would not meet key outcomes of the Airspace Modernisation Strategy, specifically reducing emissions and better noise management.

Design Principle Evaluation	OPTION NO: 16		
Option Name: Runway 28 from North (JACKO)	**ACCEPT**		
Description of Option: Aircraft route via JACKO, which is already used as a procedural point for arrivals at London airports, and then route direct to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance and minimises the track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure represents the most direct route to the approach procedure.			

3.1.18 Transition Option 16 Conclusion

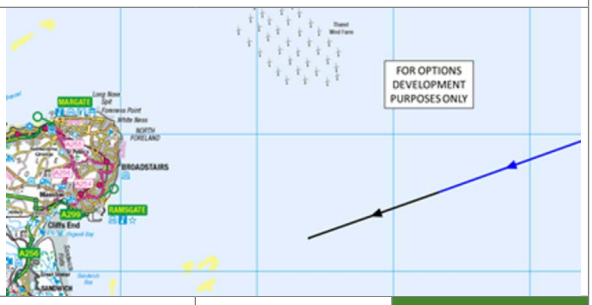
This procedure remains over the sea at all times and will have very minimal impact.

Design Principle Evaluation	OPTION NO: 17		
Option Name: Runway 28 from North East (SUMUM)	**ACCEPT**		
Description of Option: Aircraft route via the FIR boundary crossing at SUMUM, which is already used as a procedural point for arrivals at London airports, and then route direct to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance and minimises the track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure represents the most direct route to the approach procedure.			

3.1.19 Transition Option 17 Conclusion

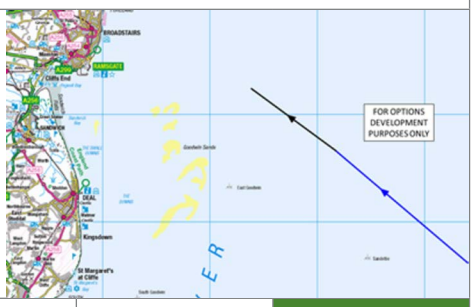
This procedure remains over the sea at all times and will have very minimal impact.

Design Principle Evaluation	OPTION NO: 18		
Option Name: Runway 28 from East (RAPIX)	**ACCEPT**		
Description of Option: Aircraft route via the FIR boundary crossing point direct to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance and minimises the track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure represents the most direct route to the approach procedure.			

3.1.20 Transition Option 18 Conclusion

This procedure remains over the sea at all times and will have very minimal impact.

Design Principle Evaluation	OPTION NO: 19		
Option Name: Runway 28 from South East (KONAN)	**ACCEPT**		
Description of Option: Aircraft route via the FIR boundary crossing at KONAN and then route direct to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance and minimises the track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure represents the most direct route to the approach procedure.			

3.1.21 Transition Option 19 Conclusion

This procedure remains over the sea at all times and will have very minimal impact.

Design Principle Evaluation	OPTION NO: 20		
Option Name: Runway 28 from South (OKVAP)	**ACCEPT**		
Description of Option: Aircraft route via OKVAP, which is already used as a procedural point for arrivals at London airports, and then route direct to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance and minimises the track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure represents the most direct route to the approach procedure.			

3.1.22 Transition Option 20 Conclusion

This procedure remains over the sea at all times and will have very minimal impact.

Design Principle Evaluation	OPTION NO: 21		
Option Name: Runway 10 from North to 2,500 ft Approach	**ACCEPT**		
Description of Option: Aircraft would follow the London City Airport Transition Arrival Procedure from GODLU in the south or JACKO in the north, to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance. For aircraft joining this procedure from the south, this is not the most direct routing which will mean more track miles and an associated increase in fuel use and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times. This procedure could be used to spread the noise burden from other procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft joining this procedure from the south, this is not the most direct routing which will mean more track miles flown.			

3.1.23 Transition Option 21 Conclusion

Stakeholders expressed a preference for options that moved routes away from urban areas and maximising the flight paths over the sea. Fitting Manston procedures into existing arrivals route flow would not restrict other airport's arrivals traffic so would be a good option.

Design Principle Evaluation	OPTION NO: 22		
Option Name: Runway 10 from South to 2,500 ft Approach (East)	**REJECT**		
Description of Option: Aircraft would leave the en-route network at the reporting point EMKAD and route to the south of Faversham to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. Aircraft will route through an area used by gliders for aerobatic activities. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure routes over rural areas, avoiding large built-up areas and villages and although this area will have low ambient noise, the aircraft will be in the descent and will have lower power settings.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route passes close to a number of schools but aircraft should be above 4,000 ft where noise affects are lower. The route also crosses the Kent Downs AONB.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, this area of Kent is used extensively for gliding operations, specifically from Challock airfield.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, joining the approach procedure from this direction will vastly reduce the number of track miles, and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Implementing all of the Transition procedure options proposed for Runway 10, different options could be utilised at different times to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, this procedure represents the minimum number of track miles required to join the approach procedure.			

3.1.24 Transition Option 22 Conclusion

Although there were no specific objections to this Transition procedure, stakeholders expressed a preference for the more western procedure (option 23) due to the shorter transit over the AONB and because aircraft would remain within Controlled Airspace for longer, thereby minimising the impact on glider operations. From a network perspective, it would be difficult to integrate the descent of Manston arrival traffic in order to leave the network at EMKAD against the flow of outbound climb-out traffic from the London TMA, which uses the same network route. However, when traffic density was low, this would be a good option. This option does not meet the highest priority Design Principle with significant safety concerns.

Design Principle Evaluation	OPTION NO: 23		
Option Name: Runway 10 from South to 2,500 ft Approach (West)	**ACCEPT**		
Description of Option: Aircraft would leave the en-route network at the reporting point EMKAD and route to the west of Faversham to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure routes over rural areas, avoiding large built-up areas and villages and although this area will have low ambient noise, the aircraft will be in the descent and will have lower power settings.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route passes close to a number of schools but aircraft should be above 4,000 ft where noise effects are lower. The route also crosses the Kent Downs AONB.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, joining the approach procedure from this direction will vastly reduce the number of track miles, and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Implementing all of the Transition procedure options proposed for Runway 10, different options could be utilised at different times to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, this procedure represents the minimum number of track miles required to join the approach procedure.			

3.1.25 Transition Option 23 Conclusion

For aircraft arriving from the south via EMKAD, this option was preferred by those stakeholders that expressed a preference. This option has a shorter route across the Kent Downs AONB and will therefore have less of an impact on the tranquillity of the area. The route also remains inside the London TMA for longer, where the base height is 3,500 ft amsl, which will have less of an impact on gliding operations in the area. This routing is, however, very close to the Southend Airport Control Area (CTA) 8, which has a base height of 3,500 ft. From a network perspective, it would be difficult to integrate the descent of Manston arrival traffic in order to leave the network at EMKAD against the flow of outbound climb-out traffic from the London TMA, which uses the same network route. However, when traffic density was low, this would be a good option.

Design Principle Evaluation	OPTION NO: 24		
Option Name: Runway 10 from North to 3,000 ft Approach	**ACCEPT**		
Description of Option: Aircraft would follow the London City Airport Transition Arrival Procedure from GODLU in the south or JACKO in the north, to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure would incorporate a continuous descent profile at optimum aircraft performance. For aircraft joining this procedure from the south, this is not the most direct routing which will mean more track miles and an associated increase in fuel use and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure remains over the sea at all times. This procedure could be used to spread the noise burden from other procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft joining this procedure from the south, this is not the most direct routing which will mean more track miles flown.			

3.1.26 Transition Option 24 Conclusion

Stakeholders expressed a preference for options that moved routes away from urban areas and maximising the flight paths over the sea. Fitting Manston procedures into existing arrivals route flow would not restrict other airport's arrivals traffic so would be a good option. Aircraft would need to join the approach procedure further from the airport to accommodate the 3,000 ft final approach height, bringing this procedure closer to the Southend Airport proposed additional CTAs.

Design Principle Evaluation	OPTION NO: 25		
Option Name: Runway 10 from South to 3,000 ft Approach (East)	**REJECT**		
Description of Option: Aircraft would leave the en-route network at the reporting point EMKAD and route to the south of Faversham to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. Aircraft will route through an area used by gliders for aerobatic activities. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure routes over rural areas, avoiding large built-up areas and villages and although this area will have low ambient noise, the aircraft will be in the descent and will have lower power settings.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route passes close to a number of schools but aircraft should be above 4,000 ft where noise affects are lower. The route also crosses the Kent Downs AONB.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, this area of Kent is used extensively for gliding operations, specifically from Challock airfield.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, joining the approach procedure from this direction will vastly reduce the number of track miles, and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Implementing all of the Transition procedure options proposed for Runway 10, different options could be utilised at different times to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, this procedure represents the minimum number of track miles required to join the approach procedure.			

3.1.27 Transition Option 25 Conclusion

Although there were no specific objections to this Transition procedure, stakeholders expressed a preference for the more western procedure (option 26) due to the shorter transit over the AONB and because aircraft would remain within Controlled Airspace for longer, thereby minimising the impact on glider operations. From a network perspective, it would be difficult to integrate the descent of Manston arrival traffic in order to leave the network at EMKAD against the flow of outbound climb-out traffic from the London TMA, which uses the same network route. However, when traffic density was low, this would be a good option. This option does not meet the highest priority Design Principle with significant safety concerns.

Design Principle Evaluation	OPTION NO: 26		
Option Name: Runway 10 from South to 3,000 ft Approach (West)	**ACCEPT**		
Description of Option: Aircraft would leave the en-route network at the reporting point EMKAD and route to the west of Faversham to join the approach 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 will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure routes over rural areas, avoiding large built-up areas and villages and although this area will have low ambient noise, the aircraft will be in the descent and will have lower power settings.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route passes close to a number of schools but aircraft should be above 4,000 ft where noise affects are lower. The route also crosses the Kent Downs AONB.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, joining the approach procedure from this direction will vastly reduce the number of track miles, and therefore emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Implementing all of the Transition procedure options proposed for Runway 10, different options could be utilised at different times to spread the burden of noise more equitably.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: For aircraft arriving from the west, this procedure represents the minimum number of track miles required to join the approach procedure.			

3.1.28 Transition Option 26 Conclusion

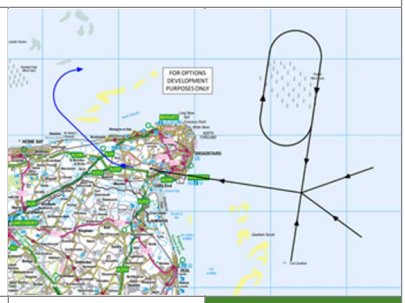
For aircraft arriving from the south via EMKAD, this option was preferred by those stakeholders that expressed a preference. This option has a shorter route across the Kent Downs AONB and will therefore have less of an impact on the tranquillity of the area. The route also remains inside the London TMA for longer, where the base height is 3,500 ft amsl, which will have less of an impact on gliding operations in the area. This routing is, however, very close to the Southend Airport Control Area (CTA) 8, which has a base height of 3,500 ft. From a network perspective, it would be difficult to integrate the descent of Manston arrival traffic in order to leave the network at EMKAD against the flow of outbound climb-out traffic from the London TMA, which uses the same network route. However, when traffic density was low, this would be a good option.

Design Principle Evaluation	OPTION NO: Baseline		
Option Name: Approach Procedure Baseline (Do Minimum)	**ACCEPT**		
Description of Option: Without any promulgated approach procedures, aircraft would have to fly a visual approach without lateral or vertical guidance.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: ATC monitoring would be required to provide safe separation from known or unknown traffic.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Key outcomes of Airspace Modernisation are unlikely to be met. Airports are required to introduce procedures that have been designed to satellite navigation standards.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft conducting visual approaches are more likely to follow different tracks over the ground producing a greater noise impact. Greater likelihood of an unstable approach and aircraft therefore needing to carry out a Missed Approach Procedure and conducting further approaches, therefore increasing the noise impact.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No consideration would be given to noise on particularly sensitive areas by aircraft conducting a visual approach.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment:			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft conducting a visual approach are more likely to use more power than an automated approach. Greater likelihood of aircraft needing to carry out a Missed Approach Procedure and conducting further approaches, therefore increasing emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft conducting visual approaches are more likely to follow different tracks over the ground therefore spreading the noise burden more.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Greater likelihood of aircraft needing to carry out a Missed Approach Procedure and conducting further approaches, therefore increasing the number of track miles flown.			

3.1.29 Approach Procedure Do Minimum Option Conclusion

The Approach Procedure Do Minimum option would not meet key outcomes of the Airspace Modernisation Strategy, specifically the introduction of procedures designed to satellite navigation standards.

Design Principle Evaluation	OPTION NO: 27		
Option Name: Runway 28 ILS/RNAV MAP North (East)	**ACCEPT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 2,000 ft on a 3° glidepath. MAP – an initial right-hand turn onto a north westerly heading until over the sea then a further right-hand turn to hold over the sea. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The initial part of the procedure will be over the sea. Aircraft will cross the coast at Ramsgate only 2.3 nautical miles from touchdown and must be aligned to the runway, so it is not possible to avoid overflight of the town. The MAP is over a rural area of Kent and avoids large built-up areas and villages. This procedure follows the shortest route to the coast, after which, aircraft will remain over the sea.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under, or close to, the approach path. It is not possible to avoid overflight at this range from touchdown. The MAP crosses a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures due to the constraints of aircraft having to be aligned to runway on approach.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.30 Approach Procedure Option 27 Conclusion

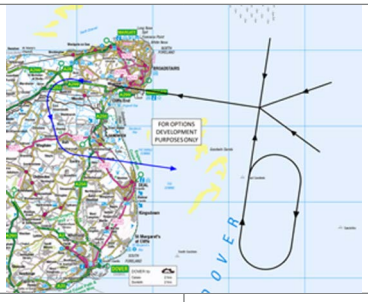
Stakeholder responses expressed preference for routes that minimised the impact on residents and maximised the use of flight paths over the sea. This option was preferred since the MAP was furthest from the village of St Nicholas-At-Wade.

Design Principle Evaluation	OPTION NO: 28		
Option Name: Runway 28 ILS/RNAV MAP North (West)	**ACCEPT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 2,000 ft on a 3° glidepath. MAP – continue on runway heading initially before a right-hand turn onto a north westerly heading until over the sea then a further right-hand turn to hold over the sea. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The initial part of the procedure will be over the sea. Aircraft will cross the coast at Ramsgate only 2.3 nautical miles from touchdown, so it is not possible to avoid overflight of the town. The MAP is over a rural area of Kent and avoids large built-up areas and villages, although is closer to the village of St Nicholas-At-Wade, after which, aircraft will remain over the sea.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under, or close to, the approach path. It is not possible to avoid overflight at this range from touchdown. The MAP crosses a narrow section of the Thanet Coast SSSI as it crosses the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This route will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.31 Approach Procedure Option 28 Conclusion

Stakeholder responses expressed preference for routes that minimised the impact on residents and maximised the use of flight paths over the sea. This option is virtually identical to the previous option, although the MAP is closer to the village of St Nicholas-At-Wade.

Design Principle Evaluation	OPTION NO: 29		
Option Name: Runway 28 ILS/RNAV MAP South	**REJECT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 2,000 ft on a 3° glidepath. MAP – continue on runway heading initially before a left-hand turn onto a southerly heading. A further left-hand turn onto east until over the sea direct to the hold over the sea. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. The MAP routes overland through an area used by gliders. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The initial part of the procedure will be over the sea. Aircraft will cross the coast at Ramsgate only 2.3 nautical miles from touchdown, so it is not possible to avoid overflight of the town. The MAP avoids large built-up areas, the extended overland portion is over a rural area of east Kent and will pass close by numerous villages and hamlets with low ambient noise before reaching the sea.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes close to the flight path. The MAP crosses the Sandwich Bay to Hacklinge Marshes SSSI before reaching the coast.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Although the route will not impose any restrictions on other aviation users, the MAP is over an area of Kent used for gliding operations.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance. The route has been extended to the south to avoid the town of Sandwich, therefore increasing the number of track miles flown and subsequent emissions.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The number of track miles flown is greater than the minimum possible due to avoiding the town of Sandwich.			

3.1.32 Approach Procedure Option 29 Conclusion

Stakeholder responses expressed preference for routes that minimised the impact on residents and maximised the use of flight paths over the sea. This MAP for this option has an extended overland portion with an associated impact on a number of villages in the area.

Design Principle Evaluation	OPTION NO: 30		
Option Name: Runway 10 ILS/RNAV 2,500 ft Approach MAP North	**ACCEPT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 2,500 ft on a 3° glidepath. The eastern of the southern Initial Approach segments will not be utilised due to the Transition to this part of the procedure (Option 22) being Rejected due to a safety conflict with gliders. MAP – continue on runway heading initially until over the sea before a left-hand turn onto a northerly heading initially before a further left-hand turn onto west direct to the hold over the sea. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Initial Approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The Intermediate and Final Approach segments are unable to avoid the town of Herne Bay due to the location and orientation of the runway. The MAP goes over the town of Ramsgate, which is unavoidable due to the location.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under or close to the approach and MAP flight paths. Given their location in respect to the position of the runway, it will not be possible to avoid these areas.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The location of the Hold would be restrictive for GA aircraft transiting north across the Thames Estuary, which are already constrained by Southend Airport CTAs and Shoeburyness Danger Area. The Hold is also close to both the Southend CTAs and the Danger Area.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.33 Approach Procedure Option 30 Conclusion

Stakeholders expressed concern over a possible confliction with GA aircraft in the vicinity of Herne Bay which could be mitigated by stipulating that the procedure should not be joined below 2,500 ft. The procedure will not be joined below this height, although aircraft will need to commence descent over Herne Bay to follow the correct procedure. As a result of the concerns over the location of the Hold with respect to Southend CTA, Shoeburyness Danger Area and conflict with transiting GA, the position of the Hold will be moved further east, remaining over the sea, and will be co-located with the Hold for the Runway 10 MAP. This change will have no adverse impact on the evaluation of this procedure against the Design Principles, but will improve the assessment of Design Principle 5 to 'Met'.

Design Principle Evaluation	OPTION NO: 31		
Option Name: Runway 10 ILS/RNAV 2,500 ft Approach MAP South	**REJECT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 2,500 ft on a 3° glidepath. The eastern of the southern Initial Approach segments will not be utilised due to the Transition to this part of the procedure (Option 22) being Rejected due to a safety conflict with gliders. MAP – continue on runway heading initially until over the sea before a right-hand turn onto a southerly heading initially before a further right-hand turn onto west direct to the hold. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. The MAP routes overland through an area used extensively by gliders. In addition, the Hold is positioned overhead Challock airfield and airspace used for gliding activities. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Initial Approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The Intermediate and Final Approach segments are unable to avoid the town of Herne Bay due to the location and orientation of the runway. The MAP goes over the town of Ramsgate, which is unavoidable due to the location. The overland transit to the Hold and the position of the Hold will have an impact on the rural communities of east Kent.			

Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under or close to the approach flight path. Given their location in respect to the position of the runway, it will not be possible to avoid these areas. There are also numerous schools and care homes close to the MAP flight path. The Hold is positioned at 3,000 ft over the Kent Downs AONB and will have an impact on the tranquillity where existing background noise is extremely low.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Hold is located close to Challock airfield and Kent Gliding Club and is in a location used extensively both for Glider Tow operations and gliding activities, including spin and aerobatic training.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.34 Approach Procedure Option 31 Conclusion

This option, and specifically the MAP, has the potential to have a negative impact on large areas of east Kent in terms of noise, tranquillity and other aviation users. This option does not meet the highest priority Design Principle with significant safety concerns.

Design Principle Evaluation	OPTION NO: 32		
Option Name: Runway 10 ILS/RNAV 3,000 ft Approach MAP North	**ACCEPT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 3,000 ft on a 3° glidepath. The eastern of the southern Initial Approach segments will not be utilised due to the Transition to this part of the procedure (Option 25) being Rejected due to a safety conflict with gliders. MAP – continue on runway heading initially until over the sea before a left-hand turn onto a northerly heading initially before a further left-hand turn onto west direct to the hold over the sea. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Initial Approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The Intermediate and Final Approach segments are unable to avoid the town of Herne Bay due to the location and orientation of the runway. The MAP goes over the town of Ramsgate, which is unavoidable due to the location.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under or close to the approach and MAP flight paths. Given their location in respect to the position of the runway, it will not be possible to avoid these areas.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The location of the Hold would be restrictive for GA aircraft transiting north across the Thames Estuary, which are already constrained by Southend Airport CTAs and Shoeburyness Danger Area. The Hold also infringes both the Danger Area and the proposed additional CTAs at Southend Airport.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.35 Approach Procedure Option 32 Conclusion

Stakeholders expressed concern over a possible confliction with GA aircraft in the vicinity of Herne Bay which could be mitigated by stipulating that the procedure should not be joined below 2,500 ft. The procedure will not be joined below this height, although aircraft will need to descend over Herne Bay to follow the correct procedure. As a result of the concerns over the location of the Hold with respect to Southend CTA, Shoeburyness Danger Area and conflict with transiting GA, the position of the Hold will be moved further east, remaining over the sea, and will be co-located with the Hold for the Runway 10 MAP. This change will have no adverse impact on the evaluation of this procedure against the Design Principles, but will improve the assessment of Design Principle 5 to 'Met'.

Design Principle Evaluation	OPTION NO: 33		
Option Name: Runway 10 ILS/RNAV 3,000 ft Approach MAP South	**REJECT**		
Description of Option: The procedure will commence from approximately 4,000 ft. The procedure could be a T-bar or Y-bar arrangement. Aircraft will commence descent from 3,000 ft on a 3° glidepath. The eastern of the southern Initial Approach segments will not be utilised due to the Transition to this part of the procedure (Option 25) being Rejected due to a safety conflict with gliders. MAP – continue on runway heading initially until over the sea before a right-hand turn onto a southerly heading initially before a further right-hand turn onto west direct to the hold. Aircraft will climb to 3,000 ft to hold.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements. The MAP routes overland through an area used extensively by gliders. In addition, the Hold is positioned overhead Challock airfield and airspace used for gliding activities. Gliders will not be detectable by Primary Surveillance Radar and may not be radio or transponder equipped. Unable to adequately mitigate and an LOA/MOU not likely to offer robust separation.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure has been developed through coordination with NATS and other local airports as part of the FASI-S programme such that it accords with the published Airspace Modernisation Strategy.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Initial Approach segments are either over the sea, or over rural areas, avoiding large built-up areas and villages. The Intermediate and Final Approach segments are unable to avoid the town of Herne Bay due to the location and orientation of the runway. The MAP goes over the town of Ramsgate, which is unavoidable due to the location. The overland transit to the Hold and the position of the Hold will have an impact on the rural communities of east Kent.			

Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There are a number of schools and care homes under or close to the approach flight path. Given their location in respect to the position of the runway, it will not be possible to avoid these areas. There are also numerous schools and care homes close to the MAP flight path. The Hold is positioned at 3,000 ft over the Kent Downs AONB and will have an impact on the tranquillity where existing background noise is extremely low.			
Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Hold is located close to Challock airfield and Kent Gliding Club and is in a location used extensively both for Glider Tow operations and gliding activities, including spin and aerobatic training.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will be designed to be flown at optimum aircraft performance and with the minimum practicable track miles flown.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Alternative procedures are not developed for individual approach procedures.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure represents the minimum practicable track miles flown.			

3.1.36 Approach Procedure Option 33 Conclusion

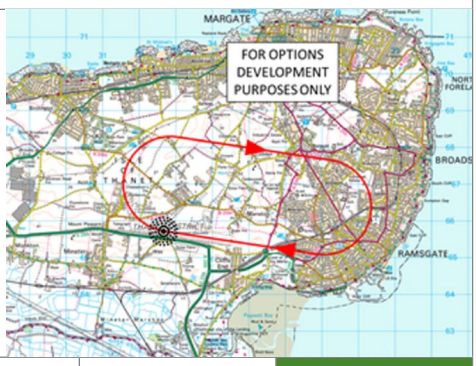
This option, and specifically the MAP, has the potential to have a negative impact on large areas of east Kent in terms of noise, tranquillity and other aviation users. This option does not meet the highest priority Design Principle with significant safety concerns.

Design Principle Evaluation	OPTION NO: Baseline		
Option Name: NDB Hold Baseline (Do Minimum)	**ACCEPT**		
Description of Option: GA aircraft requiring to hold will be able to hold at any location and any height, VFR within the Rules of the Air.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would be operating VFR and would adhere to 'See and Avoid' principles.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the Ends of Modernisation Outside Controlled Airspace is to improve the situational awareness of all aircraft and aerodromes operating outside controlled airspace.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be holding VFR in Class G airspace and could be as low as 500 ft above ground level (agl). This only applies to GA light aircraft, so noise footprint will be relatively low.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be holding VFR in Class G airspace and could be as low as 500 ft above ground level (agl). Aircraft may not be aware of any local noise sensitive areas. This only applies to GA light aircraft, so noise footprint will be relatively low.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be holding VFR in Class G airspace and could be as low as 500 ft above ground level (agl).			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft could be holding in multiple locations in Class G airspace, at the pilot's discretion.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			

3.1.37 NDB Hold Do Minimum Option Conclusion

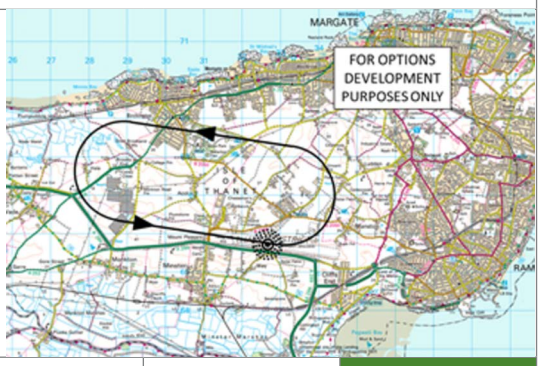
This option is likely to have an increased environmental impact.

Design Principle Evaluation	OPTION NO: 34		
Option Name: NDB Hold North East	**ACCEPT**		
Description of Option: The Hold will be based on the position of the NDB and will be a right-hand racetrack orientated along the runway direction. The NDB is at the end of the westbound leg. Each leg will be one minute at an altitude of 2,000 ft.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the Ends of Modernisation Outside Controlled Airspace is to improve the situational awareness of all aircraft and aerodromes operating outside controlled airspace, which will be achieved with the introduction of a Hold procedure.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would be required to hold over the towns of Ramsgate and Broadstairs, including a turn portion of the Hold.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft would be required to hold over the towns of Ramsgate and Broadstairs, including a turn portion of the Hold, in the vicinity of a number of schools and care homes.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: A single Hold position would be required. It would not be practicable, or safe, to have multiple Hold positions activated at different times. Use will be for GA light aircraft only and the Hold is not anticipated to be used often.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			

3.1.38 NDB Hold Option 34 Conclusion

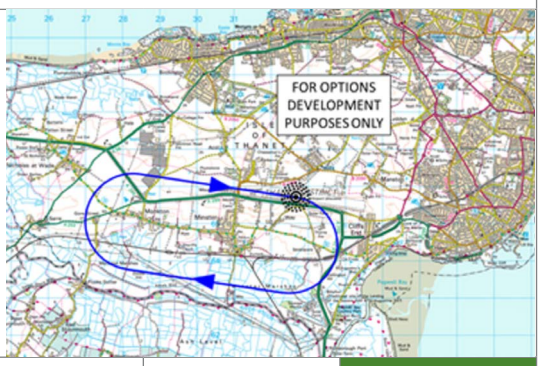
This option will have an impact of noise on urban areas.

Design Principle Evaluation	OPTION NO: 35		
Option Name: NDB Hold North West	**ACCEPT**		
Description of Option: The Hold will be based on the position of the NDB and will be a left-hand racetrack orientated along the runway direction. The NDB is at the end of the eastbound leg. Each leg will be one minute at an altitude of 2,000 ft.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the Ends of Modernisation Outside Controlled Airspace is to improve the situational awareness of all aircraft and aerodromes operating outside controlled airspace, which will be achieved with the introduction of a Hold procedure.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft in the Hold may overfly residential areas of Birchington. Aircraft at slower speeds and with a tighter turn radius may not overfly the village.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The flightpath as shown overflies a school in Birchington. Aircraft at slower speeds and with a tighter turn radius may not overfly this location.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: A single Hold position would be required. It would not be practicable, or safe, to have multiple Hold positions activated at different times. Use will be for GA light aircraft only and the Hold is not anticipated to be used often.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			

3.1.39 NDB Hold Option 35 Conclusion

This option will have an impact of noise on urban areas.

Design Principle Evaluation	OPTION NO: 36		
Option Name: NDB Hold South West	**ACCEPT**		
Description of Option: The Hold will be based on the position of the NDB and will be a right-hand racetrack orientated along the runway direction. The NDB is at the end of the eastbound leg. Each leg will be one minute at an altitude of 2,000 ft.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure will be designed to meet acceptable levels of flight safety. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the Ends of Modernisation Outside Controlled Airspace is to improve the situational awareness of all aircraft and aerodromes operating outside controlled airspace, which will be achieved with the introduction of a Hold procedure.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The Hold is located in a rural area of east Kent and avoids all villages and hamlets.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: The procedure avoids all areas sensitive to noise.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: This procedure will have minimum impact on other airspace users.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: A single Hold position would be required. It would not be practicable, or safe, to have multiple Hold positions activated at different times. Use will be for GA light aircraft only and the Hold is not anticipated to be used often.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will only hold for the minimum time necessary.			

3.1.40 NDB Hold Option 36 Conclusion

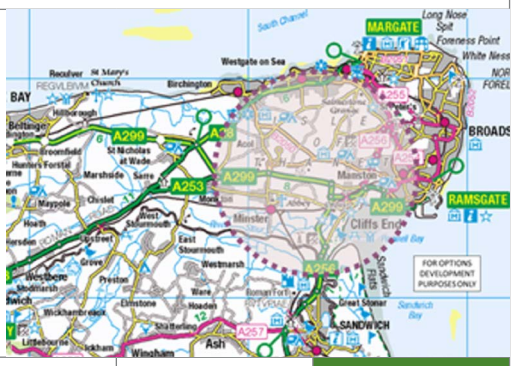
This option was preferred by stakeholders as it avoided overflying the urban settlements of Ramsgate, Birchington and Broadstairs.

Design Principle Evaluation	OPTION NO: Baseline		
Option Name: Regulated Airspace (Do Minimum)	**ACCEPT**		
Description of Option: No form of Regulated Airspace for the protection of air traffic operating in and out of Manston Airport.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: No protection afforded to aircraft during the critical stages of flight. Commercial aircraft will be unable to carry out avoiding action from conflicting air traffic.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the known ends that airspace modernisation is expected to deliver is maintaining and enhancing high aviation safety standards.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Without any regulated airspace, there is an increased likelihood of aircraft requiring avoidance action which will have an impact on noise in the area around the airport.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no change in the impact on noise sensitive areas without any regulated airspace.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no impact on other airspace users without any regulated airspace.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Without any regulated airspace, there is an increased likelihood of aircraft requiring avoidance action which will have an impact on emissions in the area around the airport.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no change in the spread of aircraft noise without any regulated airspace.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Without any regulated airspace, there is an increased likelihood of additional track miles caused by the need for aircraft to carry out avoidance action to avoid conflicts.			

3.1.41 Regulated Airspace Do Minimum Option Conclusion

Regulated airspace is established to give protection to aircraft at the critical stages of flight when departing, arriving and flying in the vicinity of an aerodrome. Not having any regulated airspace for the protection of aircraft will severely impact on flight safety.

Design Principle Evaluation	OPTION NO: 37		
Option Name: Aerodrome Traffic Zone (ATZ)	**ACCEPT**		
Description of Option: Establishment of an Aerodrome Traffic Zone (ATZ) as defined in Article 5 of the Air Navigation Order (ANO) 2016. The zone will extend from the surface to 2,000 ft agl with a radius of 2.5 nautical miles around the midpoint of the runway.			
Design Principle 1: Procedures must be designed to meet acceptable levels of flight safety.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: An ATZ would give protection to aircraft at the critical stages of flight when departing, arriving or flying in the vicinity of the airport. The procedure will be compliant with the required technical criteria and will be consistent and compatible with the appropriate regulatory requirements.			
Design Principle 2: Design options must accord with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: One of the known ends that airspace modernisation is expected to deliver is maintaining and enhancing high aviation safety standards.			
Design Principle 3: Procedures should be designed to minimise the impact of noise below 7,000 feet.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There may be a redistribution of GA traffic in the local area as a result of implementing an ATZ but the impact will be minimal.			
Design Principle 4: Where practicable, designs should seek to minimise the impact of noise on particularly sensitive areas.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There may be a redistribution of GA traffic in the local area as a result of implementing an ATZ but the impact on noise sensitive areas will be minimal.			

Design Principle 5: Designs should minimise the impact on other airspace users in the local area.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: Aircraft will be required to obtain Air Traffic Control (ATC) permission before entering the ATZ. Some GA pilots may choose not to (or be unable to) contact ATZ so will have to avoid the ATZ.			
Design Principle 6: Procedures should be designed that minimise aircraft emissions to reduce air pollution.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no change in the impact of aircraft emissions with the establishment of an ATZ.			
Design Principle 7: Designs should make provision for multiple routes that can be used to spread the noise burden more equitably.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no change in the spread of aircraft noise with the establishment of an ATZ.			
Design Principle 8: Procedures should be designed to minimise the number of track miles flown.	NOT MET	PARTIAL	MET
Summary of Qualitative Assessment: There will be no change in the number of track miles flown with the establishment of an ATZ.			

3.1.42 Regulated Airspace Option 37 Conclusion

One stakeholder supported the establishment of a segregated route structure which would afford controlled airspace protection to commercial air traffic, stating that without this protection, the proposal would not meet acceptable levels of flight safety. Other stakeholders supported the approach for a limited volume of regulated airspace. The establishment of an ATZ is considered the minimum amount of regulated airspace required to meet acceptable safety standards. Anticipated traffic levels at the airport, during the initial years of operation at least, means there is no justification at this point for Controlled Airspace to be established around the airport, although this may be considered in the future.

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 the first column of the table, 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

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Operational Impact																
An analysis of the impact of the change on all airspace users, airfields and traffic levels must be provided, and include an outline concept of operations describing how operations within the new airspace will be managed. Specifically, consideration should be given to:		Evidence of compliance/ mitigation														
a	Impact on IFR general air traffic and operational air traffic or on VFR GA traffic flow in or through the area	1	1	1												
b	Impact on VFR operations (including VFR routes where applicable)	1	1	1												
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															
e	Any flight planning restrictions and/or route requirements															

1 Conflict with gliders in Class G airspace

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Supporting Infrastructure/Resources																
General Requirements		Evidence of compliance/ mitigation														
a	Evidence to support RNAV and conventional navigation as appropriate															
b	Evidence to support primary and secondary surveillance radar (SSR)										2	2	2	2		
c	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															

2 The impact of the presence of wind farms will be assessed during the Initial Options Appraisal with suitable mitigation where necessary
3 The Safety Management Plan will include operating procedures in case of failures
4 The Safety Management Plan will include operating procedures in case of failures

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Airspace and Infrastructure																
General Requirements		Evidence of compliance/ mitigation														
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments															
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.															
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures															
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															

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
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	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements															
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace															
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered															
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests															

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
ATS Route Requirements		Evidence of compliance/ mitigation														
a	There must be sufficient accurate navigational guidance based on in-line VOR/ DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol standards															
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task															
c	All new routes should be designed to accommodate P-RNAV navigational requirements															

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Terminal Airspace Requirements		Evidence of compliance/ mitigation														
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas															
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)															
c	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)															

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
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															

		Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Off-Route Airspace Requirements		Evidence of compliance/ mitigation														
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															
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	5	5	5												

5 Conflict with gliders in Class G airspace

			Runway 28 South (East)	Runway 28 South (Centre)	Runway 28 South (West)	Runway 28 North (East) to North	Runway 28 North (Centre) to North	Runway 28 North (West) to North	Runway 28 North (East) to South	Runway 28 North (Centre) to South	Runway 28 North (West) to South	Runway 28 North (East) to East	Runway 28 North (Centre) to East	Runway 28 North (West) to East	Runway 10 North	Runway 10 South to East	Runway 10 South to West
Environmental Assessment																	
	Theme	Content	Assessment of Impact														
a	Assessment of noise impacts	Consideration of noise impacts	6	6	6		7	7		7	7		7	7			8
b	Assessment of CO_2 emissions	Consideration of the impacts on CO_2 emissions							9	9	9	9	9	9		9	
c	Assessment of local air quality	Consideration of the impacts on local air quality	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on AONB or National Parks		11	11			12			12			12			

Table 4 - Technical Criteria Evaluation of Standard Instrument Departures

6 Extended overland track. Procedure may be capped at 7,000 ft to avoid arrival routes to other London airports
7 Increased impact on the village of St Nicholas-At-Wade
8 Procedure may be capped at 7,000 ft to avoid arrival routes to other London airports
9 Extended track miles, not the most direct route
10 No current airport operations (airport disused) so all departing flights may have an impact on local air quality
11 Proximity to Stodmarsh Nature Reserve and Preston Marshes, both of which are Sites of Special Scientific Interest
12 Proximity to Reculver Country Park Nature Reserve

4.3 Transitions

Operational Impact		Evidence of compliance/ mitigation										
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:		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
a	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area							13			13	
b	Impact on VFR operations (including VFR routes where applicable)							13			13	
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								14			14
e	Any flight planning restrictions and/or route requirements											

13 Conflict with gliders in Class G airspace
14 Operating agreements may be required with Southend Airport due to proximity with CTA

		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
Supporting Infrastructure / Resources												
General Requirements		Evidence of compliance/ mitigation										
a	Evidence to support RNAV and conventional navigation as appropriate											
b	Evidence to support primary and secondary surveillance radar (SSR)	15	15				15			15		
c	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	16	16	16	16	16	16	16	16	16	16	16
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out	16	16	16	16	16	16	16	16	16	16	16
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											

15 The impact of the presence of wind farms will be assessed during the Initial Options Appraisal with suitable mitigation where necessary
16 The Safety Management Plan will include operating procedures in case of failures

		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
Airspace and Infrastructure												
General Requirements		Evidence of compliance/ mitigation										
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments											
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.											
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures											
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											

General Requirements		Evidence of compliance/ mitigation										
		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
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	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements											
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace											
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered								17			17
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests											

17 Operating agreements may be required with Southend Airport due to proximity with CTA

		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
ATS Route Requirements		Evidence of compliance/ mitigation										
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol standards											
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task											
c	All new routes should be designed to accommodate P-RNAV navigational requirements											
Terminal Airspace Requirements		Evidence of compliance/ mitigation										
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas											
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)											
c	Where possible, there shall be suitable linking routes between the proposed terminal airspace and existing en-route airspace structure											

		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
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											

18 Operating agreements may be required with Southend Airport due to proximity with CTA
19 Conflict with gliders in Class G airspace
20 Route crosses the Kent Downs AONB

		Runway 28 from North (JACKO)	Runway 28 from North East (SUMUM)	Runway 28 from East (RAPIX)	Runway 28 from South East (KONAN)	Runway 28 from South (OKVAP)	Runway 10 from North to 2,500 ft	Runway 10 from South to 2,500 ft (East)	Runway 10 from South to 2,500 ft (West)	Runway 10 from North to 3,000 ft	Runway 10 from South to 3,000 ft (East)	Runway 10 from South to 3,000 ft (West)
Off-Route Airspace Requirements		**Evidence of compliance/ mitigation**										
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								18			18
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								19			19
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										
c	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						20	20		20	20

Table 5 - Technical Criteria Evaluation of Transitions

4.4 Instrument Approach Procedures

Operational Impact		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
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**						
a	Impact on IFR general air traffic and operational air traffic or on VFR General Aviation (GA) traffic flow in or through the area			21	22	23	22	23
b	Impact on VFR operations (including VFR routes where applicable)			21	22	23	22	23
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				24	25	24	25
e	Any flight planning restrictions and/or route requirements							

21 Conflict with gliders in Class G airspace
22 The current location of the Hold would impact GA traffic
23 Conflict with gliders in Class G airspace and the current location of the Hold would impact gliding operations
24 The current location of the Hold is close to a Southend Airport CTA and Shoeburyness Danger Area
25 Operating agreements may be required with Southend Airport due to proximity with CTA

		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
Supporting Infrastructure / Resources								
General Requirements		**Evidence of compliance/ mitigation**						
a	Evidence to support RNAV and conventional navigation as appropriate							
b	Evidence to support primary and secondary surveillance radar (SSR)	26	26		26		26	
c	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	27	27	27	27	27	27
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out	27	27	27	27	27	27	27
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							

26 The impact of the presence of wind farms will be assessed during the Initial Options Appraisal with suitable mitigation where necessary
27 The Safety Management Plan will include operating procedures in case of failures

		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
Airspace and Infrastructure								
General Requirements		**Evidence of compliance/ mitigation**						
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments							
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.							
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures							
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							

General Requirements		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
		Evidence of compliance/ mitigation						
h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements							
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace				28	28	28	28
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered							
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests							
ATS Route Requirements		**Evidence of compliance/ mitigation**						
a	There must be sufficient accurate navigational guidance based on in-line VOR/DME or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol standards							
b	Where ATS routes adjoin terminal airspace there shall be suitable link routes as necessary for the ATM task							
c	All new routes should be designed to accommodate P-RNAV navigational requirements							

28 Operating agreements may be required with Southend Airport due to proximity with CTA

Terminal Airspace Requirements		Evidence of compliance/ mitigation						
		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas							
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)							
c	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							

29 The current location of the Hold is close to a Southend Airport CTA and Shoeburyness Danger Area
30 Operating agreements may be required with Southend Airport due to proximity with CTA
31 Conflict with gliders in Class G airspace
32 The current location of the Hold would impact GA traffic
33 Conflict with gliders in Class G airspace and the current location of the Hold would impact gliding operations
34 Increased impact on the village of St Nicholas-At-Wades
35 The MAP is overland
36 No current airport operations (airport disused) so all arriving flights may have an impact on local air quality
37 The MAP crosses the Sandwich Bay to Hacklinge Marshes SSSI
38 The MAP and Hold are located over the Kent Downs AONB

		Runway 28 ILS/RNAV MAP North (East)	Runway 28 ILS/RNAV MAP North (West)	Runway 28 ILS/RNAV MAP South	Runway 10 2,500 ft MAP North	Runway 10 2,500 ft MAP South	Runway 10 3,000 ft MAP North	Runway 10 3,000 ft MAP South
Off-Route Airspace Requirements		**Evidence of compliance/ mitigation**						
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				29	30	29	30
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			31	32	33	32	33
Environmental Assessment								
	Theme	**Content**	**Assessment of Impact**					
a	Assessment of noise impacts	Consideration of noise impacts		34	35		35		35
b	Assessment of CO_2 emissions	Consideration of the impacts on CO_2 emissions							
c	Assessment of local air quality	Consideration of the impacts on local air quality	36	36	36	36	36	36	36
d	Assessment of impacts upon tranquillity	Consideration of any impact upon tranquillity, notably on Areas of Outstanding Natural Beauty or National Parks			37		38		38

Table 6 - Technical Criteria Evaluation of Instrument Approach Procedures

4.5 NDB Hold and Regulated Airspace

Operational Impact		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
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**			
a	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)				
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				
e	Any flight planning restrictions and/or route requirements				

		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
Supporting Infrastructure / Resources					
General Requirements		**Evidence of compliance/ mitigation**			
a	Evidence to support RNAV and conventional navigation as appropriate				
b	Evidence to support primary and secondary surveillance radar (SSR)				
c	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	39	39	39	39
e	Effective responses to the failure modes that will enable the functions associated with airspace to be carried out	39	39	39	39
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				

39 The Safety Management Plan will include operating procedures in case of failures

		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
Airspace and Infrastructure					
General Requirements		**Evidence of compliance/ mitigation**			
a	The airspace structure must be of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to fully contain horizontal and vertical flight activity in both radar and non-radar environments				
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.				
c	The Air Traffic Management system must be adequate to ensure that prescribed separation can be maintained between aircraft within the airspace structure and safe management of interfaces with other airspace structures				
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				

General Requirements		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
		Evidence of compliance/ mitigation			
h	The notification of the implementation of new airspace structures or withdrawal of redundant airspace structures shall be adequate to allow interested parties sufficient time to comply with user requirements				
i	There must be sufficient R/T coverage to support the Air Traffic Management system within the totality of proposed controlled airspace				
j	If the new structure lies close to another airspace structure or overlaps an associated airspace structure, the need for operating agreements shall be considered				
k	Should there be any other aviation activity (low flying, gliding, parachuting, microlight site, etc) in the vicinity of the new airspace structure and no suitable operating agreements or air traffic control procedures can be devised, the change sponsor shall act to resolve any conflicting interests				

ATS Route Requirements		Evidence of compliance/ mitigation			
		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
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				
c	All new routes should be designed to accommodate P-RNAV navigational requirements				

Terminal Airspace Requirements		Evidence of compliance/ mitigation			
		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
a	The airspace structure shall be of sufficient dimensions to contain appropriate procedures, holding patterns and their associated protected areas				
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)				
c	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				

40 Part of the Hold located over Ramsgate and Broadstairs
41 Part of the Hold located over Birchington

Off-Route Airspace Requirements		Evidence of compliance/ mitigation			
		NDB Hold North East	NDB Hold North West	NDB Hold South West	Aerodrome Traffic Zone
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				
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	40	41	
b	Assessment of CO_2 emissions	Consideration of the impacts on CO_2 emissions			
c	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 7 - Technical Criteria Evaluation of NDB Hold and Regulated Airspace

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