Airspace Change Proposal
Stage 2A

Options Development & Design Principle Evaluation

London Southend Airport FASI(S)

ACP-2018-90

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Version	Date	Description of Changes
Version 1	09/11/2022	
Version 1.1	03/11/2023	Changes and updates from Version 1 are summarised below. • 1.1 - Overview – updated • 1.10 – Future Traffic Forecasts – new section • 2.1 – Swathes – updated description and process • 2.2 – Baselines – new redefined baselines and description • 3.1 – Workshops – updated • 3.2 – Feedback – updated • 3.3 – Stage 2 rework additional swathes – new section • 3.4 – ACOG as a stakeholder – new section • 4 – Departure Procedures – new definitions of the baselines and options, new maps to show the amended baselines and swathes. OS maps included. • 5 – Arrival Procedures – new definitions of the baselines and options, new maps to show the amended baselines and swathes. OS maps included. • 6.1 – Methodology – updated • 6.4 – Discounting of Options – new section • 7 – Design Principle Evaluation Summary – updated following the rework on the Design Principle Evaluation document. • Annex A – Additional Options Feedback Session – new • Annex B – Qinetiq/DAATM Meeting Notes – new • Annex D – Feedback for Stage 3 – new • Annex E – Design Principle Evaluation Criteria - updated

Version	Date	Description of Changes
Version 1.2	03/10/2024	Changes and updates from Version 1.1 are summarised below. • 1.3 – AMS Strategic Objectives – New section • 1.11 – Current Operations at London Southend Airport – Updated • 1.13 – Fleet Mix – New section • 1.14 – Future Traffic Forecasts – Updated • 2.2 – Baselines – Background – New section • 2.3 – Baselines – Do Nothing – Updated • 2.4 – Do-minimum – New section • 3 – Stakeholder Engagement – Updated and now includes summaries of what was heard. • 4 – Departure Procedures – Updated and includes new baseline • 5 – Arrival Procedures – Updated and includes new baseline • 6 – Design Principle Evaluation – Updated and new criteria explained • 7 – Design Principle Evaluation Summary – RAG scores updated, and baselines added.

Executive Summary

The Civil Aviation Authority wrote to 21 airports in the Southeast of England (including London Southend Airport) to advise them that it is essential they participate in a programme of Airspace Modernisation. This programme consists of a coordinated attempt to improve the efficiency of airspace usage across the region, whilst implementing the latest technology. It aims to reduce the Environmental impacts associated with aviation.

London Southend Airport passed the Civil Aviation Authority CAP 1616 Stage 1 Gateway in March 2022 and commenced Stage 2 activities. A comprehensive list of options was developed through internal workshops and stakeholder engagement. These options were assessed against the Design Principles developed during Stage 1 of the ACP process.

Workshops were held on the 08th of April 2022, which introduced the List of options to the Stakeholders and our assessment of the Options against the Design Principles they helped develop. Following these workshops stakeholders were invited to take part in an online survey from the 13th of April 2022 to the 16th of May 2022. The survey asked whether the Stakeholders considered the Design Principles were correctly applied and consistent in each option. It also provided an opportunity for stakeholders to comment if they considered this was not the case.

The Feedback from the Stakeholders was incorporated into the Design Principle Evaluation document, which is an Annex to this document and available on the ACP Portal.

London Southend Airport had Gateways for Stage 2 in January 2023 and November 2023, following these gateways recommendations were made by the CAA. These needed to be addressed before this ACP can progress to Stage 3 of the CAP 1616 process.

This document reflects all additional work carried out and forms part of the Stage 2 submission. This report details the comprehensive list of options that were developed for the ACP. It also includes a summary of the Design Principle Evaluation.

London Southend Airport would like to thank stakeholders for their time, consideration, and valuable input and look forward to continuing to work with them to improve our system of flight procedures and our airspace configuration.

Abbreviations

ACOG	Airspace Change Organising Group
ACP	Airspace Change Proposal
AMS	Airspace Modernisation Strategy
AONB	Area of Outstanding Natural Beauty
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management
BKY	Barkway
CAA	Civil Aviation Authority
CAF	Cumulative Analysis Framework
CAP	Civil Aviation Publication
CAT	Commercial Air Transport
CTA	Control Areas
CTR	Control Zones
DAATM	Danger Area Air Traffic Management
DFT	Department for Transport
DME	Distance Measuring Equipment
DP	Design Principle
DPE	Design Principle Evaluation
FAS	Future Airspace Strategy
FASI-S	Future Airspace Implementation South
FASI-N	Future Airspace Implementation North
GA	General Aviation
GNSS	Global Navigation Satellite Systems
IAP	Instrument Approach Procedure
ICAO	International Civil Aviation Organisation
IOA	Initial Options Appraisal
LCY	London City Airport
LSA	London Southend Airport
LTMA	London Terminal Manoeuvring Area
MAG	Manchester Airport Group
MoD	Ministry of Defence
NAP	Noise Abatement Procedures

NM	Nautical Mile
NERL	NATS En-Route Limited
NTK	Noise and Track Keeping
PBN	Performance-Based Navigation
PDP	Preferential Departure Route
RNAV	Area Navigation
RAG	Red, Amber, Green
SAC	Special Areas of Conservation
SAM	Scheduled Ancient Monuments
SID	Standard Instrument Departures
SSSI	Sites of Special Scientific Interest
SME	Subject Matter Expert
SPA	Special Protection Areas
STAR	Standard Arrival
UK	United Kingdom

References

[1] Commission Implementing Regulation EU 2018/1048, PBN-IR

[2] Civil Aviation Authority, CAP 1616, 1 March 2021, Version 4

[3] Civil Aviation Authority, CAP 2312B: UK Airspace Change Masterplan Iteration 2, 11 May 2022, Version 2.2

[4] Civil Aviation Authority, Decision Letter on ACP-2017-25, 23 January 2015

[5] ACP-2017-25, Introduction of CTA 10X and CTA 11, 31 March 2017

[6] CPJ-5641-PRE-022, LSA Stakeholder Workshop Stage 2a Presentation, 8 April 2022

[7] CPJ-5641-RPT-020, LSA Design Principle Evaluation, 9 November 2022

[8] Planning Obligation by Agreement, Pursuant to Section 106 of the Town and Country Planning Act 1990 and Section 111 of the Local Government Act 1972 in relation to land at London Southend Airport, Southend on Sea, Essex

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1. Introduction

1.1. Overview

1.1.1. The London Southend Airport (LSA) Future Airspace project has reached Stage 2 - Develop and Assess, of the Civil Aviation Publication (CAP)1616 process. This Stage is made up of 2 components: Step 2A – Option development and Step 2B – Options appraisal. This report covers Step 2A and is complemented by the Options Appraisal report which relates to Step 2B.

1.1.2. Step 2A requires the Change Sponsor to develop an initial comprehensive list of options that address the Statement of Need and align with the Design Principles (DPs) from Stage 1. This report describes how the comprehensive list of Arrival and Departure options has been derived and tested with stakeholders, in the Design Principle evaluation (DPE).

1.1.3. This report is part of a set of documents submitted to the CAA at Gateway 2 of the CAP1616 process. The submitted documents are available on the Airspace Change Portal and comprise of:

- ACP Options Development and Design Principle Evaluation.
- LSA Design Principle Evaluation.
- Initial Options Appraisal Stage 2B.

1.1.4. This report begins by providing an outline of relevant UK airspace governance. This is followed by sections that look at the Airspace Modernisation Strategy (AMS), the CAP1616 Airspace Change Process, the DPs adopted and Current Operations at LSA.

1.2. Airspace Modernisation Strategy

1.2.1. The Civil Aviation Authority (CAA) published its Airspace Modernisation Strategy (AMS) in December 2018. This Strategy was developed in response to the Department for Transport (DFT), tasking the CAA with preparing and maintaining a co-ordinated plan for the use of the United Kingdom (UK) Airspace up to 2040, including the modernisation.

1.2.2. The AMS, which replaced the Future Airspace Strategy (FAS), sets out the ways, the means and ends of modernising airspace through 15 initiatives intended to modernise the Design, Technology and Operations of airspace. Amongst other initiatives, this includes a fundamental redesign of the Terminal route network using precise and flexible satellite navigation.

1.2.3. It describes what the AMS must deliver, drawn from relevant national and international policy and law. Paragraphs 1.2 – 1.4 set out factors that airspace modernisation must deliver, drawn from Section 70 of the Transport Act 2000 and relevant policy as:

- To increase aviation capacity in the Southeast;
- Growth to be sustainable; and
- To make the best use of existing runways.

1.2.4. The UK's Airspace, particularly that of Southern England, was originally designed decades ago; it has evolved over time to manage the increasing volumes of climbing and descending aircraft travelling to and from the various airports all within close proximity. This complex evolution has resulted in an environmentally inefficient and overly complicated design, which places a burden on Air Traffic Controllers (ATCOs) and limits airspace capacity. Prior to the worldwide pandemic, flights in Southern England were forecast to double over the next 20 years. Whilst COVID-19 has undoubtedly had a significant impact upon the Aviation and Travel industries, if the Airspace is not modernised, the benefits of reduced carbon emissions and noise reduction may not be realised.

1.2.5. The Airspace Change Organising Group (ACOG) was established in 2019, as a fully independent organisation at the request of the DfT and CAA, to coordinate the delivery of key aspects of the AMS.

1.2.6. Airspace Change Organising Groups (ACOG's) role is to coordinate the delivery of two major national Airspace Change programmes known as Future Airspace Implementation South (FASI-S) and Future Airspace Implementation North (FASI-N). FASI-S is a complete redesign of the existing Airspace structure in Southern England and LSA is one of 18 airports included within this programme.

1.2.7. ACOG in collaboration with NATS En-Route plc (NERL) and each of the Airports, must deliver a Masterplan that provides detailed information on the Airspace Design options. The Masterplan must consider potential areas of overlap between individual Airspace Change Proposals (ACPs), the compromises and trade-offs that may need to be made to integrate them effectively.

1.2.8. LSA and the other airports must ensure that their modernisation proposals are aligned with neighbouring airports and connect efficiently with the Upper Airspace. The FASI(S) airports are responsible for modernising or upgrading their individual arrival and departure routes up to 7,000ft. NERL are responsible for redesigning the route network above 7,000ft. Therefore, it is possible that despite the new LSA Standard Instrument Departures (SIDs) and the Instrument Approach Procedures (IAPs) not having been implemented yet, alterations may be required to comply with the Overarching Airspace plan for the region. These dependencies will begin to become clearer as we progress through Stage 2 and work within the Cumulative Analysis Framework (CAF), facilitated by ACOG.

1.2.9. For more information, including a brief video, on the importance of modernising UK airspace, see https://www.ourfutureskies.uk/why-modernise/.

1.3. AMS Strategic Objectives

1.3.1. The AMS objectives are explained in CAP1711. AMS realisation is one of the DPs for this ACP (DP12)[1] and is further considered in the Options Appraisal[2].

1.3.2. Below is a summary of the AMS Strategic Objectives which can be found on the CAA's website and CAP1711 Part 1[3] . These are referenced throughout this ACP, particularly in the (DPE) assessment of DP12 – AMS Realisation and the Initial Options Appraisal (IOA)assessment of AMS Realisation.

Figure 1: Airspace Modernisation Strategy Strategic Objectives

- **Safety:** Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation;

- **Integration of diverse users:** Airspace modernisation should, wherever possible, satisfy the requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, General Aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems);

- **Simplification, reducing complexity and improving efficiency:** Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic, accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers;

- **Environmental sustainability:** Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance and, in doing so will take account of the interests of all stakeholders affected by the use of airspace.

1.3.3. In order to assess DP12 for this ACP, the above objectives are used to qualitatively assess AMS realisation. Note that other DPs, such as DP1 (Safety), DPs 7 and 8 (Airspace dimensions and complexity), DP5 (Emissions and Air Quality) are separately assessed but relevant to AMS objectives. Other environmental factors, for example biodiversity is not a specific DP but is assessed in the IOA document.

[1] See section 6.2
[2] See Options Appraisal Stage 2B document, sections 1 and 3.2.
[3] CAP 1711 Part 1: CAP1711: Airspace Modernisation Strategy 2023–2040 Part 1: Strategic objectives and enablers | Civil Aviation Authority (caa.co.uk)

1.4. UK Airspace Change Masterplan Iteration 2

1.4.1. The DfT and the CAA are co-sponsors of UK airspace modernisation. In 2018, they commissioned NERL to create an Airspace Change Masterplan. NERL was required to set up a separate and impartial unit, ACOG, to develop the Masterplan.

1.4.2. The purpose of the Masterplan is to set out a single coordinated implementation plan to deliver the objectives of airspace modernisation. It is intended to identify which UK airspace design changes need to be developed in coordination to achieve the range of benefits that modernisation can deliver, and when.

1.4.3. Before the Masterplan can be implemented, the CAA must decide whether to formally accept the Masterplan into its AMS[4], having consulted the Secretary of State.

1.4.4. ACOG proposed an iterative approach to the development of the Masterplan, which recognises that different information and levels of detail will be available at different points as the Plan develops. Each iteration must be accepted separately, except Iteration 1, which has already been assessed and published. Once the Masterplan is accepted into the AMS, together with the CAA's general duties in Section 70 of the Transport Act 2000, the Masterplan forms the basis against which individual airspace change decisions are made by the CAA.

1.4.5. Iteration 2 of the UK Masterplan has now been accepted into the AMS[5]. CAA Airspace Regulation has a requirement to assure that the Stage 2 Develop & Assess Gateway submissions for airspace changes under the Masterplan programme are in accordance with this iteration of the Masterplan.

1.4.6. To enable Airspace Regulation to undertake this activity, seven indicators have been defined as per the following table and submissions will be reviewed by Airspace Regulation against these. The documentation associated to Stage 2 of the LSA ACP is intended to meet these criteria.

CAA Indicator	LSA Response
Has the change sponsor identified, or otherwise can Airspace Regulation identify, the regional cluster within which the ACP sits?	**Yes, this ACP is part of the London Terminal Manoeuvring Area (LTMA) Regional Cluster.**
Has the change sponsor identified all adjacent airspace change proposals as identified under the Masterplan programme for the regional cluster in which the ACP sits and has highlighted the potential for conflicts in the Design Options?	**Yes, LTMA Airports and Manston Airport.**

[4] See https://www.caa.co.uk/commercial-industry/airspace/airspace-modernisation/airspace-modernisation-strategy/
[5] See CAP 2132A https://publicapps.caa.co.uk/docs/33/CAP2312A%20Masterplan%20assessment%20and%20acceptance.pdf

CAA Indicator	LSA Response
Has the change sponsor evidenced that the comprehensive list has identified all viable options, noting that the Masterplan is a high-level coordinated implementation plan of a series of individual airspace design changes that need to be developed in coordination to achieve the range of benefits that modernisation can deliver?	**Yes, this document identifies all viable options that have been the subject of various coordination meetings with ACOG, NERL and the LTMA Team.**
Evidence that the change sponsor's Design Options developed at Stage 2 are the product of co-ordination with other change sponsors of interdependent ACPs carried out under the Masterplan programme. A key indicator will be that change sponsor has engaged with ACOG and the change sponsors of interdependent ACPs, as part of the Masterplan programme, in developing its comprehensive list of options and undertaking its DPE and subsequent IOA.	**The Design Options have been developed in coordination with other change sponsors through various coordination meetings with ACOG, NERL and the LTMA Team.**
Evidence that the change sponsor's DPE includes an assessment of how the different Design Options respond to the relevant AMS Design Principle (i.e. achieve network optimisation). This can only be based on available evidence and assumptions about the outcome of integrating different ACPs, as there are various risks and unknowns until, at least, the change sponsor has carried out the Full Options Appraisal (i.e. the quantitative work) during Stage 3. Additionally, evidence that the change DPE and IOA include a qualitative (high-level) assessment of how the Design Options perform against the vision and parameters/strategic objectives of the AMS.	**Bilateral meetings with the NERL LTMA Team have been held at various points through the development process to ensure network optimisation has been considered.**
Evidence that the change sponsor has justified, based on available evidence, why certain Design Options have been discounted, noting that the Design Option may need to be re-introduced after "integration" occurs in Stage 3 for masterplan reasons.	**This report details the reasons why certain Design Options have been discounted**

CAA Indicator	LSA Response
Are the change sponsor's proposed next steps/timelines consistent with those set out by ACOG in Iteration 2 for the regional cluster within which the ACP sits?	**The timeline has been coordinated with ACOG.**

Table 1: Seven Masterplan Indicators

1.5. Performance-Based Navigation

1.5.1. One of the major aims of the AMS is to optimise future airspace designs by considering modern aircraft performance and functional capabilities. This will improve efficiency, saving time, fuel and reduce emissions.

1.5.2. Key to achieving the AMS aims is the application of Performance-Based Navigation (PBN). In parallel, the UK Navigation Infrastructure will also be optimised to take advantage of the Lateral Navigation accuracy from Global Navigation Satellite Systems (GNSS). Conventional Ground-Based navigation aids will be retained for resilience.

1.5.3. PBN is being adopted world-wide. International Civil Aviation Organisation (ICAO) States are expected to modernise airspace through International, Regional and State level initiatives, including regulations. It impacts both the high-level airways and the lower-level arrival and departure routes into and out of airports and IAPs.

1.5.4. European-wide legislation[1] was developed to drive the deployment of PBN in the European region to meet the international vision laid down by ICAO.

1.6. Altitude-Based Priorities for Environmental Impacts

1.6.1. The Government's priorities for consideration of the environmental impacts arising from airspace change proposals are set out in its Air Navigation Guidance. For the purposes of assessing environmental impacts of ACPs the CAA should apply the following altitude-based priorities:

- In the airspace from the ground to below 4,000 feet, the Government's environmental priority is to limit and, where possible, reduce the total adverse effects on people;
- Where options for route design from the ground to below 4,000 feet are similar in terms of the number of people affected by total adverse noise effects, preference should be given to that option which is most consistent with existing published airspace arrangements;
- In the airspace at or above 4,000 feet to below 7,000 feet, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the Government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO2 emissions;
- In the airspace at or above 7,000 feet, the CAA should prioritise the reduction of aircraft CO2 emissions and the minimising of noise is no longer the priority;

- Where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over Area of Outstanding Natural beauty (AONB) and National Parks (NPs); and,
- All changes below 7,000 feet should take into account local circumstances in the development of the airspace design, including the actual height of the ground level being overflown, and should not be agreed to by the CAA before appropriate community engagement has been conducted by the sponsor.

1.6.2. This ACP concerns changes being made from the surface to 7,000 feet and accordingly, five of the above bullets apply.

1.7. Important context

1.7.1. LSA has already commenced the modernisation of its airspace having submitted a proposal for the introduction of PBN procedures in the form of IAPs. In addition, the FASI(S) programme may result in more requirements for the Airport to implement further PBN procedures.

1.7.2. It is possible that, in the development of options for new departure and arrival profiles for the other airports in the region, the Existing Airspace configuration may also require re-configuration. This will be managed as part of the FASI(S) programme as all of the Airports within the cluster progress through the CAP1616 process.

1.8. Civil Aviation Publication 1616 Process

1.8.1. CAA regulations[2] define the ACP process. The ACP is designed to be transparent, comprehensible and proportionate. It is aligned with Government Policy [3] on managing airspace.

1.8.2. The 7-Stage process contains 14 ‘Steps’ and 4 ‘Gateways’. The Change Sponsor must satisfy the CAA at each of these ‘Gateways’ that it has fully followed the prescribed process. Failure to do so results in further work until such time as the CAA is satisfied.

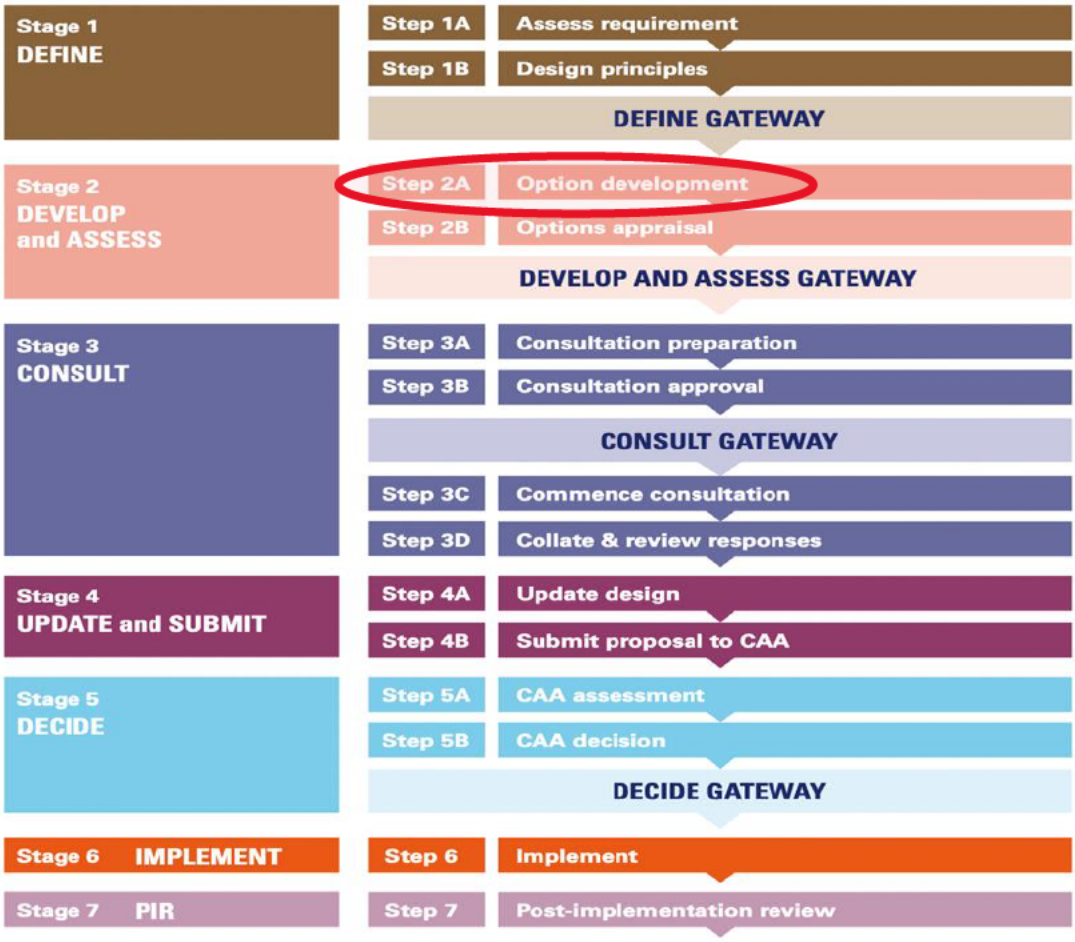


Figure 2: The CAP1616 Process

1.8.3. LSA has completed Stage 1 and has now embarked upon the development of the Options (Step 2a). These Options have been developed through a two-way engagement process with stakeholders.

1.9. Stage 1

1.9.1. LSA began their ACP in September 2021 and subsequently passed through the Stage 1 Gateway of the CAP 1616 process in March 2022. The Stage 1 documentation can be found on the ACP Portal.

1.10. Stage 2

1.10.1. This report forms part of the Stage 2 submission and details the Comprehensive List of Options developed for this ACP. Over the course of the CAP1616 ACP process, these options will be developed and refined through the following means:

- DPE;
- Safety and Environmental Assessments;
- Appraisals;
- Stakeholder Engagement; and
- Consultation.

1.11. Current Operations at London Southend Airport

1.11.1. LSA went through a major period of re-development between 2008 and 2012. A new state-of-the-art Air Traffic Control (ATC) tower and mainline railway station were opened in 2011, the same year that easyJet signed a ten-year agreement to use the airport as a new hub, with flights to a range of European destinations. In 2012, a runway extension became operational, and a new passenger terminal building was officially opened. LSA was able to handle a new generation of medium capacity, high-efficiency jets for short-haul scheduled flights and holiday charters.

1.11.2. A month later, a proposed extension to the new terminal at LSA was approved by Rochford District Council to help meet the target of serving 2 million passengers by 2020. The extended terminal building was opened in 2014 delivering a larger check-In facility, improved security screening channels and larger departure and arrival areas. These improvements provided space and a better customer experience for passengers.

1.11.3. LSA has won 'Best Airport in London' by the survey company 'Which?' six times in a row. With a catchment of 8.2 million users, 60% of which come from London, it has become the Airport of choice. The onsite train station located 100 paces away from the passenger terminal, provides a 15-minute journey time from plane to train.

1.11.4. However, recent years have been particularly challenging for the aviation sector. This is reflected in LSA's performance for the period March 2020 to February 2021, coinciding with the spread of the COVID-19 virus. Airport passenger numbers reduced from 2.15 million in 2019 to 147,000 for the period March 2020 to February 2021, a reduction of 93%. This was a complete reversal from 2019, when it recorded its busiest year ever, to its lowest throughput post development.

1.11.5. During Covid restrictions, LSA were able to attract training activity that was permitted within Government guidance. As a result, LSA ATCs retained their "recency" as required by their CAA licence conditions.

1.11.6. Over the last two years LSA have been gradually increasing passenger numbers and in May 2024, under new ownership through Carlyle Ltd and Cyrus Capital Partners, LSA announced that easyJet were again basing 3 aircraft from Summer 2025.

1.12. Types of Operations

1.12.1. LSA can accommodate a wide range of aircraft from medium sized twin engine jets to small business jets and single/twin engine propeller aircraft for training and private (General Aviation) use.

1.12.2. LSA supports the following types of operation:

- Commercial Air Transport (CAT) operations providing scheduled and charter services.
- Non-Commercial operations, which include:
  - Business Aviation;
  - Military Training and Refuelling;
  - Private and Commercial Pilot Training;
  - Skill testing; and
  - Private recreational flying.

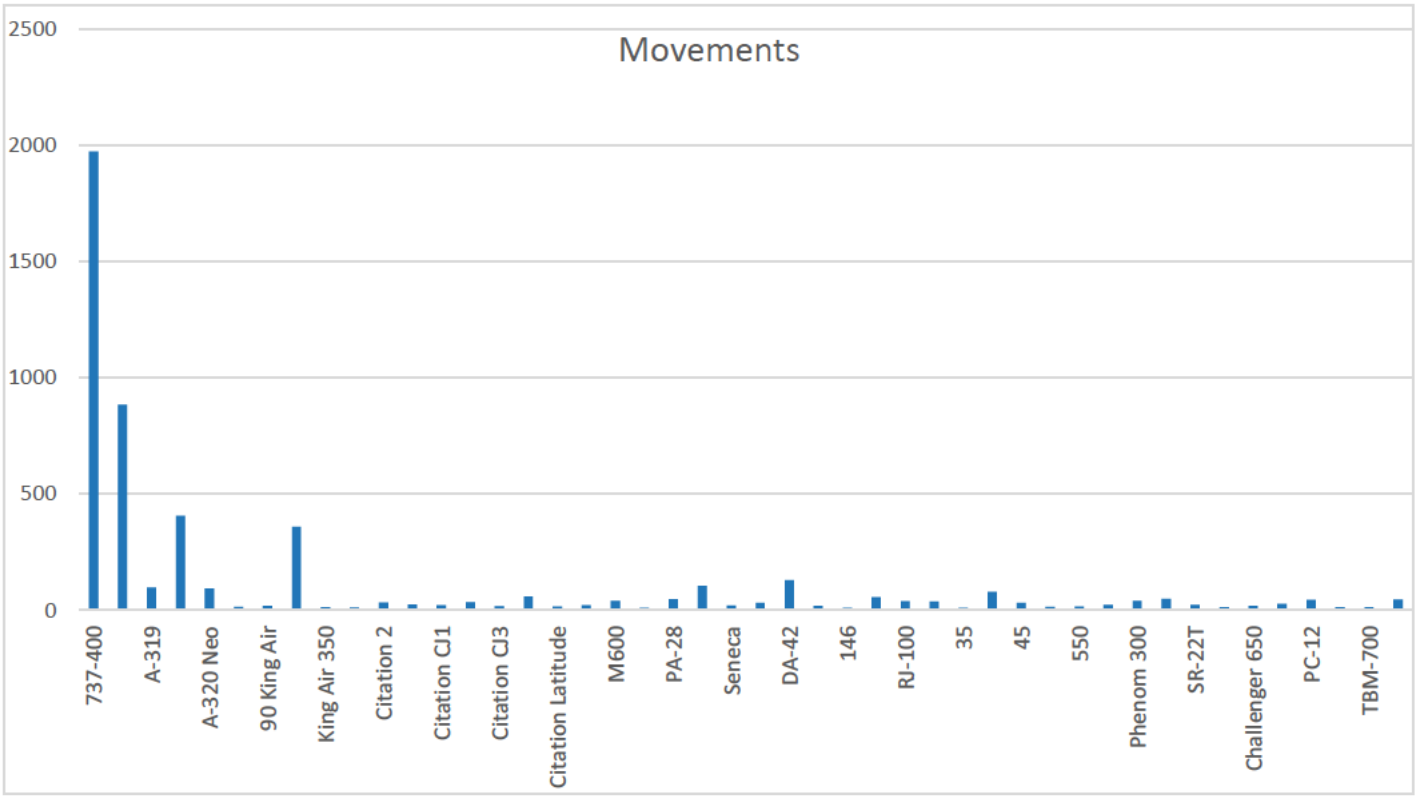
1.12.3. LSA supported a total of 36,327 movements in 2019 (just over 2 million passengers), this number halved in 2020 owing to the Global pandemic to 18,401 and there was a significant downward shift in passenger carriage (only 400,000 passengers). LSA supported a total of 34,114 movements in 2021, 26,624 movements in 2022 and 31,546 in 2023.

1.12.4. Movement figures are expected to fluctuate as the Aviation Industry comes to terms with the effect of the COVID pandemic. It is the desire of LSA to return operations to pre-pandemic levels in keeping with the Section 106 conditions detailed in **Section 1.20**. The volume of General Aviation (GA) traffic is likely to remain static or in a growth scenario, as can be accommodated.

1.13. Fleet Mix

1.13.1. The fleet mix at LSA has a mixture of turbo-prop and jet operators, and the ratio of propulsion types is unlikely to change dramatically over the next 10-15 years.

1.13.2. The graph below shows counts of aircraft type between May 2020 and February 2023 at LSA:



1.13.3. Counts of aircraft types between May 2020 and February 2023 at London Southend Airport:

Manufactures/Types	Movements	% of total movements
Boeing	**2856**	**54.3%**
737-400	1972	37.5%
737-800	884	16.8%
Airbus	**597**	**11.3%**
A-319	98	1.9%
A-320	406	7.7%
A-320 Neo	93	1.8%
Beech	**408**	**7.8%**
400 Beechjet	15	0.3%
90 King Air	19	0.4%
King Air	360	6.8%
King Air 350	14	0.3%
Cessna	**241**	**4.6%**
172	11	0.2%
Citation 2	33	0.6%

Manufactures/Types	Movements	% of total movements
Citation Bravo	25	0.5%
Citation CJ1	22	0.4%
Citation CJ2	35	0.7%
Citation CJ3	18	0.3%
Citation Excel	59	1.1%
Citation Latitude	16	0.3%
Citation Mustang	22	0.4%
Piper	**223**	**4.2%**
M600	40	0.8%
Malibu	10	0.2%
PA-28	47	0.9%
PA3	105	2.0%
Seneca	21	0.4%
Diamond	**181**	**3.4%**
DA-40	32	0.6%
DA-42	130	2.5%
DA-62	19	0.4%
Bae	**142**	**2.7%**
146	10	0.2%
146-300	56	1.1%
RJ-100	39	0.7%
RJ-85	37	0.7%
Learjet	**136**	**2.6%**
35	10	0.2%
40	79	1.5%
45	32	0.6%
75	15	0.3%
Embraer	**80**	**1.5%**
550	17	0.3%
Legacy	23	0.4%
Phenom 300	40	0.8%
Cirrus	**74**	**1.4%**
SR-22	50	0.9%
SR-22T	24	0.5%

Manufactures/Types	Movements	% of total movements
Bombardier	**60**	**1.1%**
Challenger 350	13	0.2%
Challenger 650	19	0.4%
Global Express	28	0.5%
Pilatus	**58**	**1.1%**
PC-12	44	0.8%
PC-24	14	0.3%
Socata	**57**	**1.1%**
TBM-700	12	0.2%
TBM-900	45	0.9%
Piaggio	**39**	**0.7%**
Avanti	39	0.7%
Partenavia	**32**	**0.6%**
P-68	32	0.6%
Dassault	**30**	**0.6%**
Falcon 2000	30	0.6%
De Havilland	**16**	**0.3%**
Dash 8 400	16	0.3%
Britten-Norman	**13**	**0.2%**
Islander	13	0.2%
Eclipse	**11**	**0.2%**
500	11	0.2%
Mooney	**10**	**0.2%**
M-20	10	0.2%

Table 2 - Aircraft Movements

1.14. Future Traffic Forecasts

1.14.1. These are the future traffic forecasts[6] for the next 10 years (shown as financial years) for London Southend Airport. Please note the 53,300 cap which is the movement limit in the Section 106 agreement detailed in **Section 1.20**.

Year	2024	2025	2026	2027	2028	2029 - 2040
Total Movements	33,442	35,875	40,898	47,399	53,173	53,300

Table 3 - Future Traffic Forecast

1.15. Runways

1.15.1. LSA has a single runway with two ends known as '05' and '23'; these are given their names as their true bearing is rounded to two figures, e.g. Runway 05 has a true bearing of 054.16 degrees.

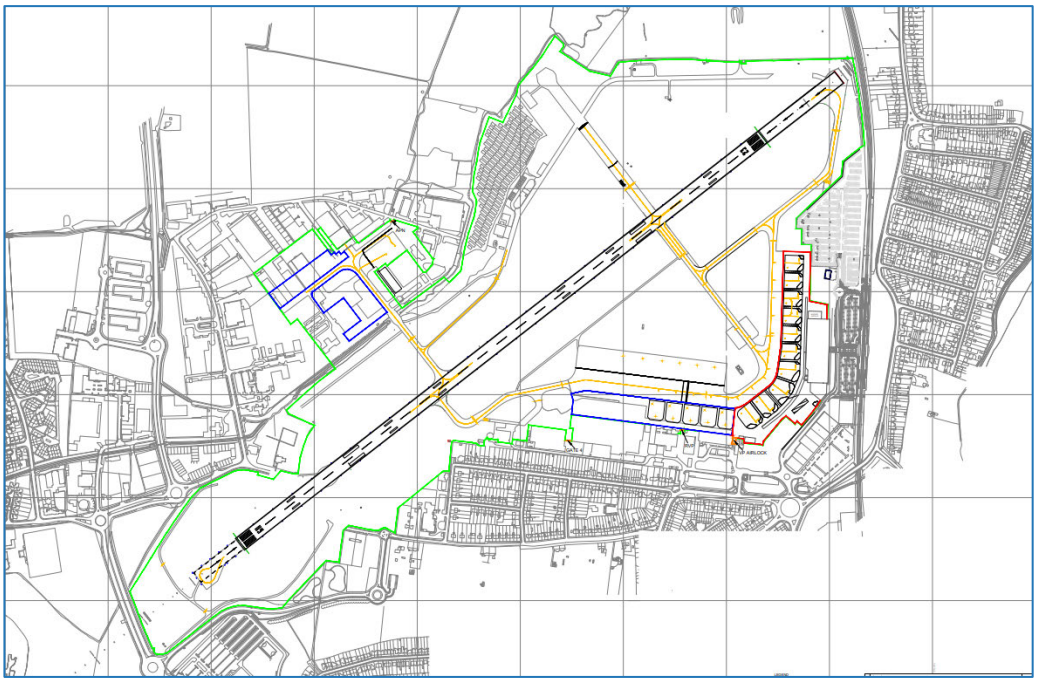


Figure 3: Runway Layout

1.15.2. Aircraft normally land and take off heading into the wind, thus the wind direction at the time of an aircraft approach or departure usually determines which runway is chosen. The prevailing wind direction at LSA is from the Southwest, therefore Runway 23 is in operation roughly 70% of the year. This means, aircraft typically depart initially to the West before turning and typically arrive from the East.

[6] Source - LSA CFO – internal forecasting

1.15.3. LSA has a 'Preferred Runway Scheme' agreed with the Local Authorities forming part of the Section 106 Agreement[8], detailed in **Section 1.20**. The Airport has committed to use Runway 23 for arrivals and Runway 05 for departures at night (2300-0630hrs) if weather and safety conditions permit. In the daytime, the Airport has committed to do the same (for more than 50% of its operations) if weather, safety conditions and movement volumes allow. The rationale for the employment of this Scheme is that the area to the Northeast of the Airport (Rochford) is less densely populated. **This ACP is not seeking to shift away from this policy.**

1.16. Airspace

1.16.1. LSA is overflown by some of the busiest and most complex airspace in the world. It is affected by flights to and from the major airports of:

- London Stansted;
- London Luton;
- London City;
- London Gatwick; and
- London Heathrow.

1.16.2. As LSA is located near other London airports, its traffic flies beneath their traffic flows. **Figure 4** shows the Departure and Arrival traffic from London City Airport and Stansted Airport (the Airports which interface with LSA to the greatest extent). When the traffic flows for the other airports are added (not illustrated) the picture becomes extremely busy. Although the diagram indicates 2016 traffic flows, these have not changed significantly.

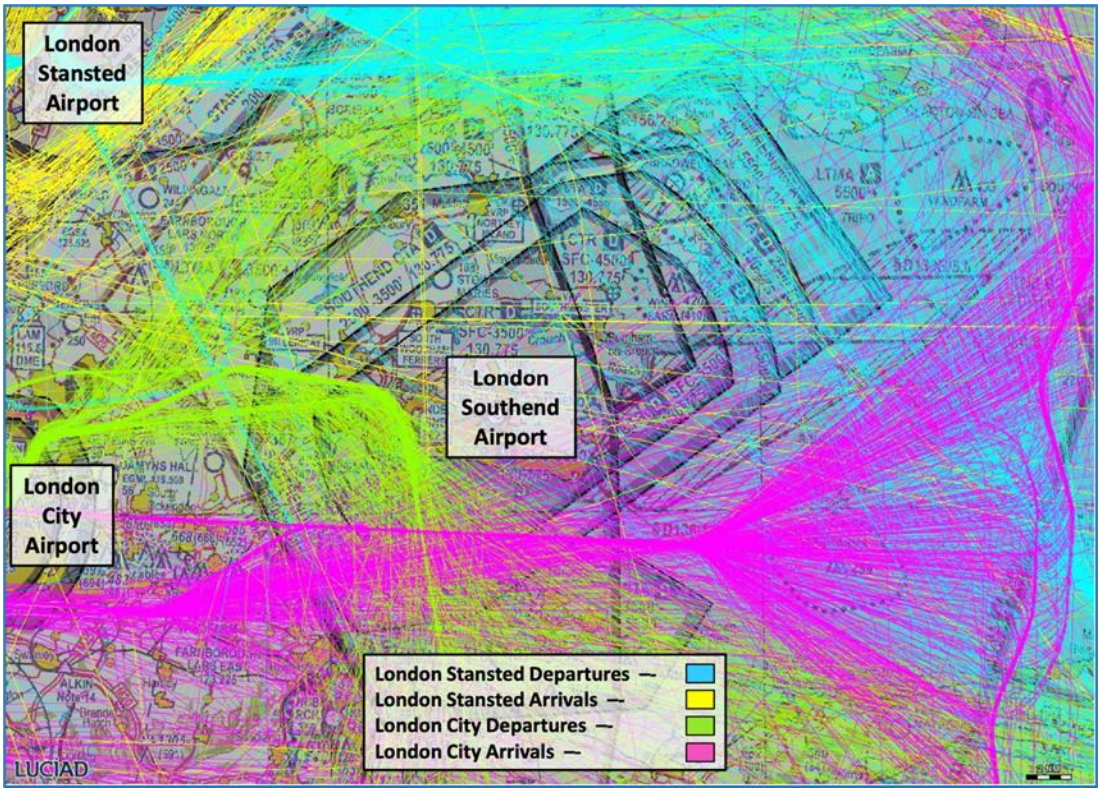


Figure 4: Stansted & London City Arrivals & Departures Over LSA Surrounding Area (One Week August 2016)

1.16.3. The Terminal Airspace surrounding LSA is very complex because of the proximity to London Stansted, London Luton, London City, London Gatwick, and London Heathrow. LSA sits underneath the LTMA) airspace. The LTMA and the respective Control Areas (CTA) and Control Zones (CTRs) are depicted in Figure 5. This shows the layers of 'Controlled Airspace' used by ATC units to manage the flights of LSA and other airports. These layers of LTMA airspace dictate the vertical and horizontal extent of LSA's own airspace.

1.16.4. The LSA CTR extends from the surface to 3,500ft above mean sea level (amsl) and in other parts extends to 4,500ft and 5,500ft respectively. The CTR is surrounded by several CTAs that provide continuous Controlled Airspace containment from the Airport into the LTMA above.

1.16.5. Military Danger Areas, densely populated areas and the Kent Downs Area of Outstanding Natural Beauty (AONB) to the South, further restrict the LSA airspace.

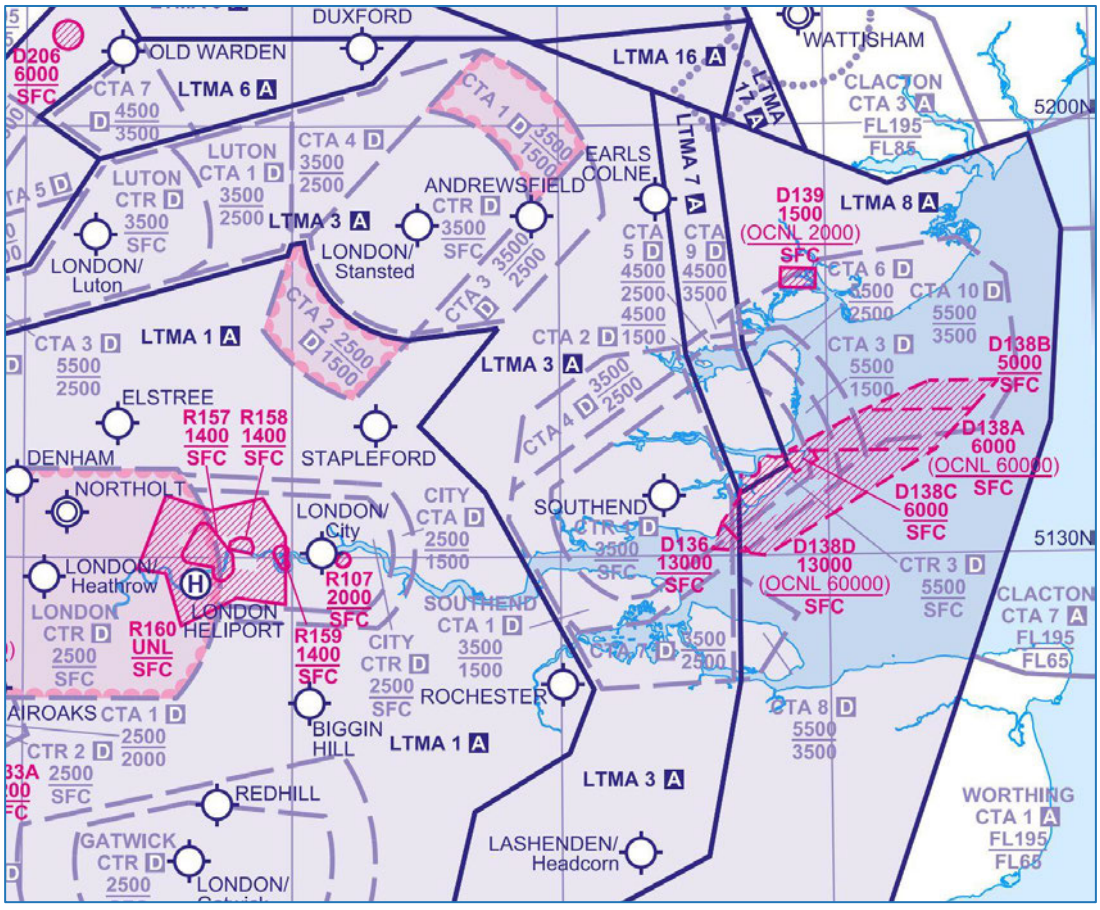


Figure 5: London TMA

Source: UK AIP ENR 6-42

1.17. Current Operational Requirement

1.17.1. The current operation requires departure procedures to the Northwest, the Northeast and the South for each Runway. The Northeast routing is increasing in importance because it meets the needs of our operators wishing to access destinations in Eastern Europe (a growth market for the Airport).

1.17.2. Arrivals are predominantly from the South and East, however, there remains a requirement for arrival procedures from the Northwest.

1.18. Control Area 10X

1.18.1. An ACP[5] was submitted to the CAA on 31 March 2017 requesting the establishment of Class D Controlled Airspace near LSA to ensure the safety of the increasing CAT operating at the Airport.

1.18.2. The CAA Decision Letter[4], whilst approving most of the requested controlled airspace, did not approve the introduction of two portions (namely CTA-11 to the Southeast and a major portion of CTA-10 to the Northeast). The CAA stated that, the then, extant traffic levels and Air Traffic Management (ATM) complexity, did not justify the introduction of these volumes of controlled airspace. The Decision Letter[4] made provision for the future introduction of the CTA-10 and CTA-11 controlled airspace segments, if increasing traffic levels and airspace complexity is justified.

1.18.3. LSA has now met these requirements and the implementation of the additional airspace for CTA10 (Known as CTA10X) was approved by the CAA and implemented in September 2022 AIRAC. (CTA11 has not been progressed as part of the ACP.)

1.18.4. The CTA10X volume of airspace is in the Baseline and will be included in the development of options for this ACP.

1.18.5. **Figure 6** shows additional volume of CTA10X and **Figure 7** shows the new associated airspace map.

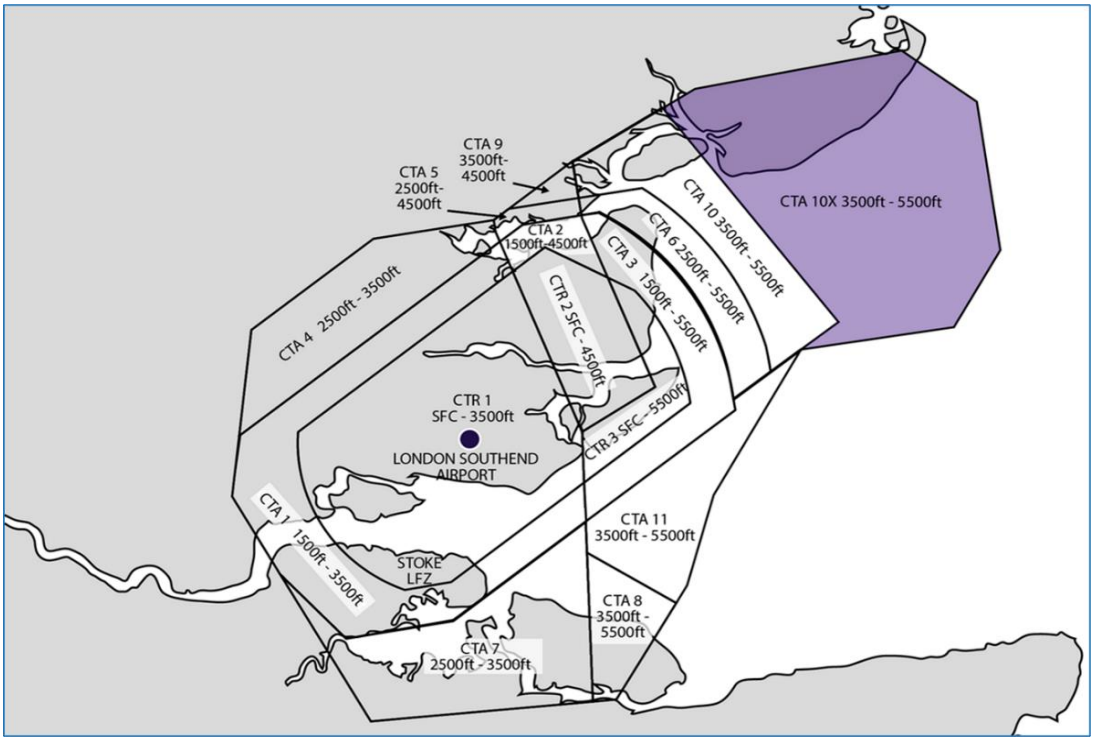


Figure 6: CTA 10X

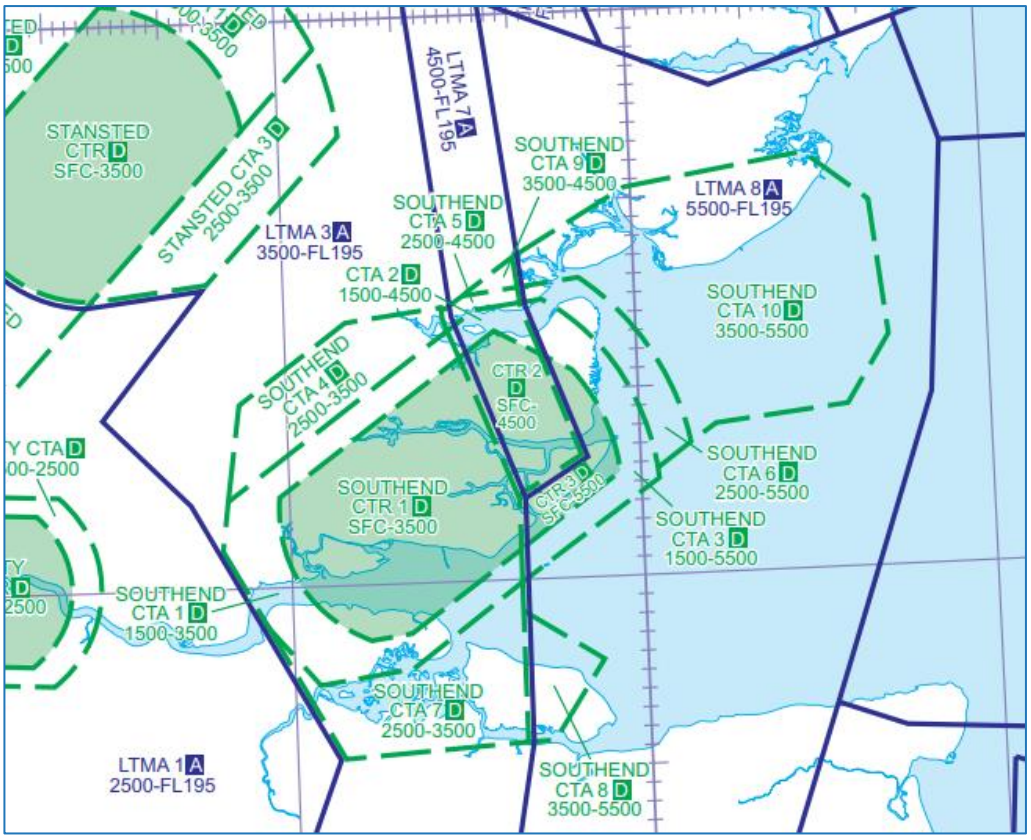


Figure 7: LSA Airspace Map

1.19. Known Constraints

1.19.1. Shoeburyness Range (D136/D138) is typically active 0800-1600hrs Monday to Friday. The nature of the activity in this Danger Area precludes LSA from being able to take aircraft through it during these hours. This is not considered to be a constraint that can be challenged. However, outside of the published hours of activity, the Airspace becomes available and may afford more advantageous routings for aircraft.[7]

1.19.2. Departures from LSA are currently required to transit through 'gates' as part of a Letter of Agreement with Thames Radar operated by NERL. These 'gates' (EKNIV to the South and EVNAS to the North) are positioned such that they are known channels through which departing aircraft will pass at an altitude of 3,000ft. LSA departing traffic is often forced into a stepped climb i.e., they are often held for a period at 3,000ft. It is unknown whether this constraint can be amended. Not all the Departure options developed will meet this existing requirement, however the constraint will be investigated later in the CAP1616 process.

1.19.3. Arrivals to Runway 23 at LSA must be spaced in a 10 Nautical Mile (NM) trail to allow the preceding aircraft to backtrack on the runway. There is not a taxiway alternative to conducting a 180 degree turn on the runway and backtracking. Arrivals to Runway 05 are not constrained in the same way and require only a 5NM spacing to be applied.

[7] See Annex B for meeting minutes with Qinetiq/DAATM about Danger Area availability.

1.20. Noise Abatement Procedures & Section 106 Agreement

1.20.1. As mentioned in Section 1.15.3 LSA operates a Preferred Runway Usage Scheme as follows:

'Subject to over-riding Pilot and ATC safety/performance and separation requirements, whenever the tailwind component is 5 KT or less, the preferred runway for departures is Runway 05, and for arrivals is Runway 23.'

1.20.2. Furthermore, on departure, aircraft of more than 5.7 tonnes Maximum Certified Weight are required to adhere to the following:

- When departing Runway 05 shall climb straight ahead until a range of 1 DME (I-SO or I-ND) and an altitude of 1500 FT is reached before turning;
- When departing Runway 23 shall climb straight ahead until a range of 2.5 DME (I-SO or I-ND) and an altitude of 1500 FT is reached before turning; and
- Aircraft of more than 5.7 tonnes weight intending to operate at below 1500 FT altitude shall conform to the DME distances above before commencing any turn on track.

1.20.3. **LSA is not seeking an amendment to these requirements and accordingly any options developed will continue to adhere to these requirements.**

2. Methodology

2.1. Swathes

2.1.1. The options for this ACP have been designed as swathes. A swathe is an area where we can design route options. It is a wide area of airspace that extends from the runway to 7000ft and is based upon a 6% climb gradient. The swathes are a minimum of 5 NM wide at 7000ft.

2.1.2. The swathe development process involved internal workshops with Subject Matter Experts (SMEs) from LSA and Cyrrus, these took place during January 2022. Having considered the Current Operational requirement, the team conceived unconstrained options which started by using a 'blank sheet of paper' approach. Whilst it was accepted that this may result in unrealistic options, it was considered important to think as broadly as possible via this technique to identify as wide a range of options as possible. These options were then tested with operational controllers at LSA in February 2022, to assess their feasibility and were developed further to create the long list of options we took forward for the Stakeholder engagement.

2.1.3. The long list of options described hereafter will be refined through a process of:

- Design Principle Evaluation;
- Stakeholder Engagement; and
- Options Appraisal (Step 2b).

2.1.4. The Options developed are purely swathes at this stage (i.e. areas within which a final departure or arrival nominal track might ultimately be designed). It is intended that the fine tuning from swathes to definitive options (actual tracks) will take place during Stage 3 of the ACP process ahead of the Formal consultation.

2.1.5. Some swathes have been created to facilitate potential respite routes.

2.1.6. In order to ensure that as wide a range of options as possible were developed, stakeholders were invited to provide further options for consideration in the Options Development workshops in 2022 described in **Section 3**. No additional options were suggested or identified by the stakeholders.

2.1.7. In 2023 following CAA feedback, two additional options were identified, further information can be found in **Section 3.5**.

2.2. Baseline – Background

2.2.1. In 2022 when the options and baselines were originally defined, the Baseline was considered to be the existing track data, which in some cases formed all or part of a swathe.

2.2.2. In December 2022, LSA submitted their Stage 2 documentation to the CAA for the FASI(S) ACP. Feedback from the CAA indicated a requirement to redefine the Baselines for this ACP. An internal operational workshop was held on the 19th of July 2023 to address this issue.

2.2.3. The Baseline was redefined as a 'do-minimum' option as it was recognised that should the Baseline be retained as it is today, there would still be work required to develop new procedures to satisfy the AMS and, as such, it was not considered to be an option to 'do-nothing'.

2.2.4. The revised baselines then formed their own individual option in each suite of options, meaning that the benefits and impacts of the Options could then be more concisely assessed against the redefined baseline.

2.2.5. LSA submitted these baselines in their 2023 Stage 2 Submission. Whilst it was agreed there was a requirement for a Do-Minimum option in this ACP, it became apparent that in order to fully and accurately assess the options, a Do-Nothing baseline needed to be defined. This Do-Nothing baseline needed to be representative of today's operation with no changes.

2.2.6. In Spring 2024 we set about redefining the Baselines. This ACP now has a Do-Nothing baseline which is representative of today's operation and a Do-Minimum option, which is a refinement of the Do-Nothing option and introduces RNAV.

2.2.7. These New baselines were introduced to the stakeholders in July 2024 (further details can be found in **Section 3.9**) and are described below.

2.2.8. Each individual baseline is described in full later in this document within each design option section.

2.3. Baseline - Do Nothing Option

2.3.1. CAP1616 outlines the requirements for LSA to define the baseline, or do-nothing option. This option serves as a benchmark against which the airspace change options are assessed. The 'Do-Nothing' Baselines are reflective of today's operation and encompass the Airspace and Procedures as they would remain if there were to be no change.

2.3.2. The key requirements are as follows:

- **Definition of the Baseline:** The baseline option must represent the current airspace design and operational procedures. It is the scenario in which no changes are made to the airspace structure or its management.
- **Compliant with regulations:** The baseline must comply with the regulations, operational constraints, and technologies in use at the time of the airspace change proposal. This ensures that the comparison is fair and reflects the actual conditions without modification.
- **Use representative data:** the baseline must be defined using up-to-date and representative operational data, including traffic levels, environmental impacts (such as noise and emissions), and safety performance. Historical data should be used to accurately describe how the current system is performing.
- **Reflective of future changes:** The baseline must account for any forecasted growth in air traffic and other future operational factors that would occur even if no changes to the airspace are made. This ensures a realistic comparison with future projections of proposed changes.
- **Appropriate benchmark:** The baseline is used as a reference point to measure the environmental, operational, and safety impacts of any proposed changes. Benefits

and/or drawbacks (costs) of the proposed options should be measured relative to this benchmark.

- **Engagement:** The baseline should be clearly presented in stakeholder engagements, providing a do-nothing scenario that can be easily understood and compared with the proposed options. A clearly defined baseline should help stakeholders evaluate the potential impact of changes.

2.3.3. In order to adhere to these requirements, the 'Do-Nothing' Baselines have been defined using Noise and Track Keeping (NK)[8] data, current procedures, and discussion with operational Air Traffic controllers. CAP1616 does not specify a time period change sponsors should use for the baseline, however the CAA's Policy on Minimum Standards for Noise Modelling (CAP2091)[9] suggests a busy time period in summer, defining the busy period as '*6 June and 15 September inclusive'*. If this specified period is not used then a justification must be provided.

2.3.4. LSA have used data from a busy, pre-pandemic, period in the summer of 2019; at the time this ACP process began, these were the most recent pre-pandemic data available. This period was chosen as this was LSA's busiest summer to date and provides a representative traffic sample and furthermore, allows for future growth.

2.3.5. LSA's Noise Action Plan (NAP)[10] provides noise contours for the specified 92-day summer period. Furthermore, and in line with the Section 106 agreement, these contours are assessed bi-annually. Comparisons have been made between 2016, 2018 and 2022. LSA's noise modelling Category for this ACP is presented in the Initial Options Appraisal document Section 9.5.3.

2.3.6. As is evident throughout the document the 'do nothing' baselines are presented as wide geographical swathes, this is a result of the current operational departure procedures, which are technically referred to as preferred departure routes (PDRs). Unlike a standard instrument departure route (SID), our PDRs have no systemised connection to the wider airspace network. Therefore, when an aircraft is ready for departure our ATCOs seek coordination in the form of a tactical release from neighbouring ATC sectors, in order to ensure the aircrafts' safe navigation through the airspace to the en-route network. This inevitably results in a delay for the aircraft on the ground at times when neighbouring air traffic control sectors cannot permit its 'release'.

2.4. Do – Minimum Option

2.4.1. The 'Do-Minimum' Option is a refinement of the 'Do-Nothing' baseline and shows how the Airspace and Procedures would look if we introduced RNAV SID procedures to today's operation for departures. A SID is an ATC coded departure procedure that:

- Includes noise abatement procedures;
- Provides a 'systemised' connection to the en-route network;
- Provides terrain safe routes;

[8] NTK data was sourced from the airport's internal Noise and Track keeping system - ANOMS NoiseDesk..
[9] CAP 2091 can be found here: https://www.caa.co.uk/publication/download/18321
[10] LSA NAP: Round 4 Noise Action Plan (londonsouthendairport.com)

- Simplifies ATC clearance delivery procedures.

2.4.2. The RNAV SID procedures will replace the non-coded PDRs currently in use. There are many advantages to this implementation including a reduction in ATCO workload, enhanced network connectivity, and environmental and safety improvements. Additionally, enhanced network connectivity is vital for ensuring the airspace structure at LSA can support future growth and development of operations at the Airport.

2.4.3. In today's operation, the PDRs are subject to tactical release in addition to release by the LSA radar ATCO. For some departures a release from two separate en-route sectors and 3 coordination calls may be required, when the aircraft is ready at the runway holding point. This process can regularly result in delays, and given LSA's limited taxiway infrastructure, the delay becomes cumulative to the other aircraft in the departure sequence. With the introduction of an RNAV SID, which integrates with the enroute network, the aim is to reduce the coordination currently required and potentially facilitate free flow for the departures.

2.4.4. Free flow refers to pre-arranged coordination between the Airport and en-route sector which means aircraft are able to depart the airport without delay and the need for the tower controller to phone the en-route sector for release (authorisation). This saves time for both the controllers and aircraft and leads to a more expeditious operation.

2.4.5. To show this as a Do-Minimum option, a geographical swathe has been created where the highest concentration of tracks fall today and therefore, a PBN SID would sit within this area in order to replicate today's option with the assistance of the new technology and enhanced connectivity.

2.4.6. For arrivals, where the current Do-Nothing baseline is already integrated with the en-route network, the Do-Minimum is expected to be an enhancement of this option, by reducing the need for coordination and enhancing network integration. A geographical swathe has been created to illustrated this and is representative of the highest concentration of tracks from baseline data. Therefore, the Do-Minimum swathes replicate today's option with the assistance of the new technology and enhanced connectivity.

3. Stakeholder Engagement

3.1. Introduction

3.1.1. LSA have undertaken three separate rounds of stakeholder engagement and updates throughout the process of Stage 2 for this FASI(S) ACP.

3.1.2. The first round of engagement in 2022 introduced the comprehensive list of options and their associated DPE to the stakeholders and invited their feedback.

3.1.3. The second round of engagement in 2023 introduced two additional options and their associated DPE to the stakeholders and invited their feedback.

3.1.4. The third round and update in 2024 introduced the Do-Nothing baseline and Do-Minimum options, with their associated DPE, to the stakeholders and invited their feedback. The assessment criteria for the DPE was also redefined in 2024 and all the previously engaged upon options underwent a re-evaluation in line with the new criteria. These DPEs were shared with the stakeholders, and they were given opportunity to comment on the revised DPEs as well as the criteria changes themselves.

3.1.5. The below sections give further details on each of the three rounds of engagement and updates. They explain the approach, the responses from the stakeholders and a summary of what was heard.

3.1.6. Summaries for each round are followed by tables. These summarise further the feedback by the stakeholder and provide a reference to where the feedback was captured in the DPE document, in addition to the paragraph mentioned in the feedback summary for this document.

3.2. First Round

3.2.1. The Stakeholders were drawn from the existing stakeholder list (see **Annex C**) which had been developed during Stage 1. All stakeholders were invited to attend a workshop and were then assigned to one of the two separate Stakeholder Workshops (as described below) which were held on the 8th of April 2022, with stakeholders invited to attend either in person or online. The purpose of this engagement was to introduce stakeholders to the Airspace Design options, the approach to assessing options against the DPs they helped to shape and seek feedback in terms of other options that had not yet been considered.

3.2.2. Prior to the Workshops, the stakeholders were split into two groups: Technical Stakeholders (airports, GA, etc.) and Non-Technical Stakeholders (community groups, local councils, environmental bodies etc). Each group received the same presentation with the same information, one group in the morning and the other in the afternoon. This was done so we could focus the discussions on the topics each group was most interested in. Learning from our Stage 1 engagement which revealed that noise, tranquillity and overflight were more emotive issues to the Non-Technical Stakeholders, whereas the Technical group had more interest in airspace issues, like complexity and airspace dimensions.

3.2.3. The Technical workshop was attended by;

- NATS;
- Biggin Hill Airport;
- London Gatwick Airport;
- London Heathrow Airport;
- London Stansted Airport;
- British Hang Gliding and Paragliding Association;
- Earls Colne Airfield;
- Manston Airport;
- Private Pilot.

The Non-Technical workshop was attended by:

- RSPB;
- Natural England;
- Essex County Council;
- Essex County /Rochford District Council;
- Southend Borough Council;
- AONB – Kent Downs.

3.2.4. The Presentation outlined the Options development process. It included the Comprehensive List of options and our initial assessment of these options against the DPs established in Stage 1. The Presentation can be found on the ACP Portal titled: 'LSA Stakeholder Workshop Stage 2a Presentation'[6] and has been updated to include a more comprehensive introduction.

3.3. Responses – First Round

3.3.1. After the workshops, an email was forwarded to all the Stakeholders on the 19th April 2022 asking them to provide feedback on the DPE and add additional comments through an online survey. The deadline for responses was Friday 6th May 2022. After several requests from stakeholders, on the 26th April 2022 LSA sent an email extending the deadline for responses to the 16th May 2022.

3.3.2. We received 13 responses from stakeholders who included:

- Heathrow Airport;
- Biggin Hill Airport;
- London Stansted Airport;
- Tillingham Airstrip Users;
- Manston Airport;
- NATS (NERL);
- MoD;
- Natural England;
- Private Pilots;
- Local Councils.

3.3.3. Responses received from the Stakeholders were assessed and incorporated into the Design Principle Evaluation document[7] available on the ACP Portal. The feedback provided is included in its entirety and addressed in that document.

3.3.4. While full details of the process are available via the document on the ACP Portal, in summary the assessment consisted of the evaluation of any stakeholder comments by DP with each comment being assessed and validated for accuracy and relevance. The feedback was then incorporated into the DPE and the RAG score (Red, Amber, Green assessment as detailed in Annex A) changed accordingly.

3.3.5. During the Engagement period we received some further feedback from stakeholders, outside of the Survey which was not in relation to the DPs and will be addressed in full at Stage 3, this feedback is contained within **Annex D.** Additionally, some of the feedback given as part of the Survey was outside of the parameters of this engagement and was not considered for assessment. This feedback will be fully addressed at Stage 3 and has been detailed as such in the Full assessment in the Design Principle Evaluation document[7] . This feedback has been collated and for completeness is provided in **Annex D.**

3.4. Feedback Summary - First Round

3.4.1. A number of comments related to the need for certain communities that may be overflown to be included in the DPE assessment. For some options, there was also a call for consideration of some sites for future development. Similarly, there was some concern that impacts on particular Sites of Special Scientific Interest (SSSI), Areas of Outstanding Natural Beauty (AONB), Special Protection Areas (SPA) and Ramsar sites should also be included. Concern around increased noise impacts, for some options, was also raised.

3.4.2. Conversely to the above, the need to disregard some communities from consideration in the evaluation was also expressed.

3.4.3. There was a need expressed for consistency of evaluations across different options. In addition, for some options, there was a call for further textual justification of evaluations under various DPs.

3.4.4. There were comments on the need for integration of some proposed designs into the en-route network. Also, for some options, attention was drawn to potential conflict with traffic from other airports London City and Stanstead (LCY and STN) and the LTMA generally. There were comments too around the feasibility of free flow and the need for deconfliction. Other comments related to the increased complexity of network connectivity with some options.

3.4.5. Other concerns expressed related to overflight of Danger Areas for certain options. With regard to these Areas, the potential resultant increase in track miles associated with avoidance was also raised.

3.4.6. Clarification was sought on some RAG scores.

3.4.7. As a result of comments made, some RAG scores and the text of a few assessments were changed. Where no change was made in response to feedback, a justification was supplied.

Stakeholder	What we heard	What we did	Further information
Private pilot, based at Southend	Mentioned efficiency of routes and avoiding DA and populated routes.	Where applicable we have addressed and included these comments in the assessment. The additional feedback is welcome and will be useful in stage 3; feedback is too in depth at this stage of the process. Additional feedback will be carried forward to stage 3.	3.4.2 & 3.4.5 and DPE sections 2-11
Tillingham airstrip users	Agreed to all options and the DP being correctly applied.	Noted	N/A
Heathrow Airport Limited	Agreed to all options and the DP being correctly applied.	Noted	N/A
Southend City Council	Agreed to most of the DPs correctly assessed against options, however queried one option for DP11, the altitude of aircraft for another and the impacts of sensitive sites on two others.	LSA agree and we have amended assessment, additionally amended the description of the RAG score to reflect comments (However it should be noted that while the RAG changed for DP11 as a result of this feedback, it was subsequently changed back to red due to fuel efficiency). Regarding Canvey Island, this is now included the additional areas in our assessment of DP2 and DP3.	3.4.7 and DPE sections 2-11, 4.4.3, 5.7.3, 8.6.3, 9.9.3 & 10.4.3

Stakeholder	What we heard	What we did	Further information
River Oak Strategic Partners (Manston Airport)	Requested additional areas be considered. Also commented on IFP protection. Requested inclusion of Rayleigh. Other comments related to consistency of assessments.	Agreed and included the additional areas in assessment. Option assessed as partially met for the IFP protection areas. Rayleigh is now included. Regarding the consistency, LSA have amended the RAG score to reflect.	3.4.3 and 3.4.7 DPE sections 2-11 3.3.3., 5.6.3, 6.3.3, 7.3.3, 8.6.3, 10.3.3, 10.4.3
Biggin Hill Airport	Commented that it will be possible for all design principles to be applied to the routes which are established within each swathe.	Noted	DPE section 12.1
Ministry of Defence (MoD)	Agreed to all options and the DP being correctly applied.	Noted	N/A
NATS (NERL)	Commented that simply making a SID RNAV would not necessarily equate to free flow on that route. Also commented that LSA have incorrectly captured Mersea Island, in assessment. Additional comments to do with RAG scores include: overlap with DA and one option would have additional track miles, assessed as the same; interactions with the current London City Point merge; respite options; newly overflown communities; potential interactions; airspace complexity; safety;	Aim to better integrate with the en-route network and reduce the coordination currently required with the potential to facilitate free flow. LSA agree to Mersea Island comment and removed from assessment. LSA amended RAG assessment as a result of feedback.	DPE sections 2-11, 2.3.3, 2.4.3, 4.3.3, 4.5.3, 5.5.3, 5.6.3, 7.3.3, 8.3.3, 8.4.3, 8.5.3, 8.6.3, 9.3.3, 9.4.3, 10.3.3, 10.4.3, 11.3.3, 11.4.3, 11.5.3, 11.6.3, 11.7.3

Stakeholder	What we heard	What we did	Further information
Parish councillor for Barling	Expressed concern regarding the climb gradient of aircraft in order to minimise noise over certain communities. Also commented on tranquillity for options to the south and use of the DA when 'not open'.	The detail given at this stage of the process by the councillor is more in depth than the current assessment we are carrying out. This level of assessment will be carried out further in the ACP process, at CAP1616 Stage 3. Use of the DA is considered in round 3 of engagement activities.	DPE sections 2-11 2.3.3, 2.4.3, 3.1.3, 3.3.3, 4.3.3, 4.4.3, 4.5.3, 5.3.3, 5.4.3, 5.5.3,
MAG - London Stansted Airport	Comments include conflicts with STN for departures to the east and south and constraints regarding the DA.	Comments have been included in the assessment of DP10. Assessment has been amended where necessary, for example DP10 for D23-NE-B has changed from green to amber.	DPE sections 2-11,. 3.1.3, 3.3.3, 6.4.3, 8.3.3, 8.4.3, 8.6.3, 10.3.3,
Natural England	Mentioned a number of Ramsar sites, SPAs, SACs and the impact of low altitude aircraft on these. Additional comment are concerns about additional emissions due to increased track miles, impact on AONB, concern regarding bird strikes was also mentioned.	LSA have included the additional areas in our assessment of DP4, however this did not always alter the RAG score. RAG scores have amended where appropriate, for example option A23-SE-F was changed from Red to Amber in response to feedback.	3.4.1 and DPE sections 2-11, 2.3.3, 2.4.3, 3.1.3, 3.3.3, 4.3.3, 4.4.3, 4.5.3, 5.4.3, 5.5.3, 5.6.3, 6.1.3, 6.3.3, 6.4.3, 7.3.3, 7.4.3, 7.5.3, 8.5.3, 8.6.3, 9.1.3, 9.3.3, 9.4.3, 9.5.3, 9.6.3, 9.7.3, 9.8.3, 10.3.3, 10.4.3, 11.2.3, 11.3.3, 11.4.3, 11.5.3, 11.6.3, 11.7.3,

Stakeholder	What we heard	What we did	Further information
Private Pilot	Highlighted possible conflict areas and overflight of populated areas and sensitive sites. Mentioned utilising climb gradient to avoid such areas and discussed route efficiency and expressed route preferences. Highlighted the importance of liaising with military DA authorities.	Where applicable LSA have addressed and included these comments in the assessment. Comments will be useful for stage 3 of the ACP process; these will be carried forward and addressed.	DPE sections 2-11, 2.3.3, 2.4.3, 3.1.3, 3.3.3, 4.3.3, 4.4.3, 4.5.3, 5.3.3, 5.4.3, 5.5.3, 5.6.3, 5.7.3, 7.5.3, 9.1.3, 9.3.3, 9.9.3, 11.5.3, 11.6.3, 11.7.3,

Table 4: Feedback Summary By Stakeholder First Round

3.5. Second Round: Introducing Additional Swathes

3.5.1. In December 2022 LSA submitted their Stage 2 documentation to the CAA for the FASI(S) ACP. Feedback from the CAA indicated that two sets of options were not as comprehensive as they could have been. These areas were re-visited to improve upon the suite of options.

3.5.2. After an internal operational workshop on the 19th of July 2023, it was decided that, for completeness, we would introduce two additional swathes in these areas to ensure we had captured all possible options. These additional options are:

- Departures - D23-NE-E;
- Arrivals - A05-SE-H.

3.5.3. Both the additional swathes show potential routes through the Shoeburyness Danger Areas (DAs) – D136/D138, these are shown in Sections 4.6 (D23-NE-E) and 5.2 (A05-SE-H).

3.5.4. A presentation, showing the additional swathes, was sent out to stakeholders on the 5th of September 2023 with a link to an online feedback form, and an invite to an online feedback session on the 26th of September 2023. Reminder emails were sent to all stakeholders on the 25th of September 2023, the 2nd of October 2023 and the 5th of October 2023. The Engagement ran for a period of 31 days ending on the 6th of October 2023. The Presentation can be found on the ACP Portal titled 'LSA Stakeholder Stage 2 Additional Swathes Presentation' [11].

[11] It should be noted that we had already considered the potential of using the area contained within the additional swathes for the other departure and arrival directions not included in this supplementary presentation. As a result, the airspace and land beneath these additional swathes has already been assessed through previously considered options.

3.6. Responses – Second Round

3.6.1. Fifteen responses were received via the Online feedback form with a further two responses by email (see respondents listed below). This feedback is contained in its entirety in the full Design Principle Evaluation document, under the respective option assessment, and can be found on the ACP Portal titled: 'LSA Design Principle Evaluation'.

3.6.2. In total we received 17 responses from stakeholders who included:

- Heathrow Airport;
- Biggin Hill Airport;
- London Stansted Airport;
- Rochester Airport;
- St Lawrence Airstrip;
- Barling Airfield;
- Seawing Flying Club;
- General Aviation Alliance;
- NATS (NERL);
- MoD;
- British Gliding Association;
- RSPB;
- Private Pilots;
- Local Councils;
- ACC Member.

3.6.3. The feedback session on 26th September 2023 was attended by 4 stakeholders and the minutes from this meeting can be found in **Annex A**. However, it is important to note that queries had been captured from stakeholders prior to the feedback session to enable an informed discussion to take place during the meeting. These questions are also available in **Annex A**.

3.6.4. Following the engagement request, LSA had a meeting with Qinetiq (the operator of the Shoeburyness Danger Areas) on the 18th of October 2023 to discuss the two proposed additional options and capture any supplementary feedback. There were no additional comments made during the meeting and they confirmed they had already responded to the engagement via Defence Airspace and Air Traffic Management (DAATM). The minutes of the meeting are included in **Annex B.**

3.6.5. While London City Airport didn't respond directly to our invitation to take part in either the initial engagement or the subsequent rework engagement, we have engaged with them at various bilateral sessions throughout the ACP process. These have included ACOG led LTMA workshops and NATS led simulation[12]. Interdependencies with current London City Airport procedures were also highlighted by NATS feedback on both rounds of engagement.

[12] 26th October 2022 at Swanwick

3.7. Feedback Summary – Second Round

3.7.1. As anticipated given the nature of this engagement, queries centred around the use and avoidance of the Danger Areas.

3.7.2. Clarification of aircraft height and levels of noise exposure were sought. There was some concern that impacts on particular SSSIs, AONBs, SPAs and Ramsar sites be considered.

3.7.3. In addition, there were queries around the potential for respite routes outside of the Danger Areas' published operating hours.

3.7.4. There was a concern raised about one of the RAG scores (DP11) and, another, was amended from amber to red based on feedback.

Stakeholder	What we heard	What we did	Further information
Southend City Council	Requested to know the hours of operation and when option would be feasible, how arrivals compare with departures for noise/aircraft height. Queried Overflight assessment and noted options would increase impact on areas of tranquillity.	Description of RAG score amended to reflect comments. The overflight criteria was correctly assessed as the option would overfly similar or less people than today. Regarding Tranquillity, the assessment criteria requires assessment of NPs and AONBs at this stage, consideration of Foulness (in terms of tranquillity) may be raised in the next stage. It is currently considered as a sensitive biodiversity site.	3.7.2 and DPE 5.7.3 & 9.9.3
Seawing Flying club (x2 respondents)	One respondents feedback indicated no issues with either option. The other highlighted noise profile of arrivals, issues of bird strikes for departures and compared pre and post covid years in terms of tranquillity.	Overflight criteria is fully met. Other comments are noted however they have not altered assessment at this stage, comments will be taken forward to stage 3.	3.7.1 DPE 5.7.3
Heathrow	Stated feedback from 1st round of engagement remains valid, no further comments.	Noted	N/A

Stakeholder	What we heard	What we did	Further information
Private pilot	Commented that options are better from a noise perspective as is mostly over water.	Noted	N/A
Barling Airfield	Reported no impact on Barling	Noted	N/A
Essex County Council	Would like to understand when respite used. Required clarification on any increase in track miles and questioned the consistence of assessments of DP7&8.	LSA agreed and changed assessment accordingly. LSA are currently exploring the use of respite routes, we would expect them to be used outside the DAs published operating hours.	3.7.4, DPE 5.7.3 & 9.9.3
NATS (NERL)	Procedures could be established for use of the areas covered by options when the range is inactive and used for respite. Made reference to possible interaction with London City point merge.	Agreed and have amended the assessment.	3.7.3 and DPE 5.7.3 and 9.9.3
St Lawrence Airstrip	No impacts on operations	Noted	DPE 9.9.3
London Biggin Hill Airport	Have no concerns regarding one route but are interested in the development of other options.	LSA will continue to engage as the process develops.	DPE 9.9.3
RSPB	Provided a detailed response regarding impacts on particular SSSIs, AONBs, SPAs and Ramsar sites.	LSA agreed and amended the RAG score for DP4 as a result of this feedback.	3.7.2, DPE 5.7.3 and 9.9.3
Defence Airspace & Air Traffic Management (MoD)	Comments regarding Shoeburyness range and potential for limiting MoD activities, however, recognises the need for FUA.	Options still in early development and these options are being explored as potential respite routes outside the DA operating hours.	3.7.3 and DPE 5.7.3 & 9.9.3

Stakeholder	What we heard	What we did	Further information
Rochester Airport	Commented that it is another option with potential drawbacks	Options will be developed further as the ACP process continues	N/A
General Aviation Alliance	Queried the statement "This option would require an increase in controlled airspace." Commenting that it is not possible to provide meaningful feedback without knowing what this would look like.	ACP is still early in development and therefore not possible to be more specific. LSA understand and appreciate the feedback, and it will be addressed in the next stage of the ACP.	DPE 5.7.3 & 9.9.3
London Stansted Airport	No comment on additional swathes	NA	DPE 5.7.3 & 9.9.3

Table 5: Feedback Summary By Stakeholder Second Round

3.8. Stakeholder Update November 2023

3.8.1. An online update session was held on the 29 November 2023 to inform stakeholders of the progress of this ACP. A presentation was given, which can be found on the ACP Portal. The content of this update session included:

- Overview of FASI(S) ACP and update on ACP progress;
- Stage 2A;
- Stage 2B;
- Gateway and Timeline;
- Next steps;
- Opportunity for Questions.

3.8.2. Further information on stakeholder engagement can be found in Section 3 of the document titled 'Options Development and Design Principle Evaluation' which is available on the ACP Portal.

3.9. Third Round: Baselines and DPE Criteria Update

3.9.1. An email was sent on the 5th July 2024 inviting stakeholders to an online information session and to complete a feedback survey. The information session took place on 23rd July 2024 and was attended by 7 stakeholders; both technical and non-technical stakeholders. The Survey can be found on the ACP Portal. Reminder emails were sent on the 16th, 19th and 29th July. The deadline for responding to the survey was initially 4th August and subsequently extended on the 2nd August to the 11th August 2024, running for a total of 37 days.

3.9.2. The two key objectives were to present a 'do-nothing' baseline, in addition to the 'do-minimum' baseline previously presented, and to update stakeholders on the new assessment criteria.

3.9.3. The do-nothing baseline was introduced following feedback from the CAA at the December 2023 gateway. The do-nothing baselines are reflective of today's operation and encompass the Airspace and Procedures as they would remain if there were to be no change. They show where traffic currently flies in today's operation and provide us with a 'baseline' from which to assess the positives and negatives of other options. The do-nothing baselines have been defined using Noise and Track Keeping (NTK) data, current procedures, and discussion with operational Air Traffic controllers.

3.9.4. In addition to the introduction of the do-nothing baselines, the CAA further commented that the DPE assessment criteria had been incorrectly applied to the options. THE DPE had previously assessed each option against the Baseline in relation to each DP, however it was accepted that the DPE should assess the options against the DP wording and not measure against the Baseline. For example, for DP4 Tranquillity, the assessment previously assessed as green if the option was an improvement on today's operation and not assessed against the DP itself.

3.10. Responses – Third Round

3.10.1. In total 12 responses were received, 10 from the online feedback form, one copied form completed and sent via email and one email response. These respondents were from the following organisations:

- British Gliding Association;
- Barling Airfield;
- Gatwick Airport Limited;
- NATS (NERL);
- Essex County Council;
- National Trust;
- Seawing Flying Club;
- London Luton Airport;
- Kent County Council;
- Ministry of Defence;
- Kent Downs;
- London Stansted Airport.

3.10.2. The first two responses to the survey came from the British Gliding Association and Barling Airfield. Upon checking their responses it became apparent there was a technical issue with the online survey, and it had not progressed beyond the first couple of questions. Once the issue was resolved, both stakeholders were contacted and asked if they would like to revisit the survey. Barling Airfield then completed the survey in full. The British Gliding Association declined citing the following '*This stage of the ACP isn't overly informative for us it is difficult to see the potential impact on our access to airspace. Until we see lines and heights on charts, it's very difficult for us to develop a view. It's a feature of the process we regularly highlight to CAA.'*

3.11. Feedback Summary – Third Round

3.11.1. A number of comments related to the need for certain communities that may be overflown to be included in the DPE assessment. There was a call for 'sensitive receptors', beyond those solely designated as 'education', to be included in tranquillity assessments.

3.11.2. There was a query around how the systemisation DP had been met and one about how integration with the en-route network had been achieved. Also, for some options, attention was drawn to potential conflict with traffic from other airports (London City and Stansted) and the LTMA generally. There were comments too around the feasibility of free flow and the need for deconfliction. Other comments related to the increased complexity of network connectivity with some options.

3.11.3. There was some concern that impacts on particular sites, such as Scheduled Ancient Monuments (SAM), also be included.

3.11.4. In addition, there was an over-arching response that the qualitative methodology used was sufficient for stakeholders to agree with the assessment made of the 'do nothing' and 'do minimum' approaches.

3.11.5. As a result of comments made, the text of a few assessments was changed. Where no change was made in response to feedback, a justification was supplied.

Stakeholder	What we heard	What we did	Further information
British Gliding Association	DPs have been correctly applied to the Baselines and Do-Min options. However technical issues prevented the full survey completion.	Contacted the BGA to offer a resubmission of survey, it was declined at this stage.	3.10.2
Barling Airfield (X2 respondents)	DPs have been correctly applied to the Baselines and Do-Min options.	Noted	N/A
Gatwick Airport Limited	Required further information about integration with the en-route network.	Meeting held to explain the process.	3.11.2 and DPE 2.2.3
NATS (NERL)	Queried feasibility of free flow and the need for deconfliction.	Explained LSA are aware aim would be to better integrate with the en route network and reduce the coordination currently required with the potential to facilitate free flow.	3.11.2 and DPE 2.2.3

Stakeholder	What we heard	What we did	Further information
Essex County Council	Stated that assessment should highlight communities overflown. Should include areas of education etc.	Key areas overflown have been included. Areas of education are not included at this stage as the swathe approach covers a large area, this will be incorporated when routes are refined withing swathes at the next stage.	3.11.1 and DPE 2.2.3
National Trust	Expressed concern that impacts on particular sites, such as SAMs be included.	Not included at this stage as swathe approach covers a large area, this will be considered at the next stage when options are refined.	3.11.3 and DPE 2.2.3
Seawing Flying Club	DPs have been correctly applied to the Baselines and Do-Min options.	Noted	N/A
London Luton Airport	DPs have been correctly applied to the Baselines and Do-Min options.	Noted	N/A
Kent County Council	Not evaluated as does not impact Kent	Noted	N/A
Ministry of Defence	DPs have been correctly applied to the Baselines and Do-Min options.	Noted	N/A
Kent Downs	Not evaluated as does not impact Ken Downs	Noted	N/A
London Stansted Airport	Emailed LSA to advise no comments on evaluation. Raised one comment regarding DP10 (Systemisation) and stated that London Stansted Airport is keen to work to resolve possible conflicts between proposed options once LSA have designed specific route options at Stage 3.	Noted	N/A

Table 6: Feedback Summary By Stakeholder Third Round

3.12. Additional Survey Feedback

In the survey sent out to stakeholder there were two final questions relating to the DPE Criteria Change, the feedback and responses are below.

Survey Question

Do you have any comments on the new criteria presented in the 'Baselines and DPE Criteria Change' Presentation?

If yes, please provide the Design Principle Number in your response.

Response

Stakeholder feedback with our responses in **BOLD**.

NATS (NERL)

'DP12 (AMS). New criteria now reads "not aligned AMS" which seems an incomplete statement.'

The criteria has been changed and now reads 'not aligned with the AMS'.

National Trust

'4 - Tranquillity: As per response to question 7.'

'4 - Tranquillity: it is understood that sites of cultural heritage value are also identified as being noise sensitive areas and therefore Rayleigh Mount (5.5km north west of London Southend Airport) which is a Scheduled Ancient Monument (SAM) should be assessed in respect of frequency of overflights at this location.'

Whilst the DP4 lists sites of cultural or historic assets, they have not been included at this stage due to the 'swathe approach' covering too large an area to be useful when assessing individual sites– these will be fully assessed later in the options appraisal stages when the swathes are refined to more precise routes - 'lines on the map'.

Kent County Council

'DP2 – Overflight and DP3 – Noise - New communities can be more sensitive to becoming overflown as it represents a change from their existing situation, likewise an intensification of overflight either from LSA or in conjunction with the impacts of the other London Airports can exacerbate a noise issue. The RAG rating used at this stage is a very coarse tool for something that is so subjective. For example, the Partially Met criteria for DP2 and DP3 states that the number of people affected should be broadly similar, even if they are new/different communities affected. We question whether this is appropriate but

acknowledge that further stages in the design process will seek to reduce the impacts through specific routing.

DP4 – Tranquillity – Facilities other than sites with an environmental designation should be considered in the assessment criteria, such as sites of education or religious activities. The difference between "overflight of a portion of an AONB" (National Landscape) compared to "significant overflight of AONBs" is not easy to distinguish, for example what is the judged impact when a portion of two National Landscapes are overflown? Similarly, tranquil areas important to local communities can only really be highlighted by engaging with those local communities.

The cumulative impact with the existing and proposed intensification of overflight from other airports should be considered in more detail. For example, Gatwick affects communities in west Kent already. Consequently, we ask LSA to consider the cumulative impact of their route options with those of other airports in the South East and for targeted consultation with the communities potentially affected as the airspace change proposal progresses.

Overall, the new criteria are an improvement on the old criteria and will achieve a broad-brush approach to what route options are worth considering further/where route options may have certain constraints that need to be addressed as the work to refine options is continued. However, as mentioned in the briefing, the level of detail (unless there are many or particularly significant concerns with an option) means that this evaluation is insufficient to reduce route options at this stage.'

DP2/DP3 – This stage of the ACP process is very high-level qualitative assessments on the swathes we have created, further, more detailed assessments of all of the options will be carried out in Stage 2b in the Initial Options Appraisal where population density maps will be used. Following on, any options taken through to Stage 3 will undergo more rigorous assessment. We are, and will continue to engage with London Gatwick Airport, ACOG and all of the other LTMA airports throughout the ACP process.

DP4 - Whilst the DP lists sites of care or education, they have not been included at this stage due to the 'swathe approach' covering too large an area to be useful when assessing individual sites– these will be fully assessed later in the options appraisal stages when the swathes are refined to more precise routes - 'lines on the map'. As with our above response to DP2/DP3, this stage of the process is very high level, and more detailed analysis will be conducted on all of the options in Stage 2b and throughout the rest of this ACP process.

Survey Question

Do you have any comments on the Design Principle Evaluations provided to you in the Supplementary Information Document - LSA Design Principle Evaluation?

If yes, please provide the Design Principle Number in your response.

Response

Stakeholder feedback with our responses in **BOLD**.

Gatwick Airport Limited

'DP 10 in general requires further elaboration since it is unclear how the integration is achieved.'

Following the response in the survey from Gatwick Airport, LSA spoke with them and explained how departures are currently handled. It was explained that the Preferential Departure Routes (PDRs) are subject to tactical release in addition to release by the LSA radar Air Traffic Control Officer (ATCO). The procedure was discussed in detail, and it was explained that for some departures a release from TC South and Thames is required, these are en-route sectors, furthermore this requires 3 coordination calls, when the aircraft is ready at the runway holding point. This process can regularly result in delays, and given LSA's limited taxiway infrastructure, the delay becomes cumulative to the other aircraft in the departure sequence. With the introduction of an RNAV SID, which integrates with the enroute network, the aim is to reduce the coordination currently required and potentially facilitate free flow for the departures.[13]

For arrivals, where the current Do-Nothing baseline is already integrated with the en-route network the Do-Minimum is expected to be an enhancement of this option, reducing the need for coordination and enhancing the network integration.

National Trust

'4 - Tranquillity: As per response to question 7.'

'4 - Tranquillity: it is understood that sites of cultural heritage value are also identified as being noise sensitive areas and therefore Rayleigh Mount (5.5km north west of London Southend Airport) which is a Scheduled Ancient Monument (SAM) should be assessed in respect of frequency of overflights at this location.'

Whilst the DP4 lists sites of cultural or historic assets, they have not been included at this stage due to the 'swathe approach' covering too large an area to be useful when assessing individual sites– these will be fully assessed later in the options appraisal stages when the swathes are refined to more precise routes - 'lines on the map'.

London Luton Airport

'LLA did not have the opportunity to take part in the consultation session 23 July 2024, but the LSA ACP Project Manager offered the opportunity to explain how LSA completed their assessment. LLA are confident that the qualitive methodology used is sufficient for stakeholders to agree with the assessment made of the 'do nothing' and 'do minimum'

[13] More information and explanation can be found in Section 2.4

approaches. LLA looks forward to further progression with LSA's stage two submissions and positive engagement further in the FASI-S program.'

LSA thanks LLA for their feedback and looks forward to engaging with them further in the future.

Kent County Council

'Arrivals runway 05 – South and East – options A and B also extend into the High Weald National Landscape. All swathes to south – DP10 – Systemisation – Now that the legal challenges to the granting of the Development Consent Order for Manston Airport have concluded, LSA will need to ensure that its reopening as an airport is considered in the airspace design process. As further detail is available in subsequent stages of the airspace change process then we would be happy to review and comment further on the potential impacts to communities in Kent.'

The High Weald AONB has been added to the evaluation of Arrivals runway 05 – South and East – options A and B. Manston Airport have been a stakeholder throughout this ACP and will continue to be engaged with in the future.

Ministry of Defence

'While the design principles have been well evaluated against the DPE criteria, it is worth noting at this early point that there are multiple swathes that will require agreement and coordination with MoD Special Use Areas such as Shoeburyness. Any future design options that impact range access and/or operations will require significant agreement and coordination with MoD to ensure continued operational access to training and special use areas.'

We will continue to engage with the MOD fully during the progression of any options that may impact the Shoeburyness danger areas.

3.13. ACOG as a Stakeholder and Additional Engagement with LTMA Airports

3.13.1. ACOGs role was introduced in Section 1. They are an important stakeholder in this ACP. LSA has engaged with them and the other LTMA Airports throughout this ACP process through bilateral, monthly meetings and other regular communications. These include but are not limited to;

Meetings	Date
LTMA Technical coordination group meeting.	26.01.23
	23.03.23

Meetings	Date
	04.05.23
	25.05.23
	27.07.23
	28.09.23
	26.10.23
	23.11.23
	25.01.24
	27.06.24
	11.07.24
ACOG FASI Programme Board.	12.01.22
	16.03.22
	11.05.22
	13.07.22
	14.09.22
	16.11.22
	11.01.23
	15.03.23
	10.05.23
	19.07.23
	13.09.23
	20.03.24
	22.05.24
	17.07.24
LTMA Workshop.	28.10.21
Operational Safety Assurance Delivery Plan Session.	19.01.23
CAF Brief.	12.08.22
BPK workshop part 2.	04.10.22
CAF 2 Strawman and technical fact finding.	07.12.22
BIG SND AMS process review update.	13.03.23
ACOG BPK3 Workshop.	16.11.22
LTMA Workshop LAM Pre Brief.	22.12.22
LTMA Workshop- LAM.	03.01.23

Meetings	Date
	04.01.23
LTMA Workshop CLN Pre Brief.	06.01.23
LTMA Workshop LAM (please note change of RSW Sector).	10.01.23
	11.01.23
LTMA Workshop – LAM.	17.01.23
	18.01.23
LTMA Workshop - BPK & LAM Combo Review.	31.01.23
	01.02.23
Review of CAF1A Route Separation Workshops.	09.02.23
LTMA Next Steps.	15.06.23
LTMA Programme Update.	13.07.23
LTMA Programme Co-ordination Meeting.	09.08.23
LTMA Next Steps.	16.08.23
Taking the Network to the Next Level.	27.04.23
MC/NERL Catch Up.	05.09.23
Southend / Shoeburyness ACP Discussion	18.10.23
LTMA Step 3 Planning and Methodology	16.11.23
Farnborough Stage Two Engagement	04.12.23
Stakeholder Engagement - LTMA First Deployment	16.01.24
	19.01.24
FASI Workshop SEN (NERL)	19.03.24
LTMA Deployment Workshop 2	23.05.24
Build 6 Update - Southend	06.06.24
UKADS LTMA Engagement Meeting	08.08.24
LTMA Programme Coordination Group	11.08.24
	13.06.24
	09.05.24
	14.12.23
SEN and MSE Indicative Interactions technical bi lateral	19.03.24
SEN and STN Indicative Interactions technical bi lateral	15.03.24
SEN and NHT Indicative Interactions technical bi lateral	15.03.24
SEN and LCY Indicative Interactions technical bi lateral	14.03.24
SEN and LTN Indicative Interactions technical bi lateral	12.03.24
SEN and LHR Indicative Interactions technical bi lateral	01.03.24
SEN and GAL Indicative Interactions technical bi lateral	01.03.24

Meetings	Date
SEN and BIG Indicative Interactions technical bi lateral	20.02.24

4. Departure Procedures

4.1. Overview

4.1.1. The Options conceived for each runway and departure direction are depicted in this section of the report in four figures:

i. Google Earth Mapping with existing NTK data;
ii. Google Earth Mapping;
iii. En-Route Chart; and
iv. Google Maps Mapping.

4.1.2. The relative pros and cons of each option are not considered at this stage (these will be looked at during Stage 3); the Options are simply presented and explained. The extent to which each option does or does not meet the Design Principles is covered in the Design Principle Evaluation document[7] on the ACP Portal.

4.1.3. It is possible more than one option for each departure direction may be progressed, through to implementation. Such a scenario would facilitate dispersion of impacts and the potential for relief and respite.

4.2. Runway 05 – Northeast

Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

Departures to the Northeast off Runway 05 typically route straight ahead with a slight deviation to the left of track, as is evidenced by the green NTK data in Figure 8. Our Do-Nothing baseline is defined as option D05-NE-BASELINE and is depicted as the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise. Our Do Minimum option is defined as option D05-NE-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[14].

[14] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

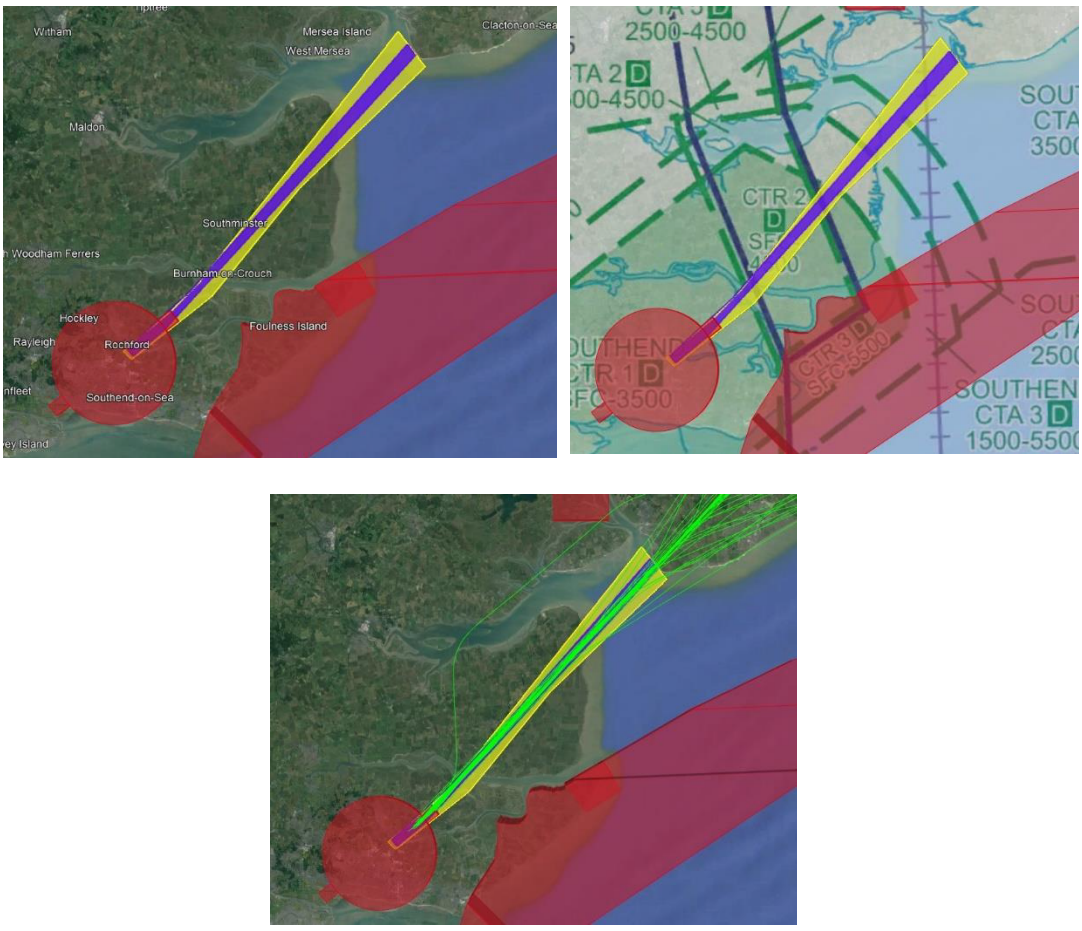


Figure 8: RW05 Northeast Departures Baseline and Do-Minimum Options

Options

Two options were considered, an option to the right of the Baselines (D05-NE-B) and an option with a left turn towards the Northeast (D05-NE-A).

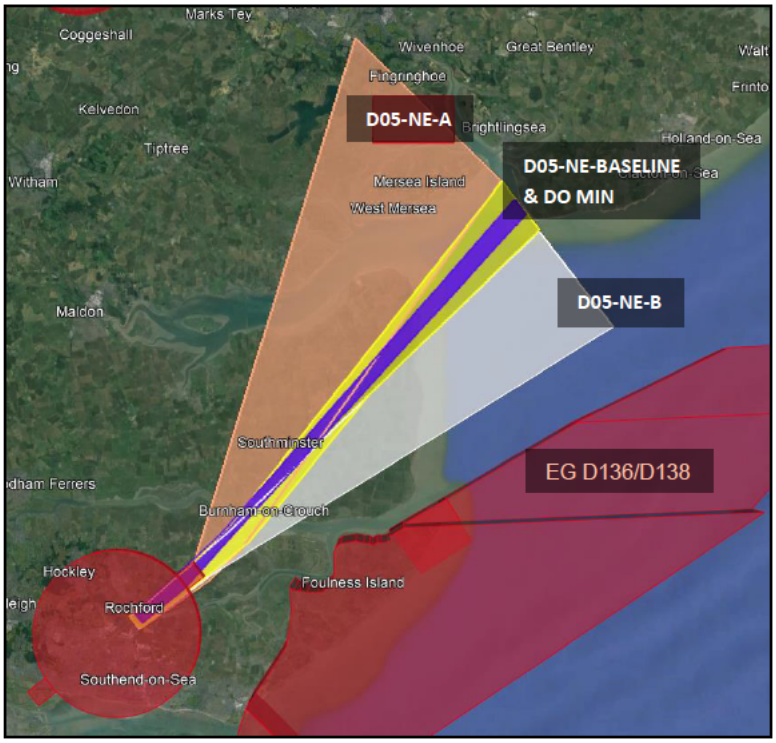


Figure 9: RW05 Northeast Departures on Google Earth

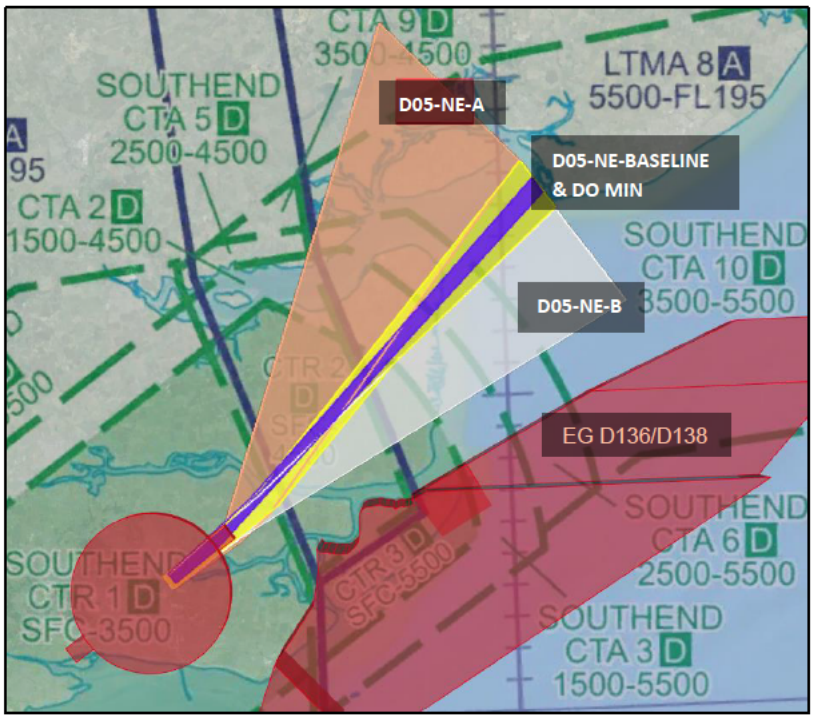


Figure 10: RW05 Northeast Departures with En-route (ENR) Chart

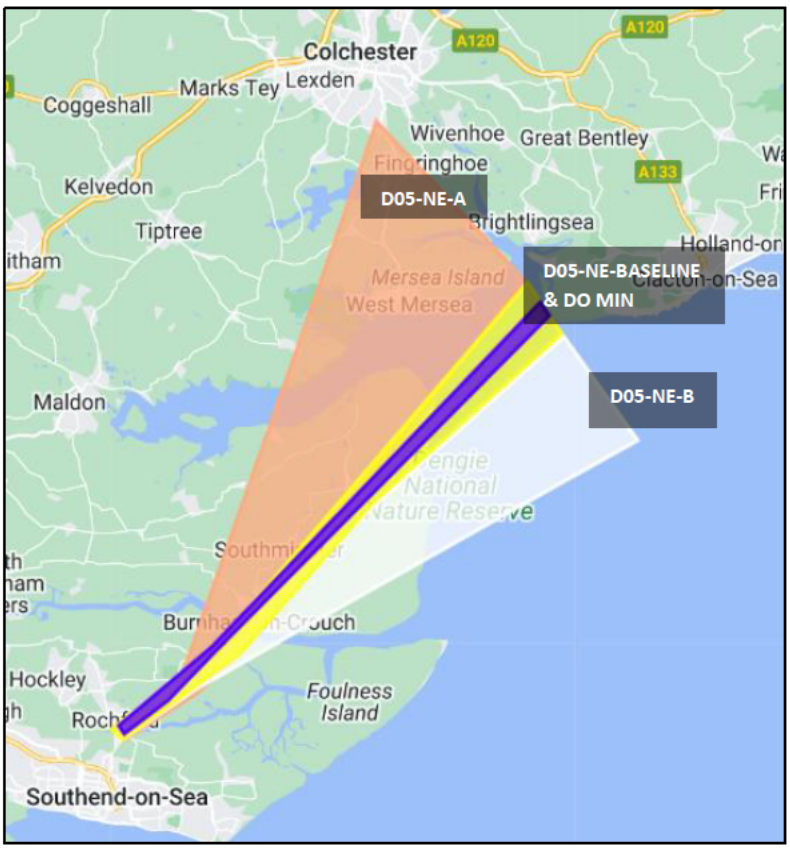


Figure 11: RW05 Northeast Departures on Google Maps

4.3. Runway 05 – Northwest

Baseline (Light grey Swathe) & Do-Minimum (Dark Blue Swathe)

Departures to the Northwest off Runway 05, turn after adherence to the Noise Abatement Procedures (NAPs) directly to the Northwest. However, as can be seen by the track data in **Figure 12**, these tracks disperse quite broadly once North-abeam the Airport. Our baseline is defined as option D05-NW-BASELINE and is depicted by the light grey swathe. This has been established from the NTK data, current procedures, and operational expertise. Our Do Minimum option is defined as option D05-NW-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[15].

[15] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

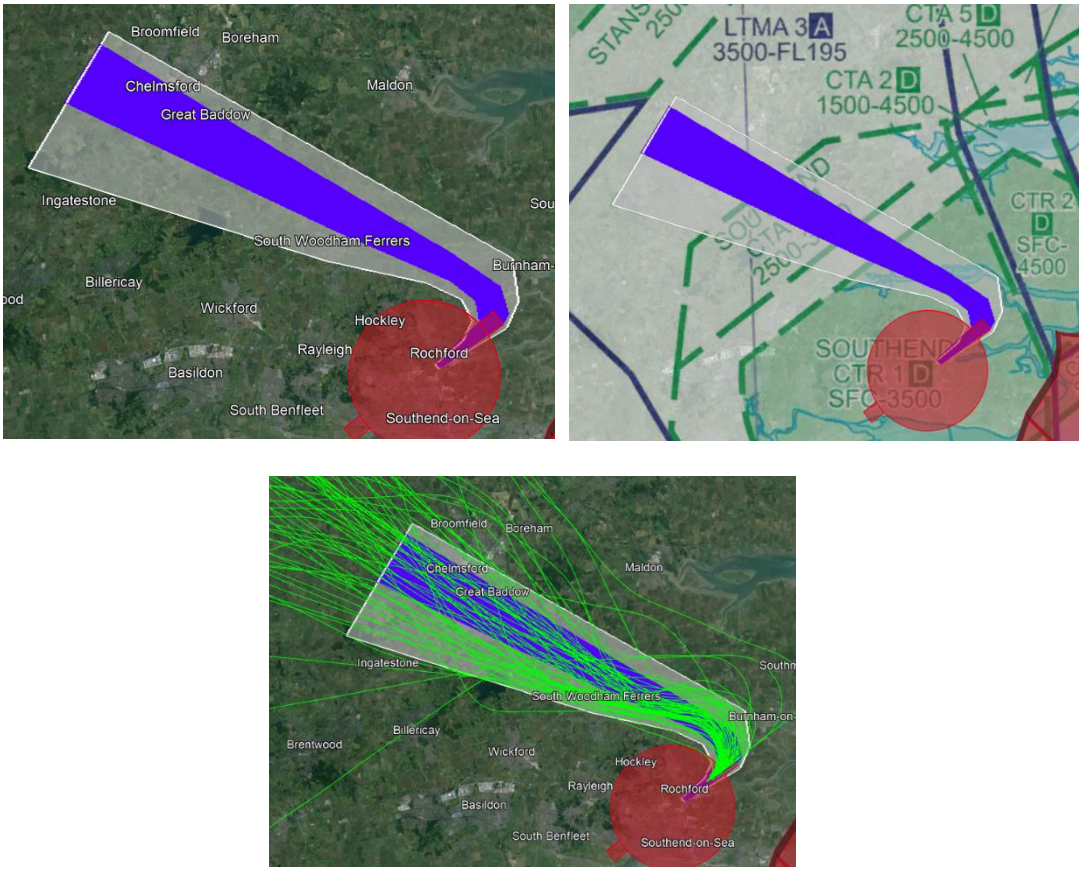


Figure 12: RW05 Northwest Departures Baseline and Do-Minimum Options

Options

One additional option was considered and looked at a shallower turn than the current baseline, resulting in a swathe that is displaced to the North (D05-NW-B).

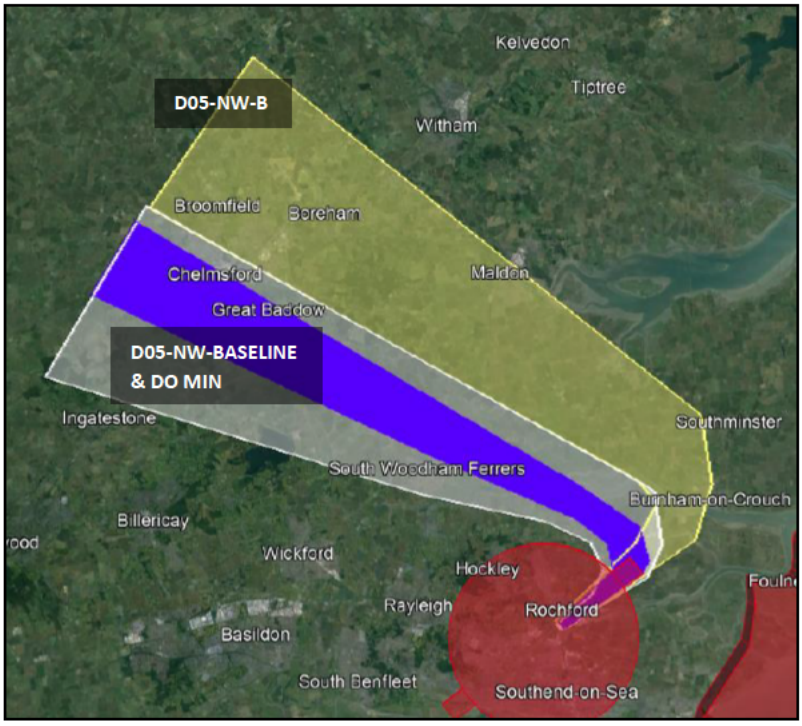


Figure 13: RW05 Northwest Departures on Google Earth

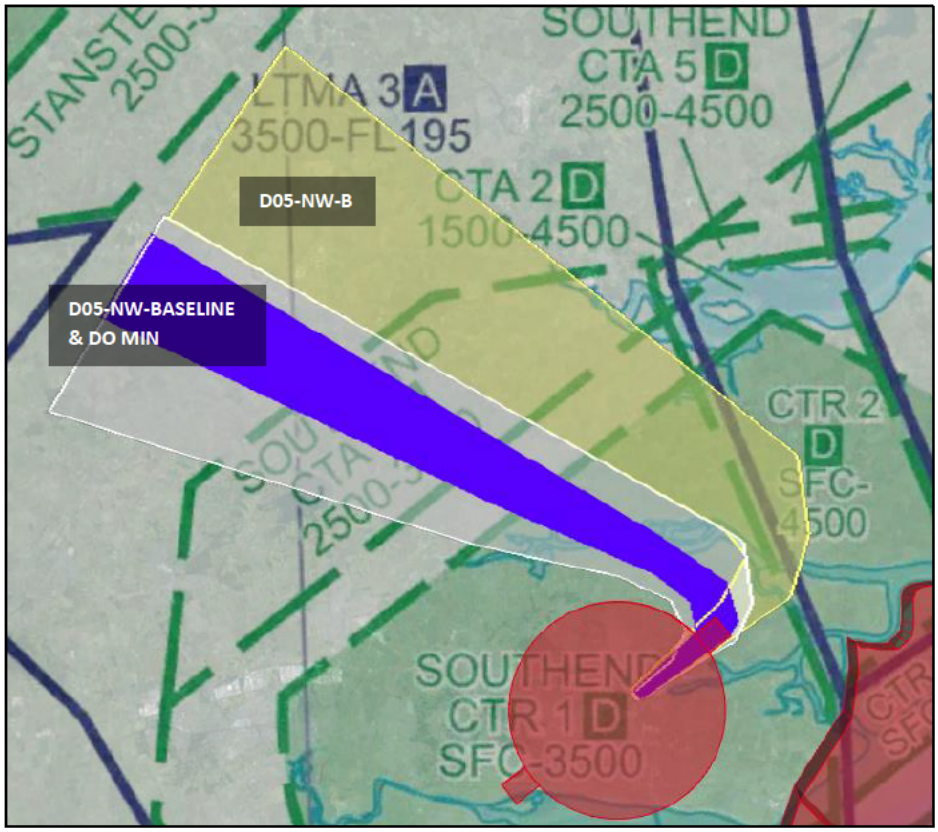


Figure 14: RW05 Northwest Departures with ENR Chart

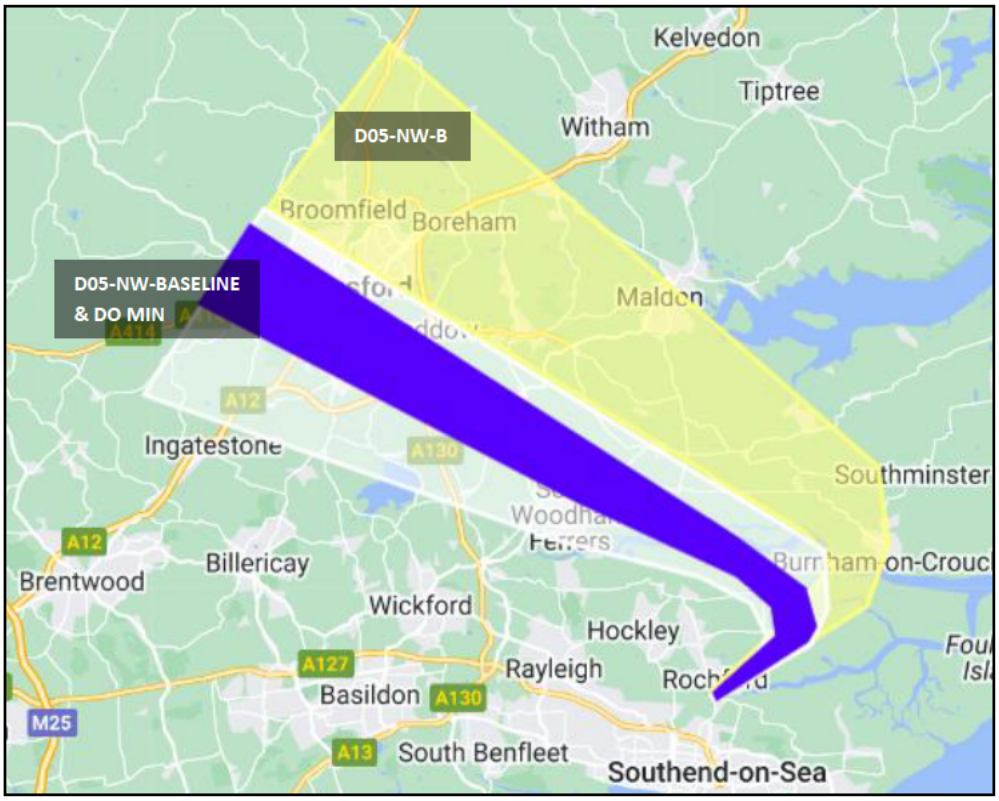


Figure 15: RW05 Northwest Departures on Google Maps

4.4. Runway 05 – South/Southeast

Baseline (Orange Swathe) & Do-Minimum (Dark Blue Swathe)

The Departures to the South off Runway 05 turn, once they have adhered to the NAPs and route directly to the South as shown in **Figure 16** by the green track data. Our baseline is defined as option D05-S-BASELINE and is depicted by the orange swathe. This has been established from the NTK data, current procedures, and operational expertise.[16] Our Do Minimum option is defined as option D05-S-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[17].

[16] Originally the baseline was contained within option D05-S-A.

[17] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

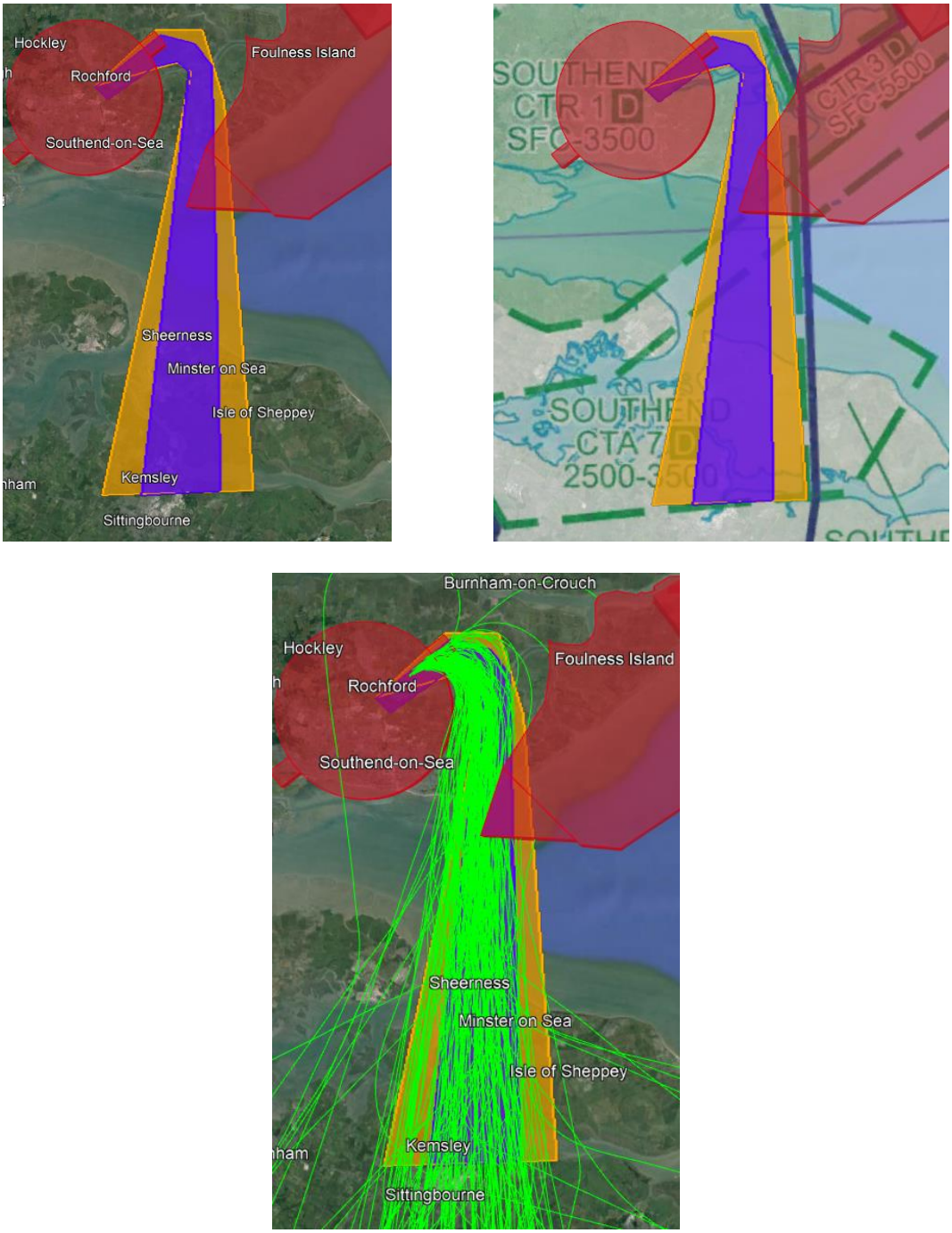


Figure 16: RW05 South Departures Baseline and Do-Minimum Options

Options

Option A (D05-S-A) has been amended to remove the new baseline from its parameters and replicates the current departure tracks with a continued turn to the right and doesn't include our baseline option. The alternatives considered include a wraparound to the North (D05-S-B) and a shallower right-turn (D05-S-C) through Shoeburyness Range (only available when the Range is inactive).

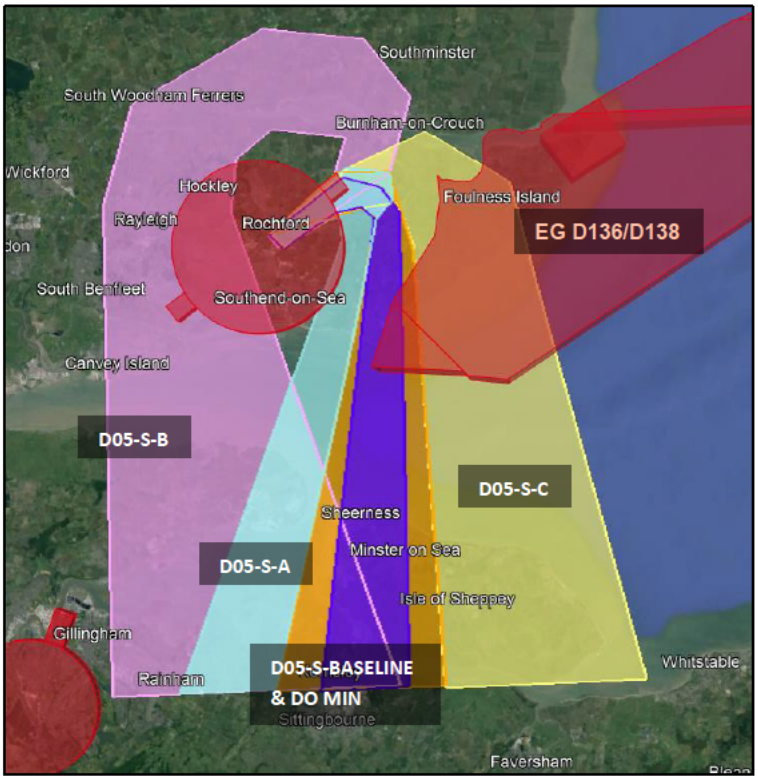


Figure 17: RW05 South Departures on Google Earth

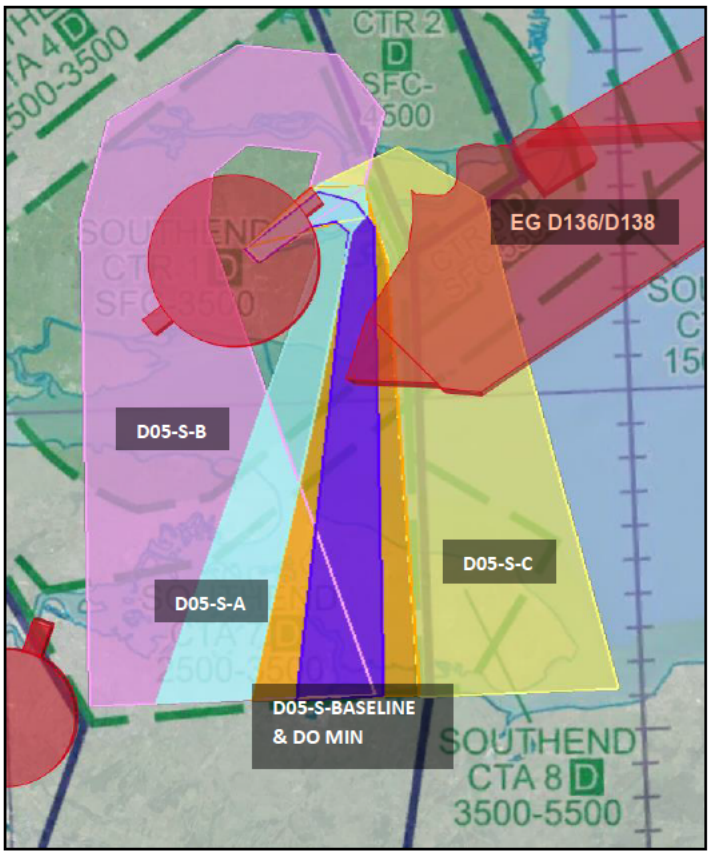


Figure 18: RW05 South Departures with ENR Chart

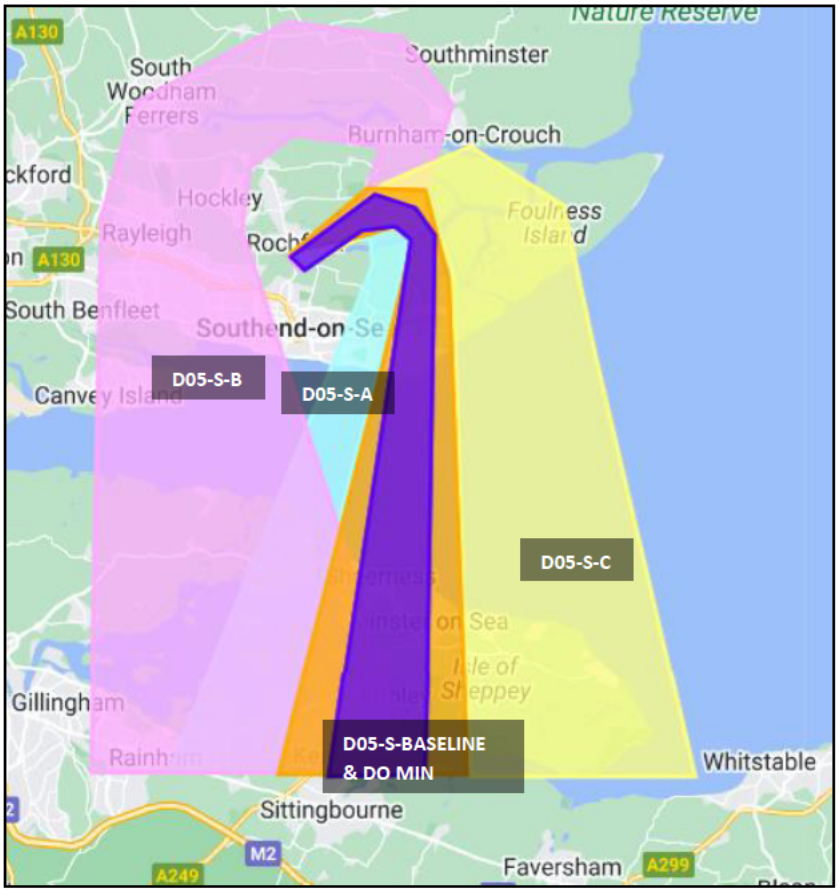


Figure 19: RW05 South Departures on Google Maps

4.5. Runway 05 - All Options

Figure 20 and Figure 21 depicts all the options considered for departures off Runway 05.

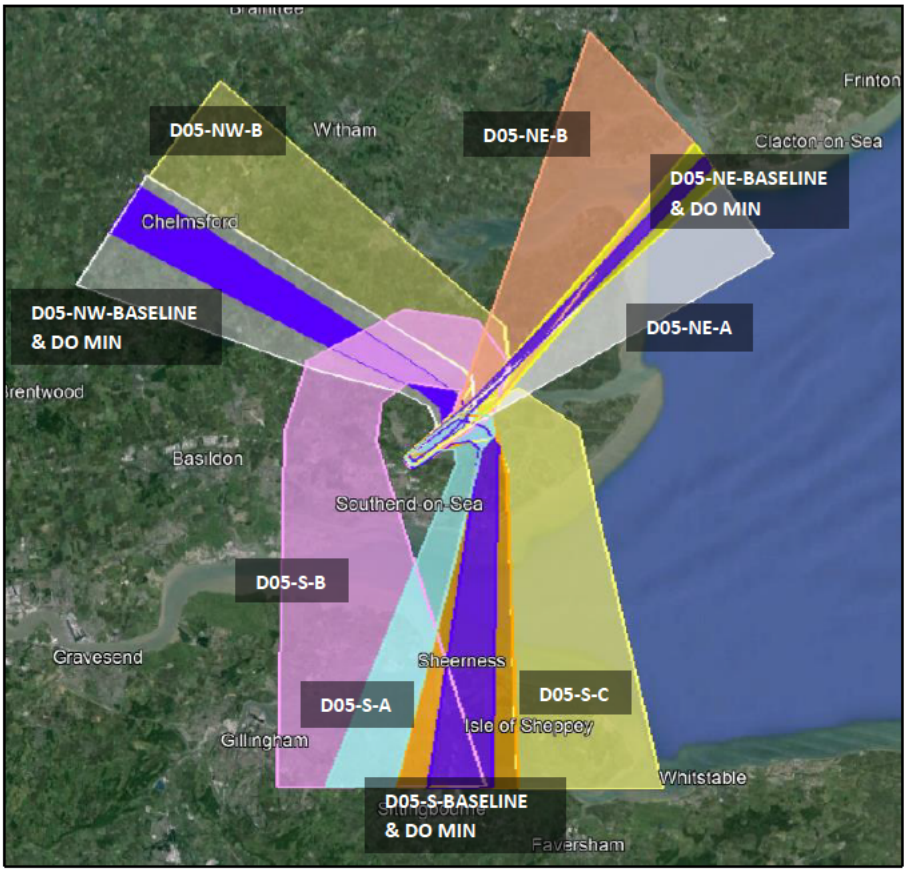


Figure 20: RW05 Departure Options

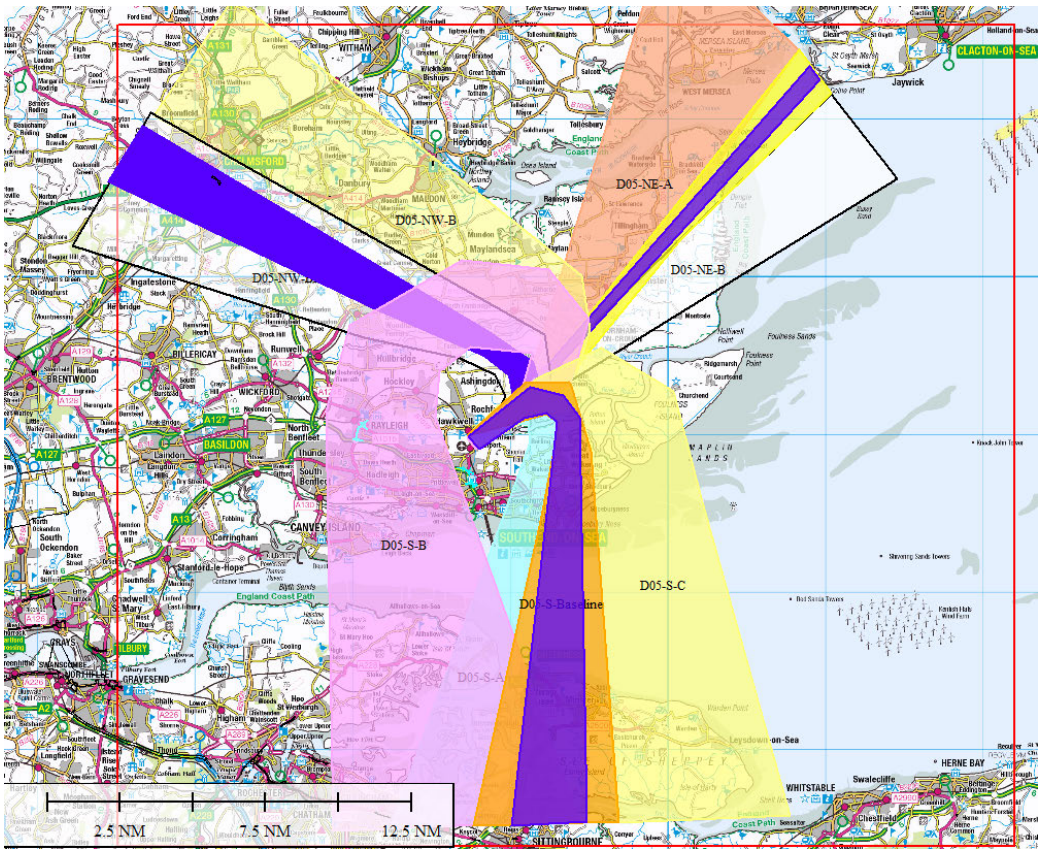


Figure 21: RW05 Departure Options on OS Map

4.6. Runway 23 – Northeast

Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

Departures bound for the Northeast off Runway 23 turn to comply with the NAPs and remain in a tight and direct Northeasterly swathe, depicted by the green lines in Figure 22. Our baseline is defined as option D23-NE-BASELINE and is depicted by the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise.[18] Our Do Minimum option is defined as option D23-NE-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[19].

[18] Originally the baseline was contained within option D23-NE-A.

[19] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

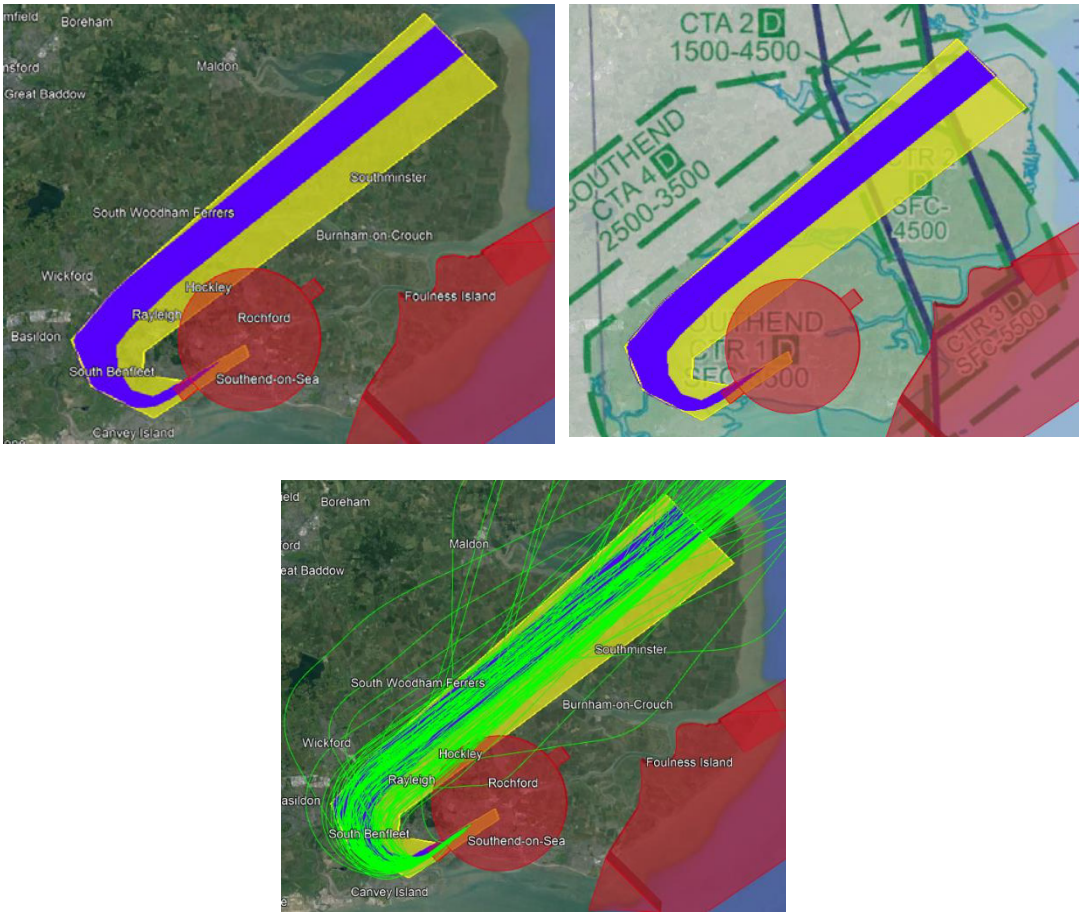


Figure 22: RW23 Northeast Departures Baseline and Do-Minimum Options

Options

Option A (D23-NE-A) originally replicated the departure tracks and included the Baseline, this has now been amended to remove the New baseline from its parameters and covers a smaller area to the NW of the current departure tracks. A shallower right turn to the Northeast was considered (D23-NE-B) with a Northeasterly track displaced to the North. A left-turn out proceeding a track North of the Range (D23-NE-C) and one with an outbound track South of the Range (D23-NE-D) make up the other options for this departure procedure. An additional option was created following feedback from the CAA, this option is D23-NE-E, more details of this additional swathe and the associated engagement can be found in Section 3.

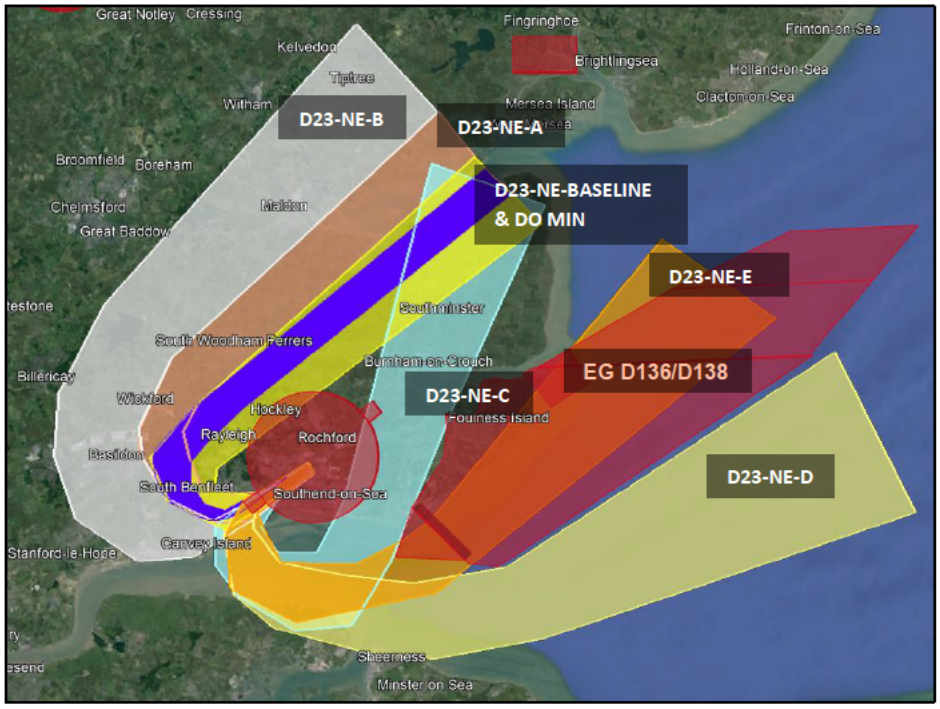


Figure 23: RW23 Northeast Departures on Google Earth

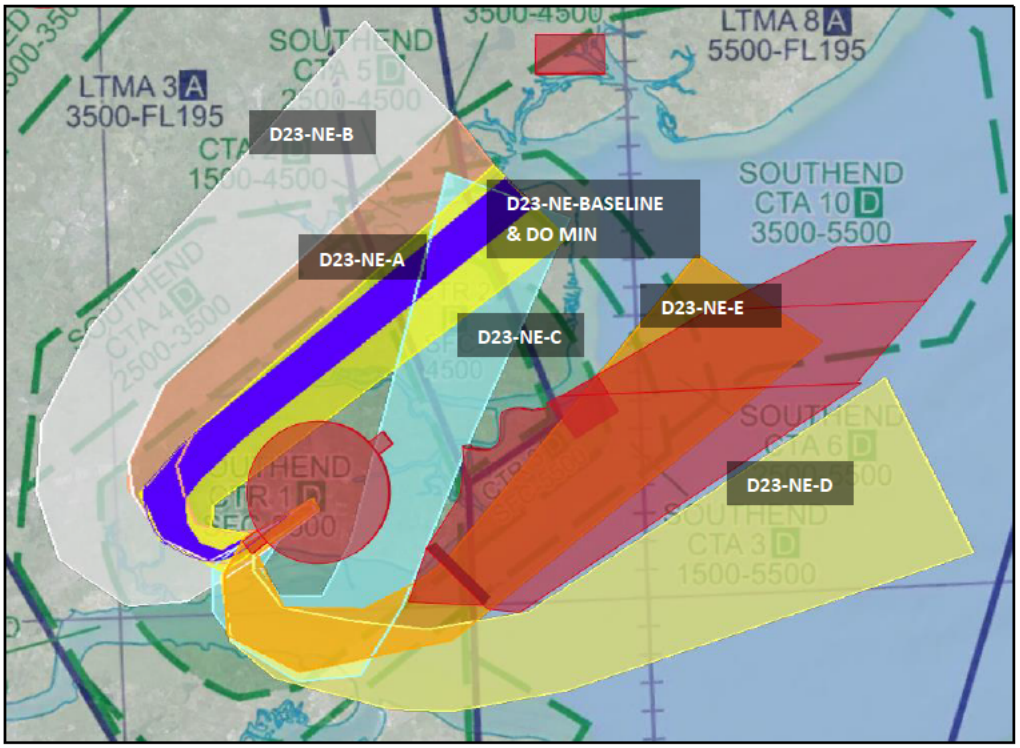


Figure 24: RW23 Northeast Departures with ENR Chart

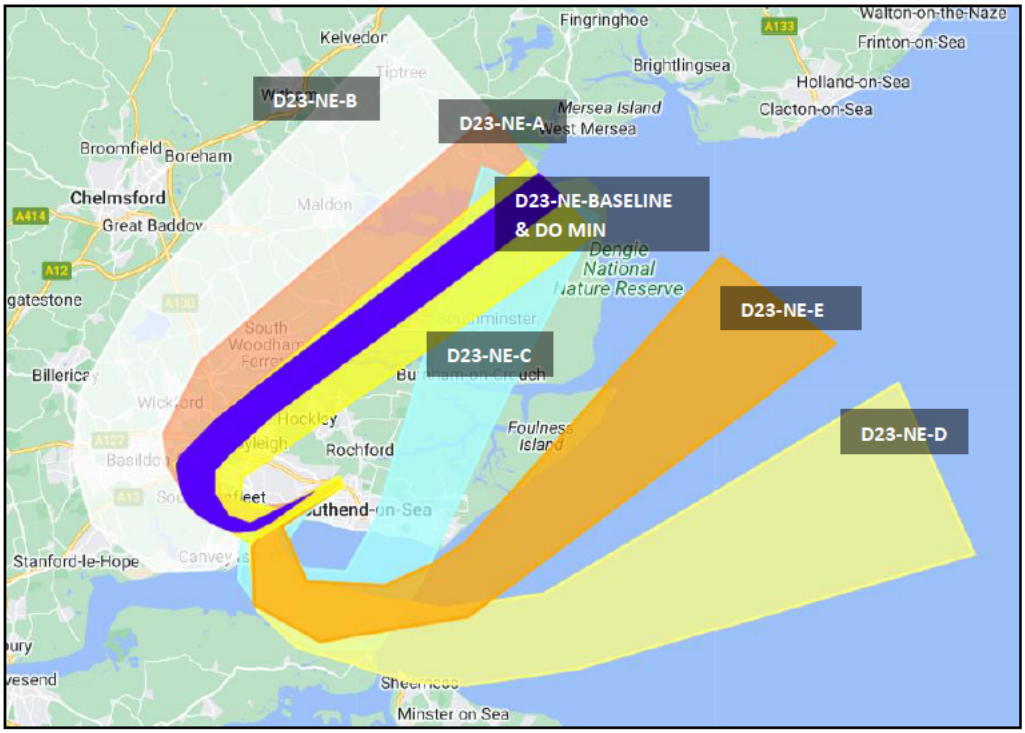


Figure 25: RW23 Northeast Departures on Google Maps

4.7. Runway 23 – Northwest

Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

Departures to the Northwest off Runway 23 turn to comply with the NAPs and do not fan out broadly until aircraft are 15-20NMs Northwest of LSA depicted by the green lines in Figure 26. Our baseline is defined as option D23-NW-BASELINE and is depicted by the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise[20]. Our Do Minimum option is defined as option D23-NW-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[21].

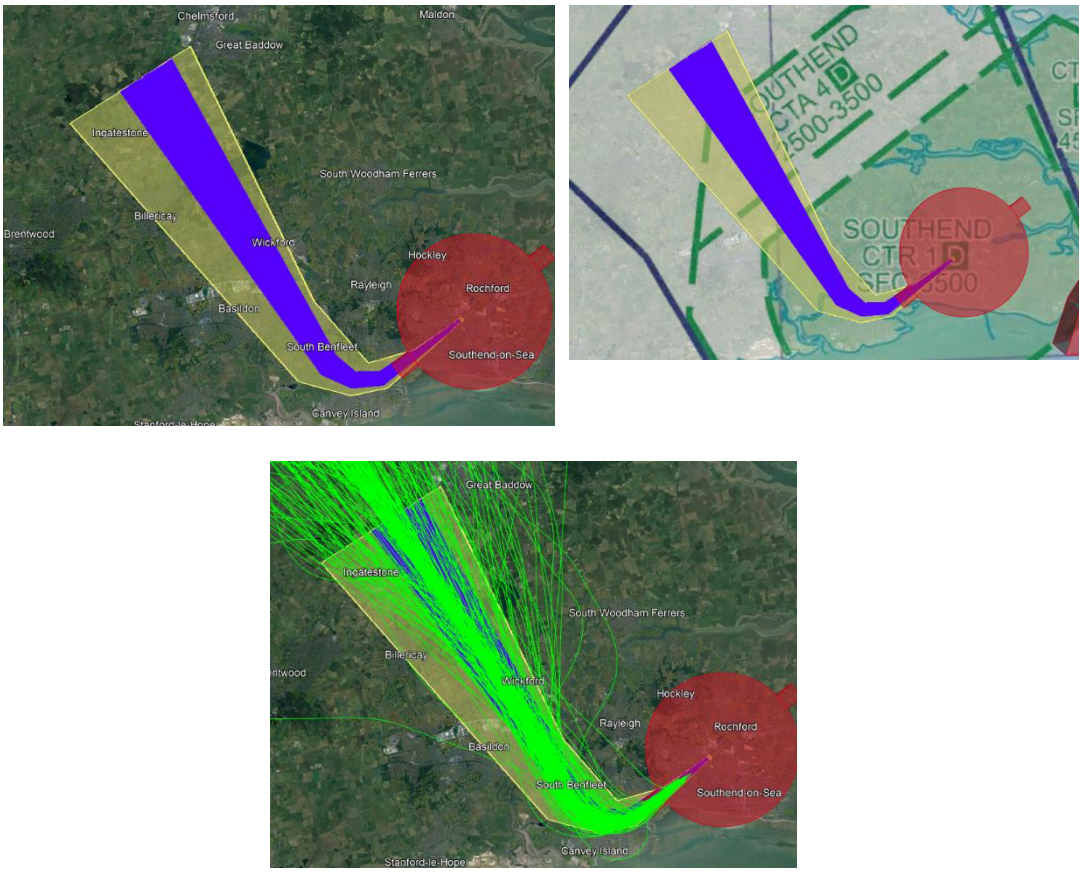


Figure 26: RW23 Northwest Departures Baseline and Do-Minimum Options

[20] Originally this option was defined as D23-NW-C and has now been renamed to more clearly define our baseline option.

[21] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

Options

An earlier turn (i.e., routing East of the existing tracks) provided Option A (D23-NW-A) and a later right-turn with a track displacement to the West became Option B (D23-NW-B).

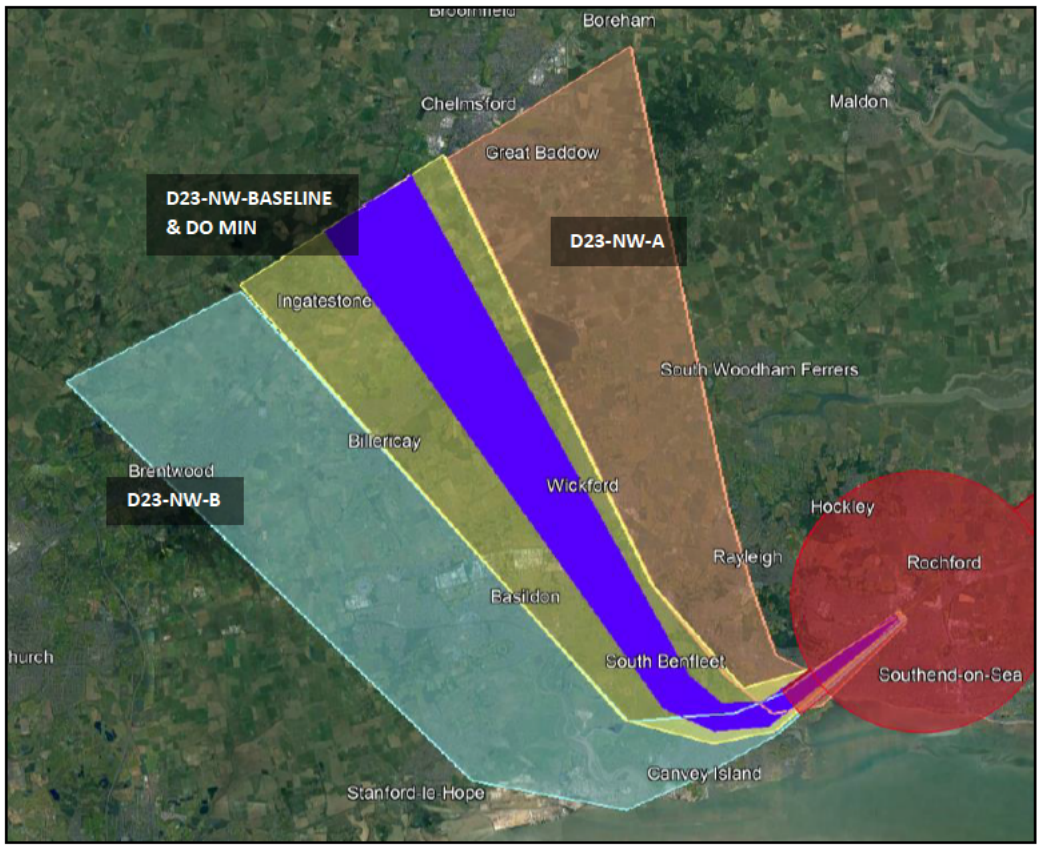


Figure 27: RW23 Northwest Departures on Goole Earth

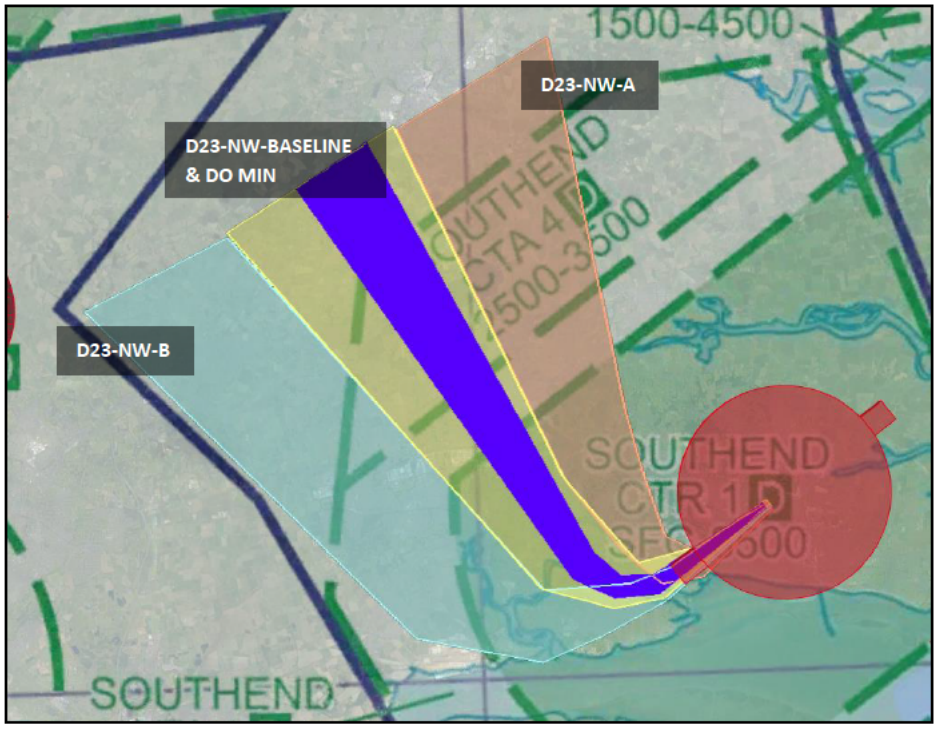


Figure 28: RW23 Northwest Departures with ENR Chart

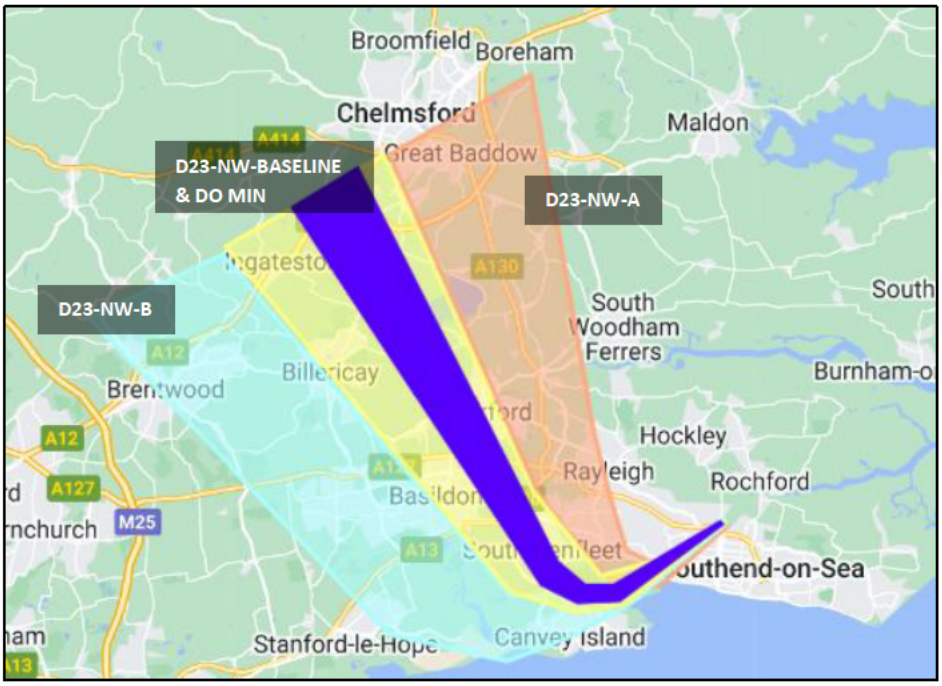


Figure 29: RW23 Northwest Departures on Google Maps

4.8. Runway 23 – South/Southeast

Baseline Orange Swathe) & Do-Minimum (Dark Blue Swathe)

Departures to the South off Runway 23 turn South upon adherence to the NAPs and start to fan out approximately 10-15nms from take-off, depicted by the green lines in Figure 30. Our baseline is defined as option D23-S-BASELINE and is depicted by the orange swathe. This has been established from the NTK data, current procedures, and operational expertise.[22] Our Do Minimum option is defined as option D23-S-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[23].

[22] Originally the baseline was contained within option D23-S-B.

[23] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

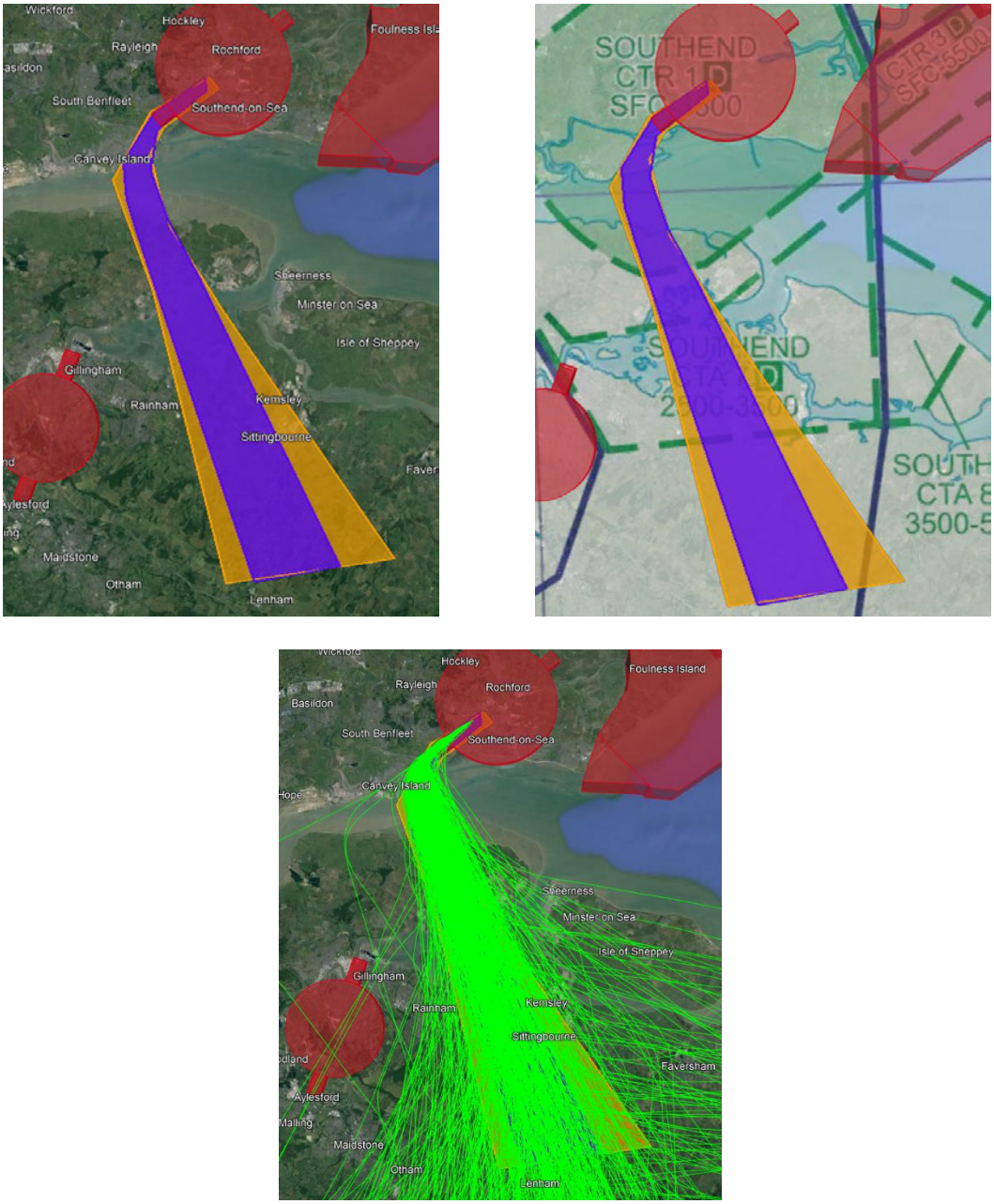


Figure 30: RW23 South Departures Baseline and Do-Minimum Options

Options

Options A and B (D23-S-A and D23-S-B) are a variance on the existing operation with Option A (D23-S-A) displacing the main outbound track to the East. Option B (D23-NE-A) originally replicated the departure tracks and included the Baseline, this has now been amended to remove the new baseline from its parameters and covers a smaller area to the south west of the current departure tracks. Option C (D23-S-C) has a later turn to the South displacing the tracks to the West of where they go today.

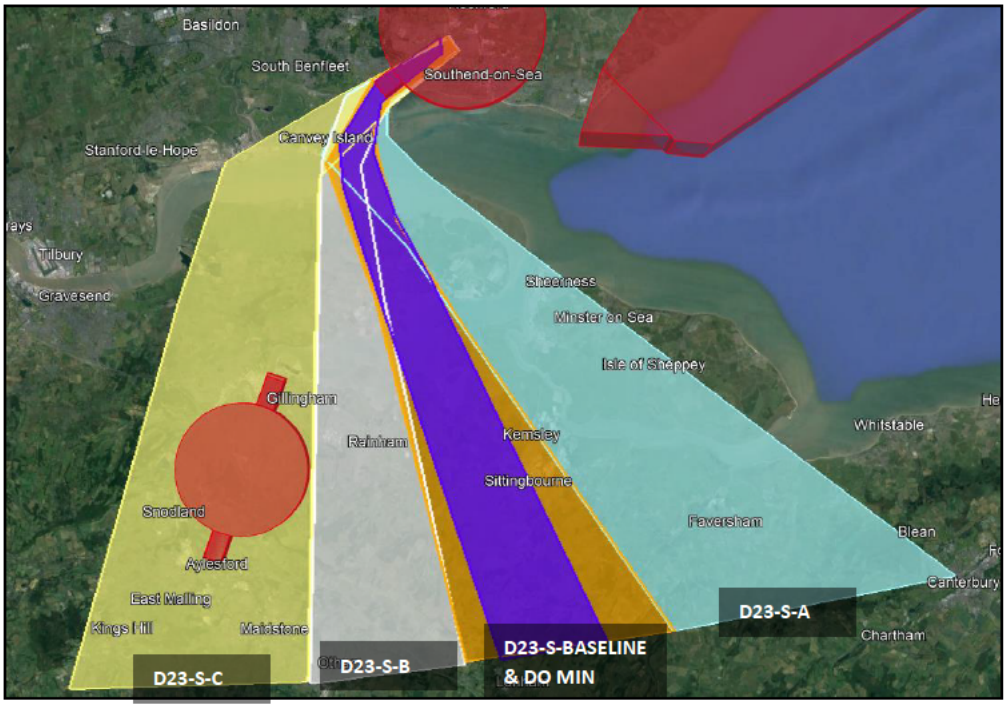


Figure 31: RW23 South Departures on Google Earth

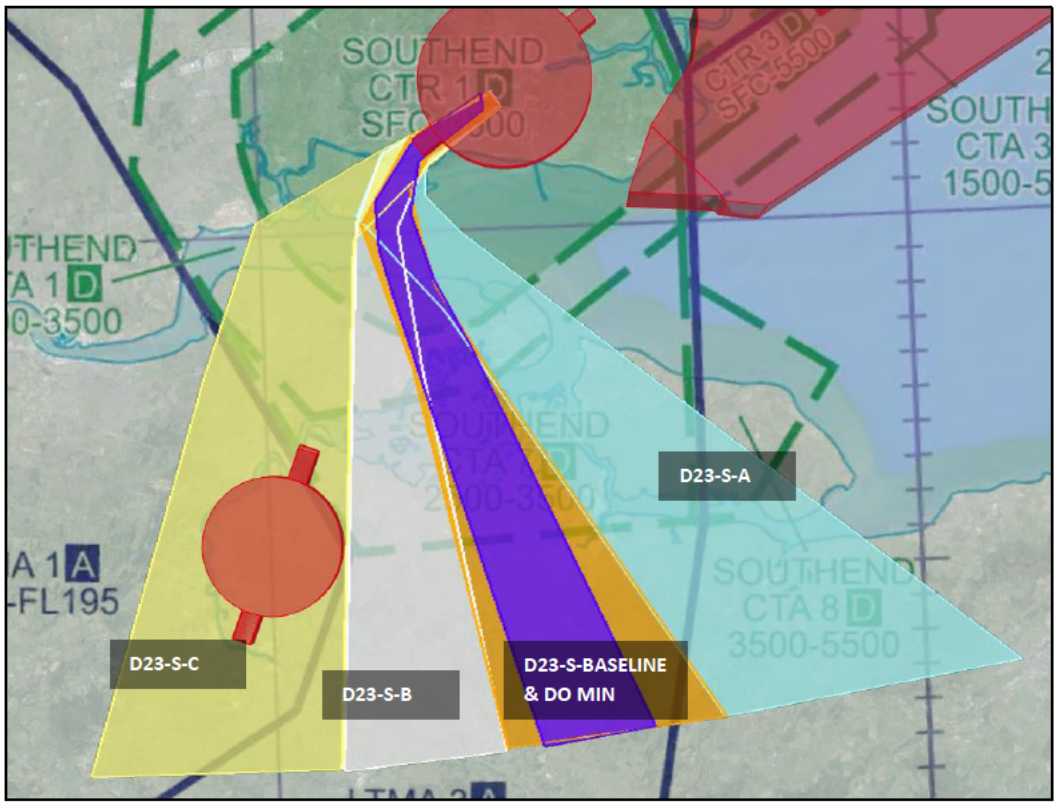


Figure 32: RW23 South Departures with ENR Chart

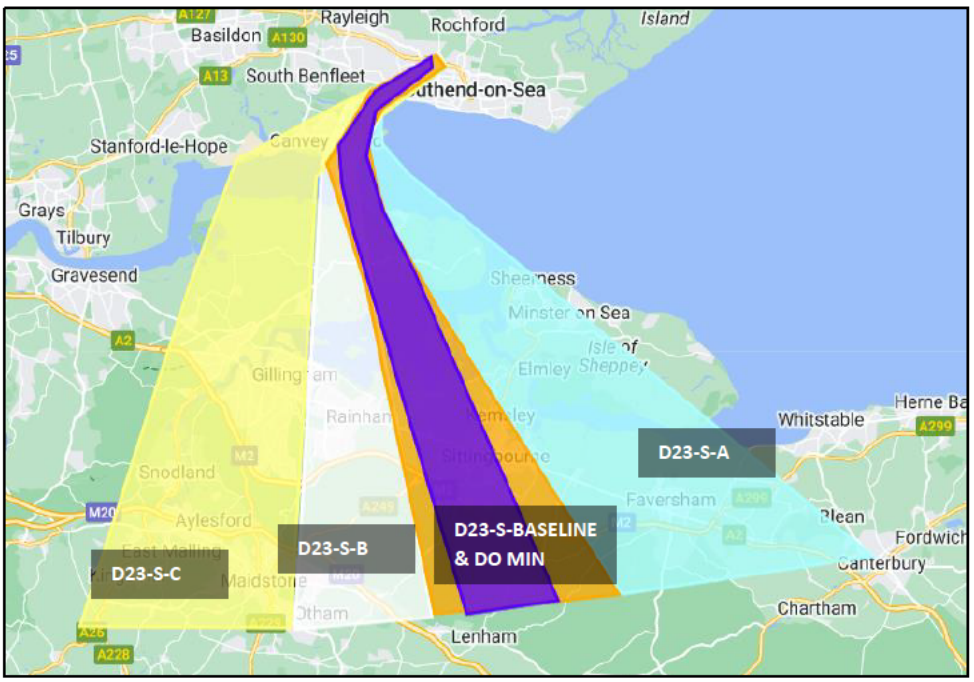


Figure 33: RW23 South Departures on Google Maps

4.9. Runway 23 - All Options

Figure 34 and **Figure 35** depicts all the options considered for Runway 23 departures.

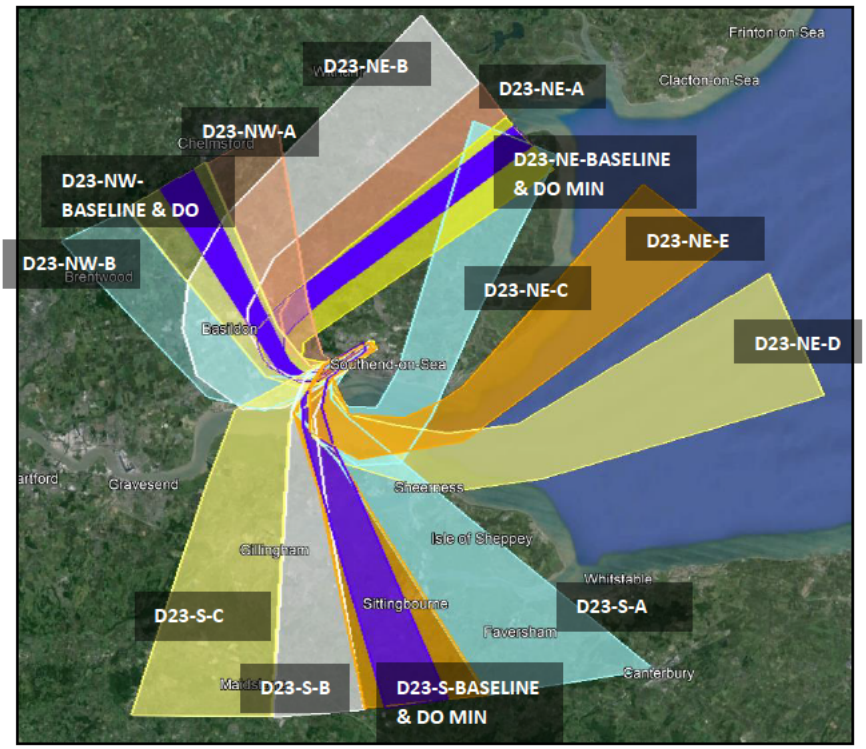


Figure 34: RW23 Departure Options

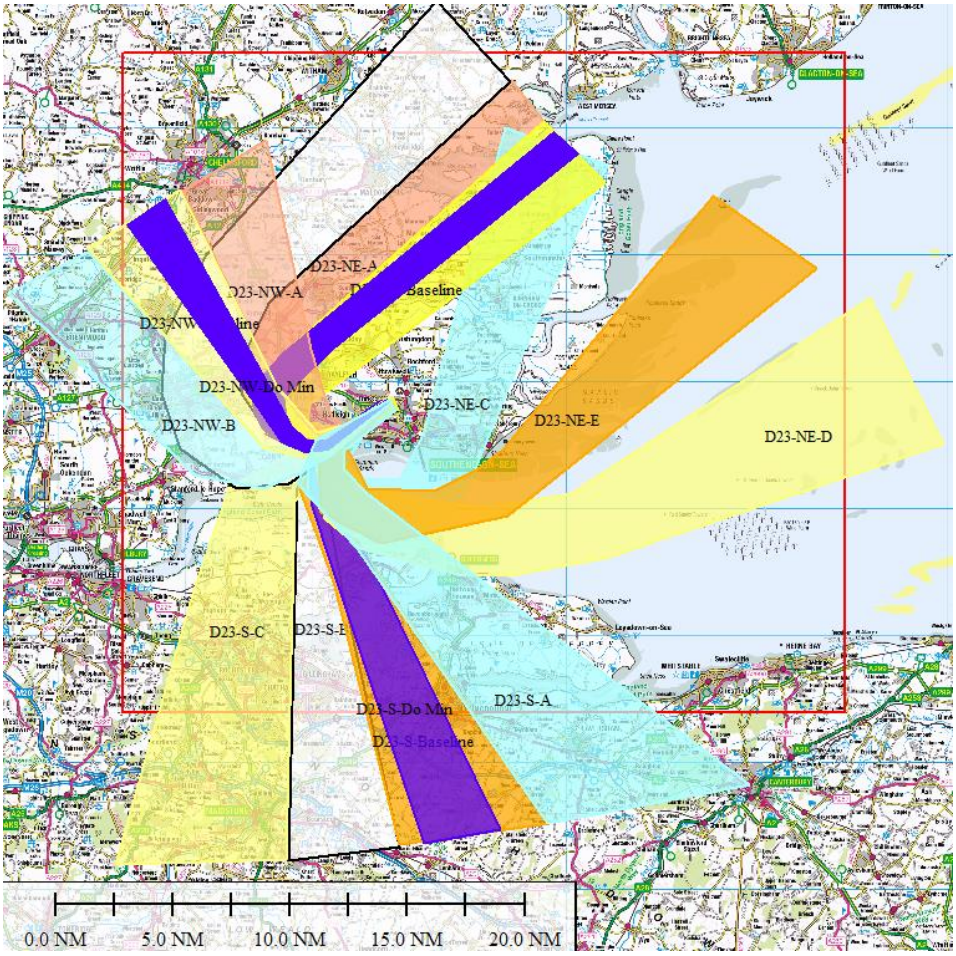


Figure 35: RW23 Departure Options on OS Map

5. Arrival Procedures

5.1. Runway 05 Arrivals from Northwest

Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

The Existing Standard Arrival (STAR) from Barkway (BKY) routes to BRAIN and then a hold in the vicinity of MAYLA.

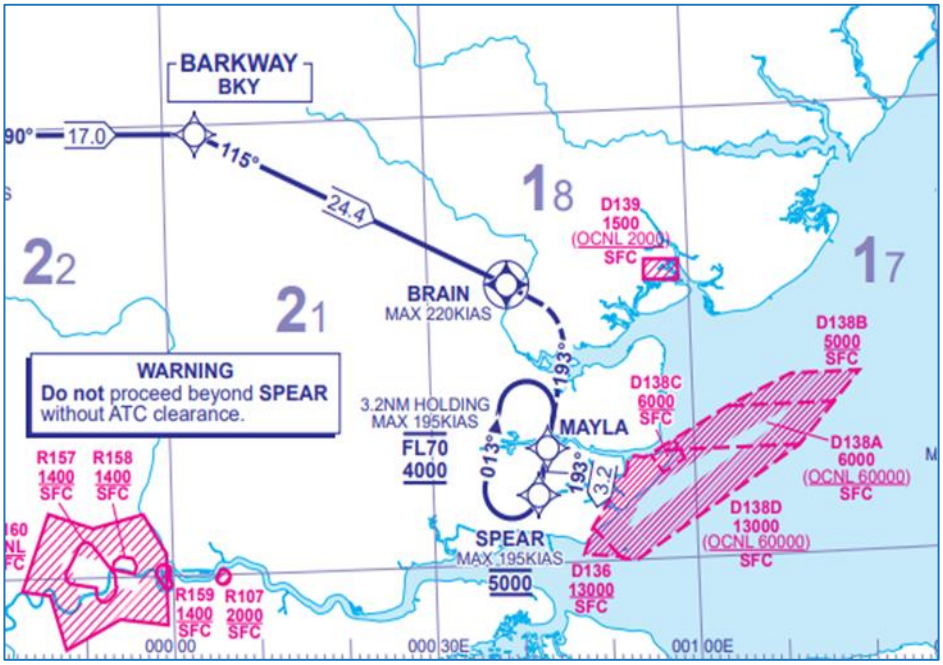


Figure 36: Existing Northwest STAR

Aircraft generally follow the Standard Arrival (STAR) initially then turn early to the South to join the Final Approach, depicted by the green lines in Figure 37.

Our baseline is defined as Option A05-NW-BASELINE and is depicted by the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise.[24] Our Do Minimum option is defined as option A05-NW-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[25].

[24] Originally the baseline was contained within option A05-NW-C.
[25] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

Figure 37: RW05 Northwest Arrivals Baseline and Do-Minimum Options

Options

The Options presented below consider a variety of direct routings (some more expeditious than others).

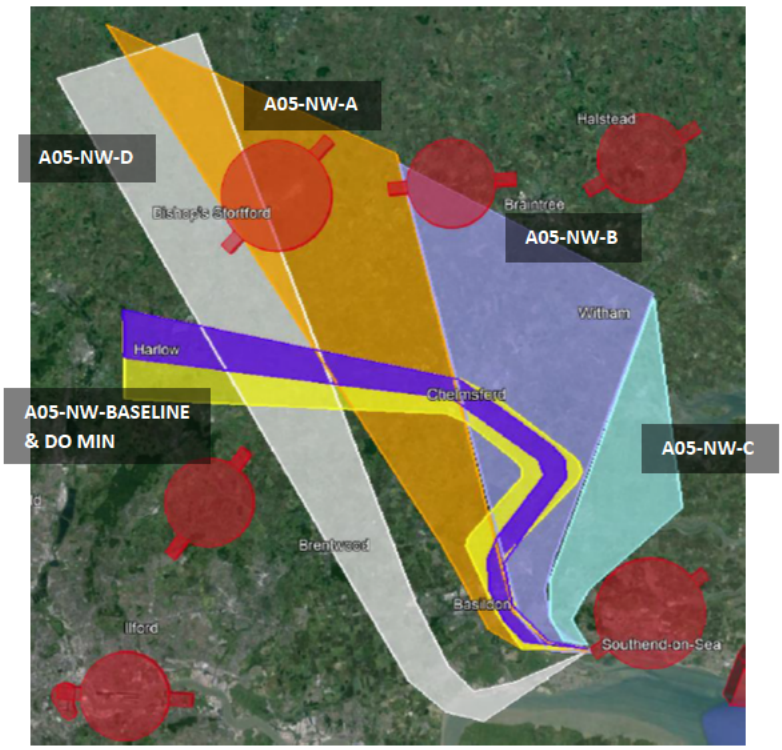


Figure 38: RW05 Arrival Options from Northwest on Google Earth

Figure 39: RW05 Arrival Options from Northwest ENR Chart

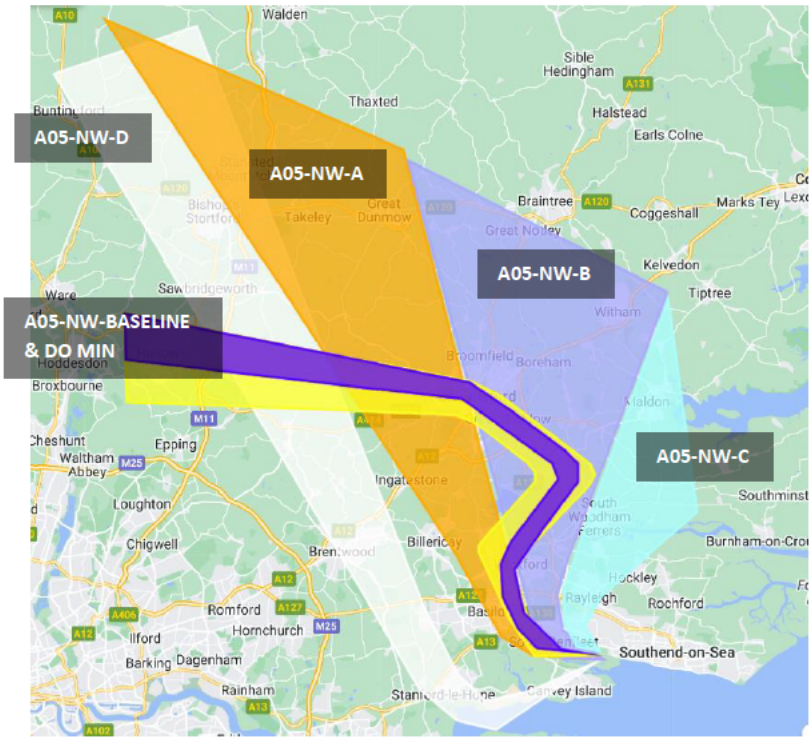


Figure 40: RW05 Arrival Options from Northwest on Google Maps

5.2. Runway 05 Arrivals from the South and the East

Baseline (Purple Swathe) & Do-Minimum (Dark Blue Swathe)

The Existing STAR from the South and the East routes to ADVAS and then the hold at GEGMU. The NTK data shows aircraft routing across the fan of options (**Figure 42)**. Our baseline is defined as option A05-SE-BASELINE and is depicted by the purple swathe. This has been established from the NTK data, current procedures, and operational expertise.[26] Our Do Minimum option is defined as option A05-SE-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[27].

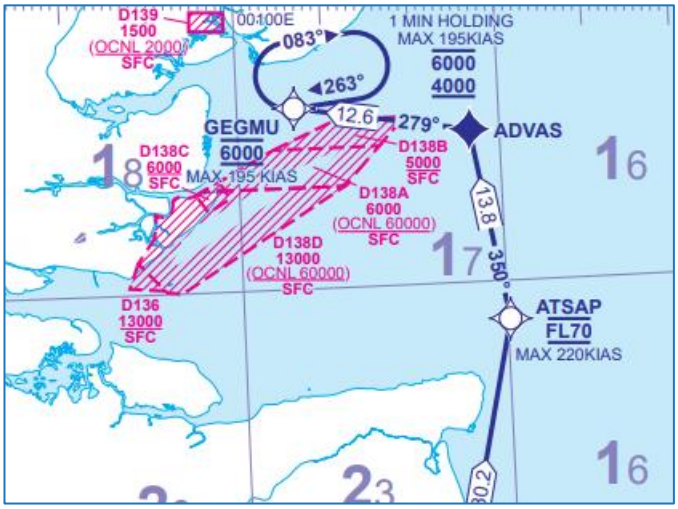


Figure 41: Existing South and East STAR

[26] The baseline was originally named A05-SE-G and has been renamed for clarity.

[27] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

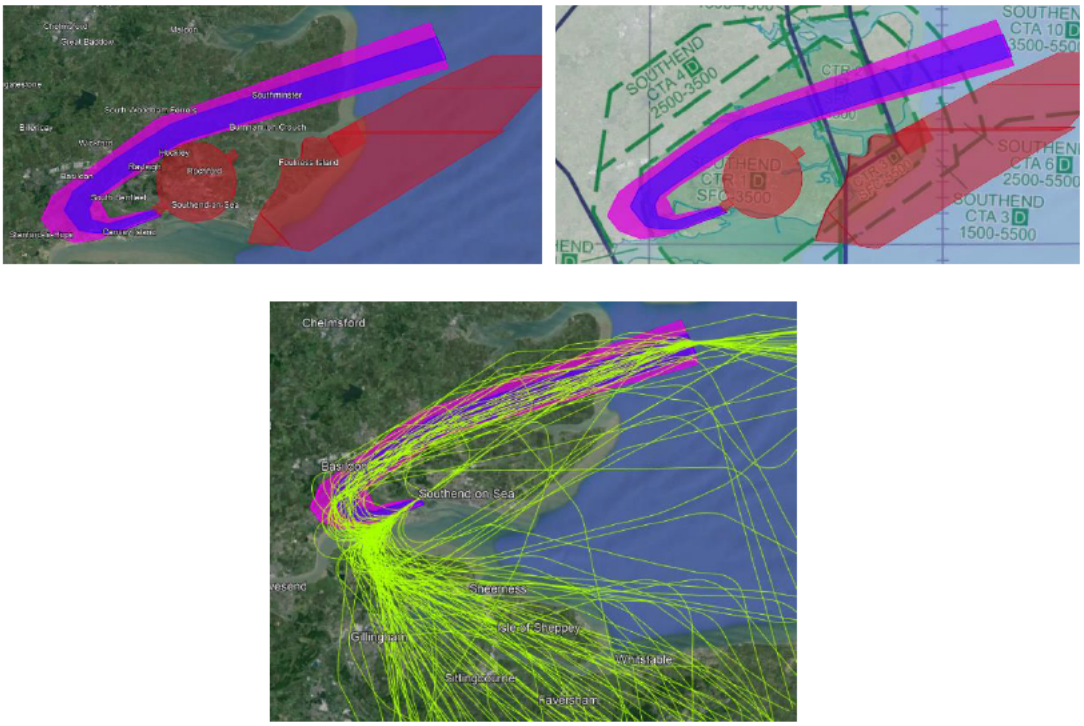


Figure 42: RW05 South Arrivals Baseline and Do-Minimum Options

Options

The Options for arrivals from the South consist of a fan array. A new option has been created following feedback from the CAA, this option is A05-SE-H, more details of this additional swathe and the associated engagement can be found in section 3.5.

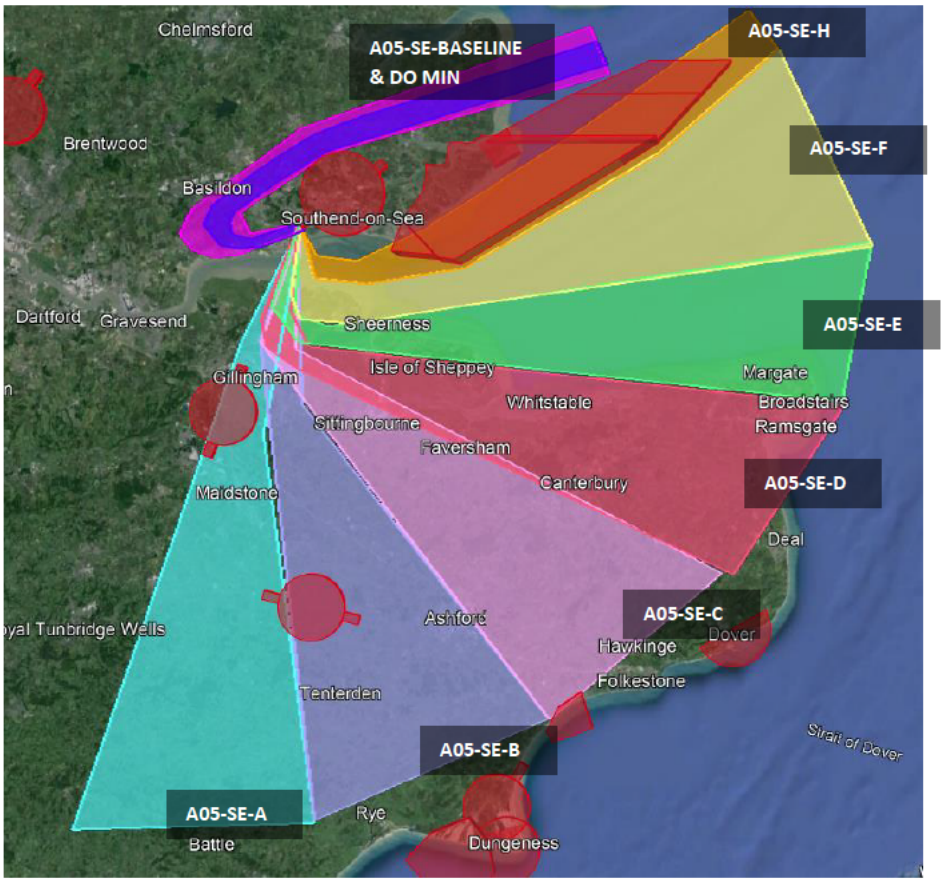


Figure 43: RW05 Arrival Options from the South and the East on Google Earth

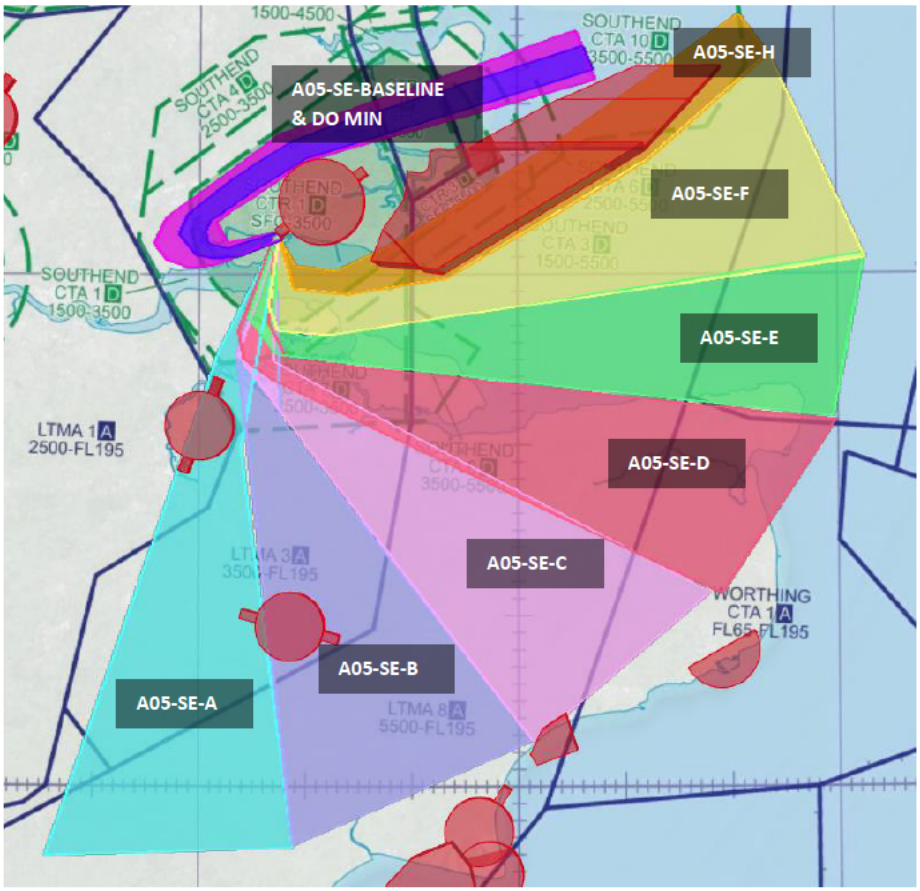


Figure 44: RW05 Arrival Options from the South and the East ENR Chart

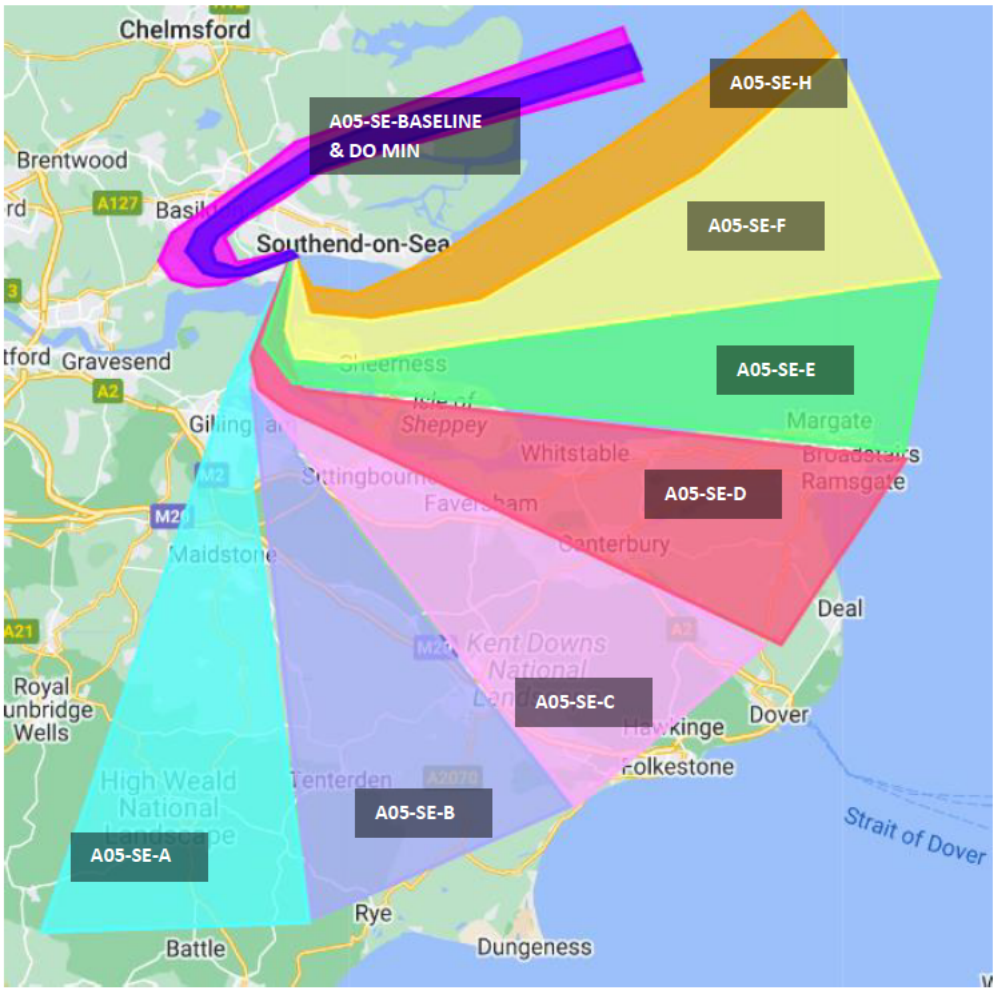


Figure 45: RW05 Arrival Options from the South and the East on Google Maps

5.3. Runway 05 Arrivals – All Options

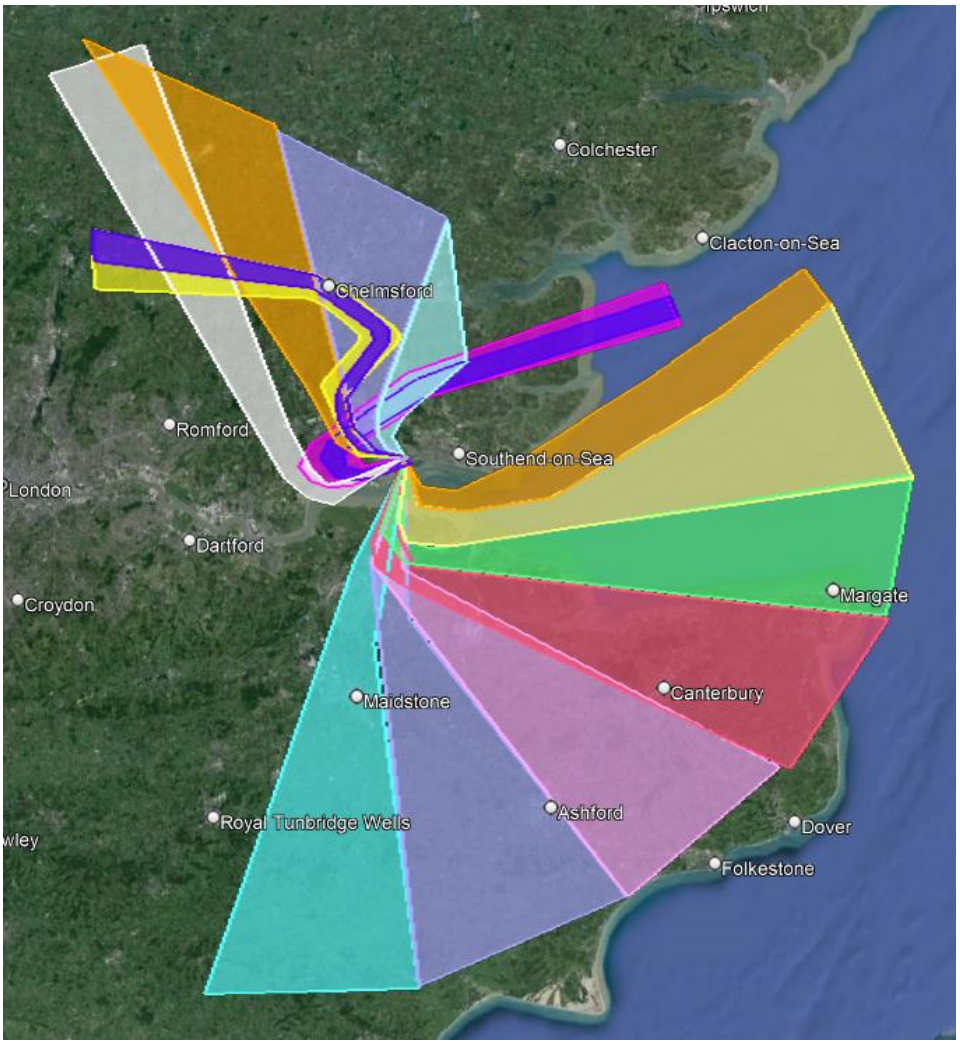


Figure 46: Runway 05 Arrival Options

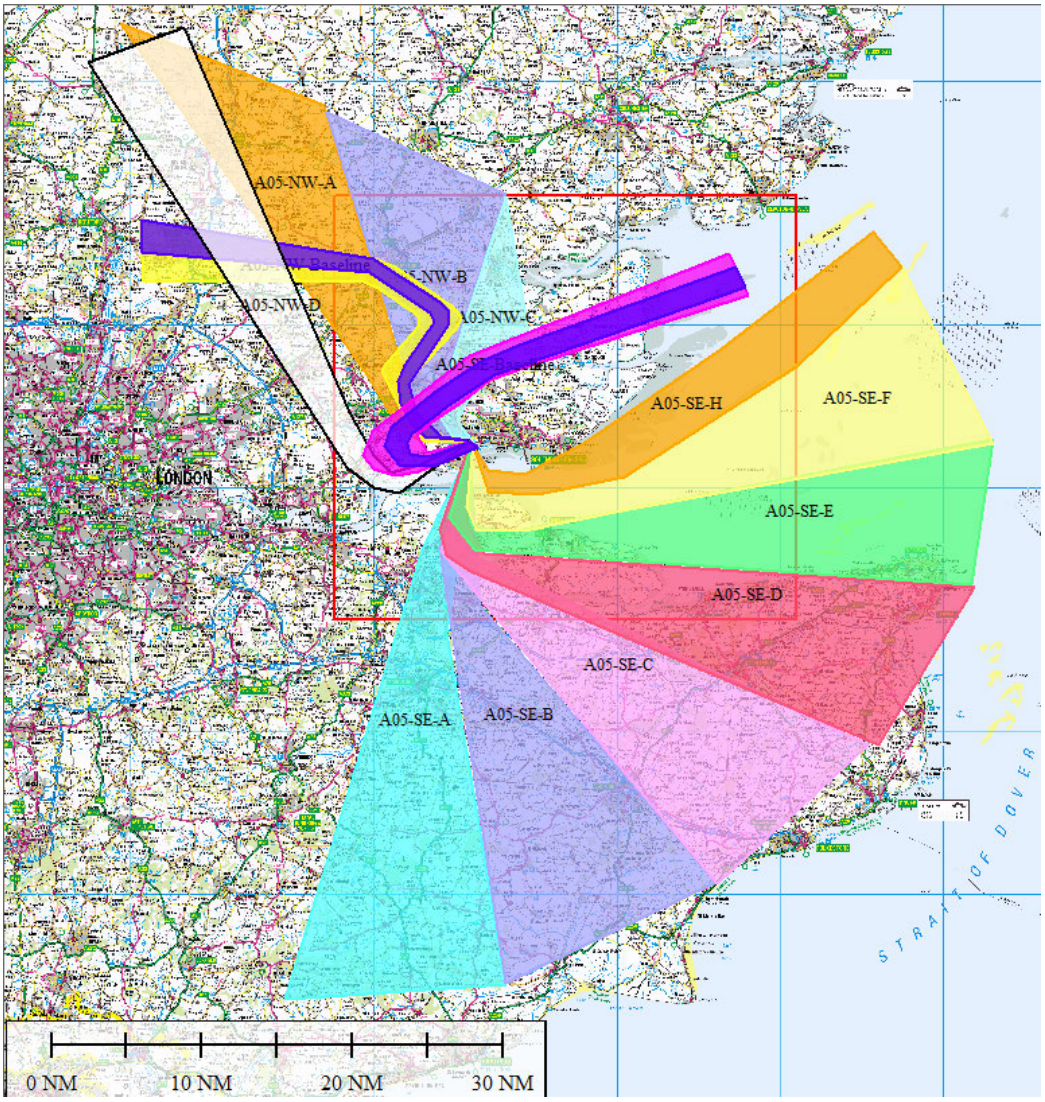


Figure 47: Runway 05 Arrivals All Options on OS Map

5.4. Runway 23 Arrivals from the Northwest

Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

The Arrival options to Runway 23 from the Northwest largely follow the existing track of the STAR although displaced slightly to the South as is illustrated by the NTK data (the green lines) in Figure 49.

Our baseline is defined as option A23-NW-BASELINE and is depicted by the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise.[28] Our Do Minimum option is defined as option A23-NW-DO MIN and is depicted

[28] Originally the baseline was contained within option A23-NW-B.

as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[29].

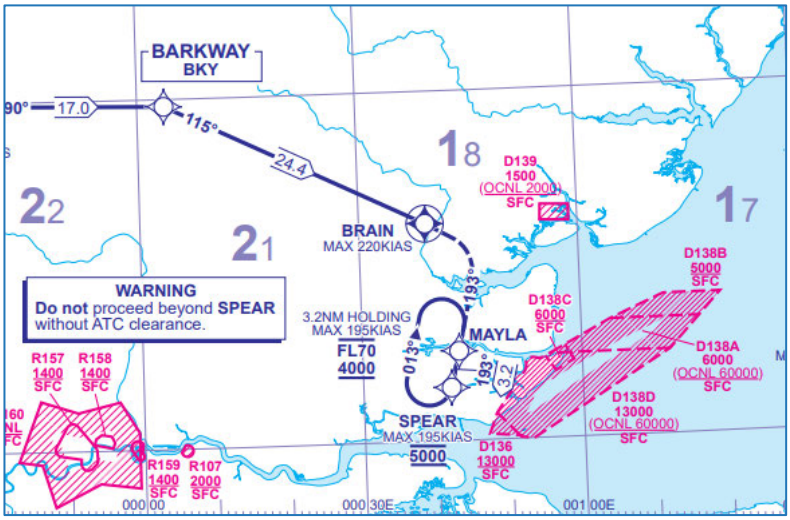


Figure 48: Arrivals from the Northwest

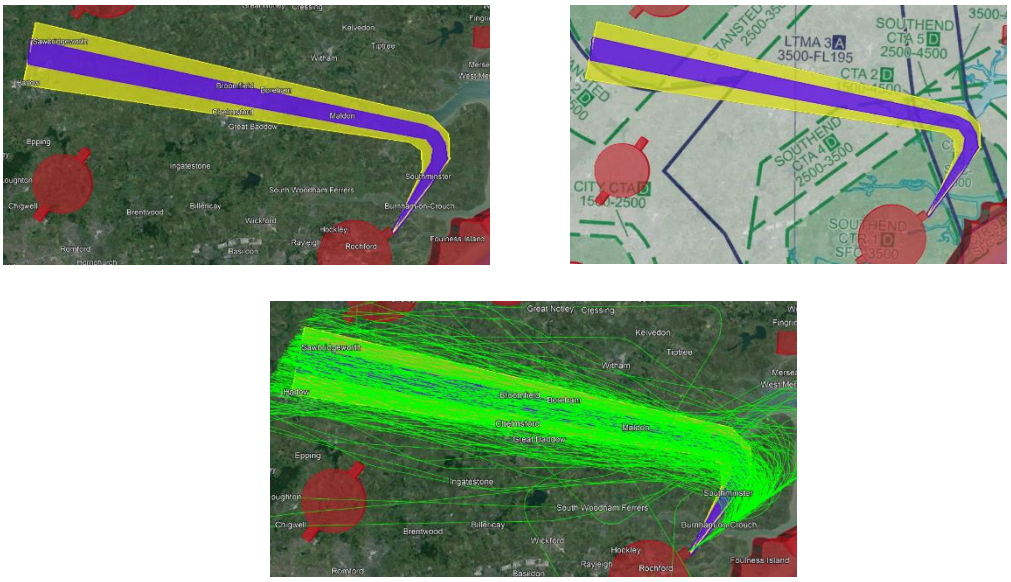


Figure 49: RW23 Northwest Arrivals Baseline and Do-Minimum Options

[29] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

Options

Option A (A23-NW-A) follows the existing STAR then takes an early turn to the South whilst Option B (A23-NW-B) does not.

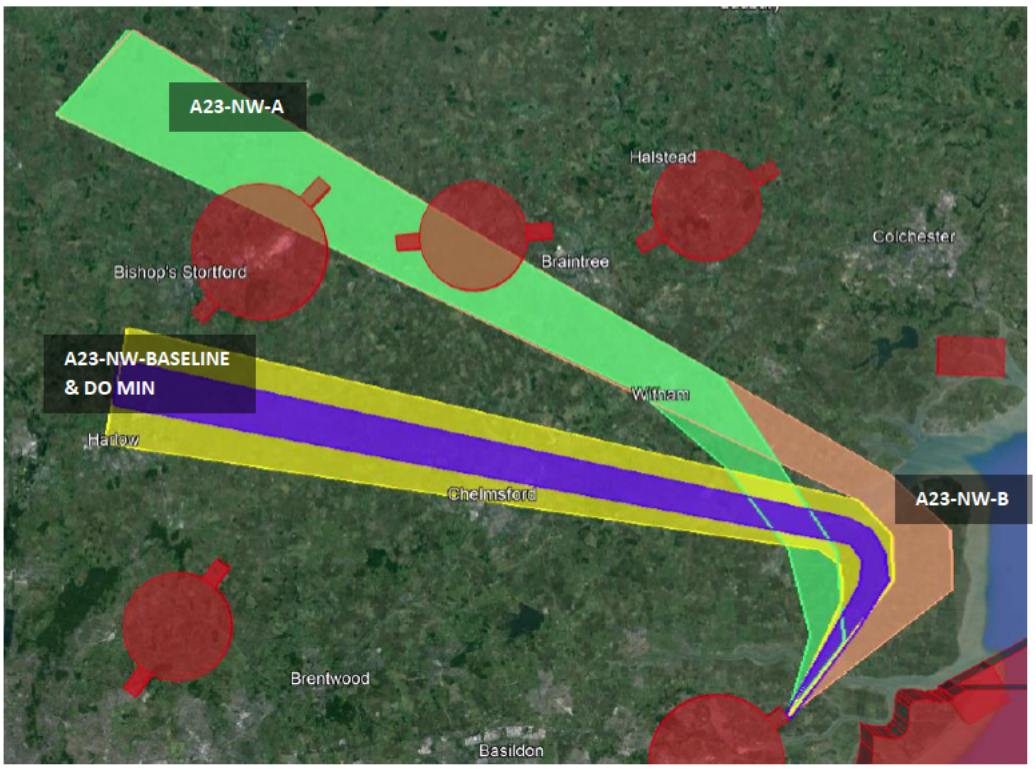


Figure 50: RW23 Arrival Options from the Northwest on Google Earth

Figure 51: RW23 Arrival Options from the Northwest ENR Chart

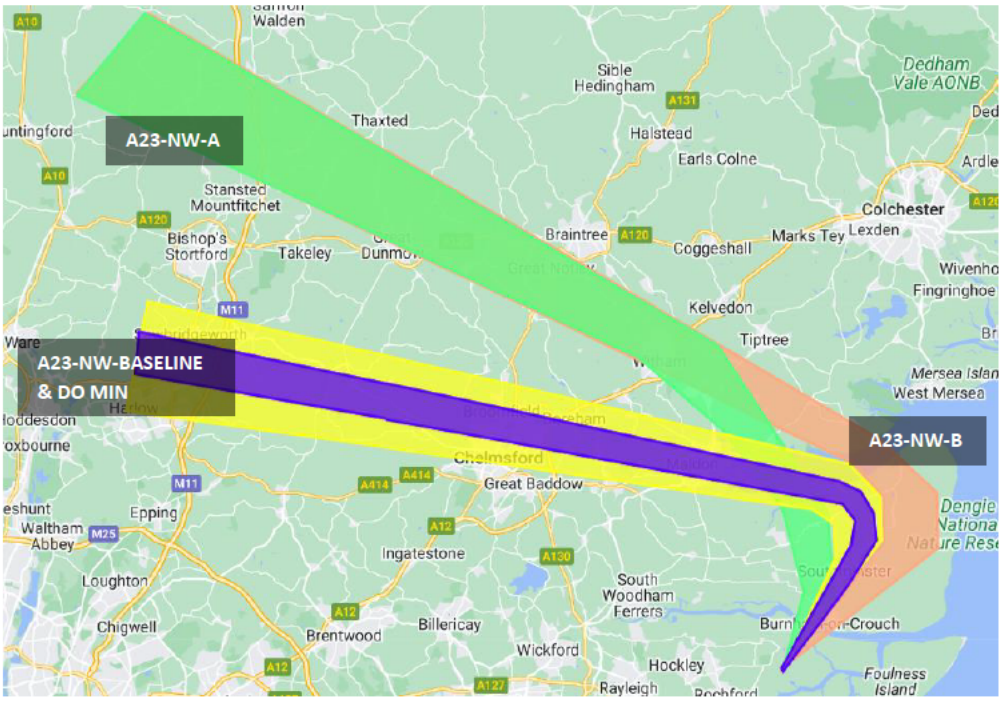


Figure 52: RW23 Arrival Options from the Northwest on Google Maps

5.5. Runway 23 Arrivals from the South and the East

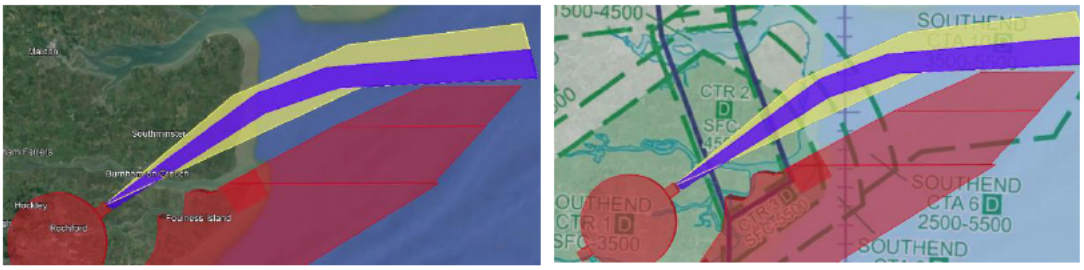
Baseline (Yellow Swathe) & Do-Minimum (Dark Blue Swathe)

The existing STAR from the South and the East, routes to ADVAS and then the hold at GEGMU, as shown in **Figure 53**. Our baseline is defined as option A23-SE-BASELINE and is depicted by the yellow swathe. This has been established from the NTK data, current procedures, and operational expertise.[30] Our Do Minimum option is defined as option A23-SE-DO MIN and is depicted as the dark blue swathe. This is a refinement of the Do-Nothing option and includes the introduction of RNAV[31].

[30] The baseline was originally named A23-SE-A and renamed for clarity.
[31] More information about the development of the Do-Nothing Baseline and Do Minimum options can be found in Section 2.

Figure 53: Arrivals from the South and the East

It is interesting to note, that the array of NTK arrival tracks fan out across the land to the Southeast of Southend. There are also many tracks that route through Shoeburyness Range when it is inactive. The Options developed capture most of these routes.



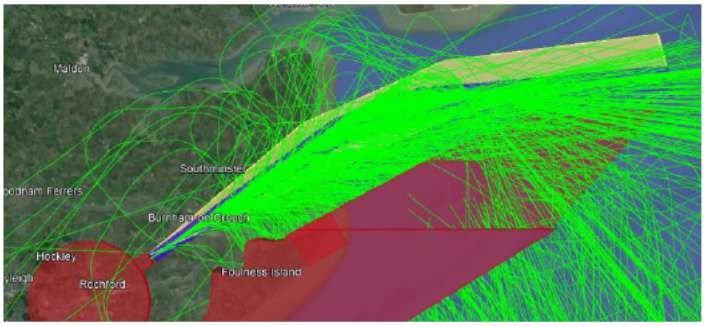


Figure 54: RW23 South Arrivals Baseline and Do-Minimum Options

Options

A fan array of options is available for arrivals from the South.

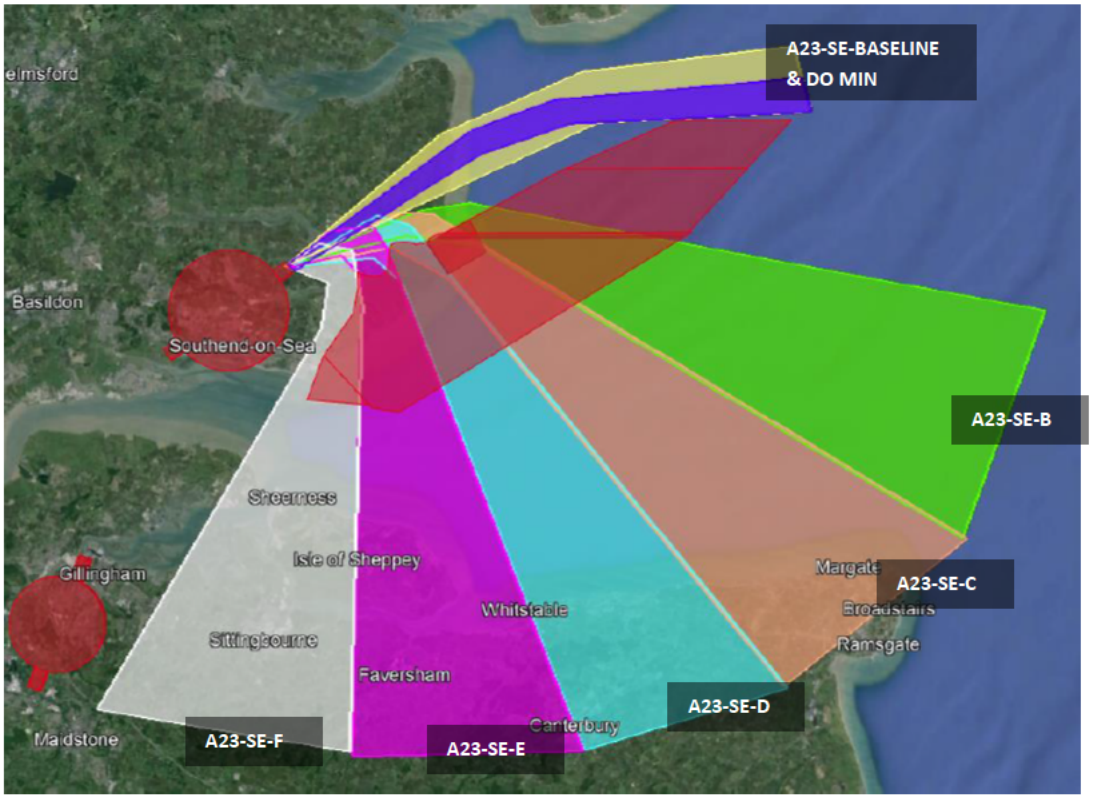


Figure 55: RW23 Arrival Options from the South and the East on Google Earth

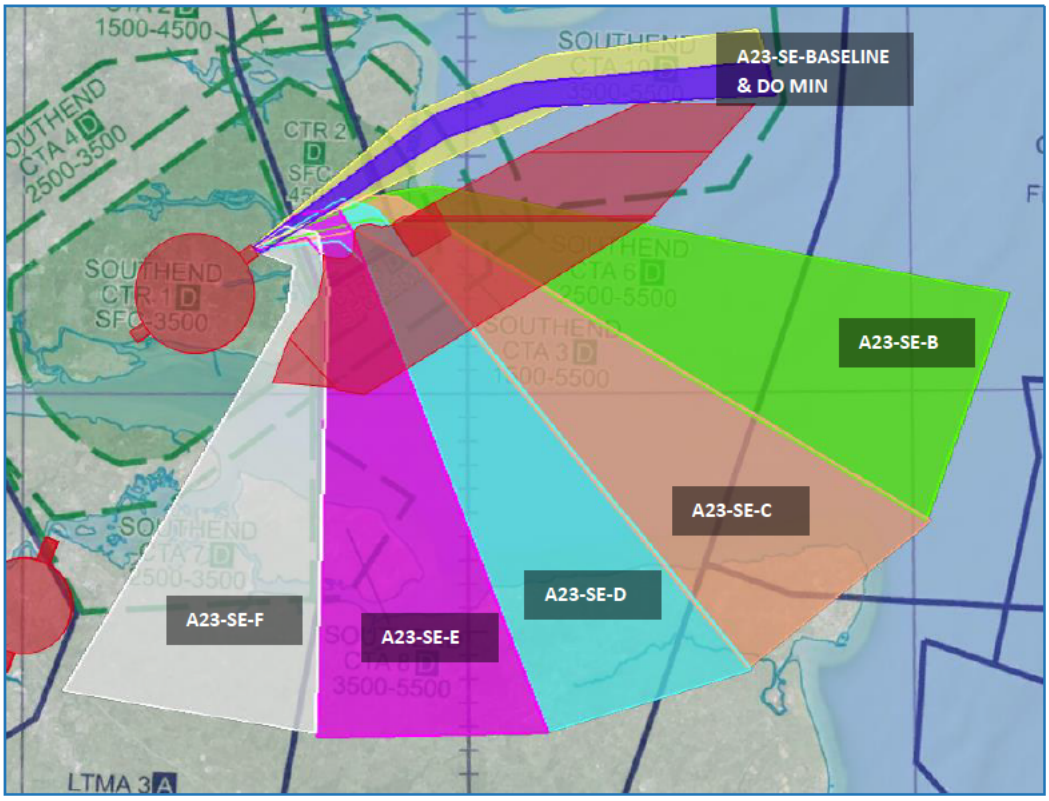


Figure 56: RW23 Arrival Options from the South and the East ENR Chart

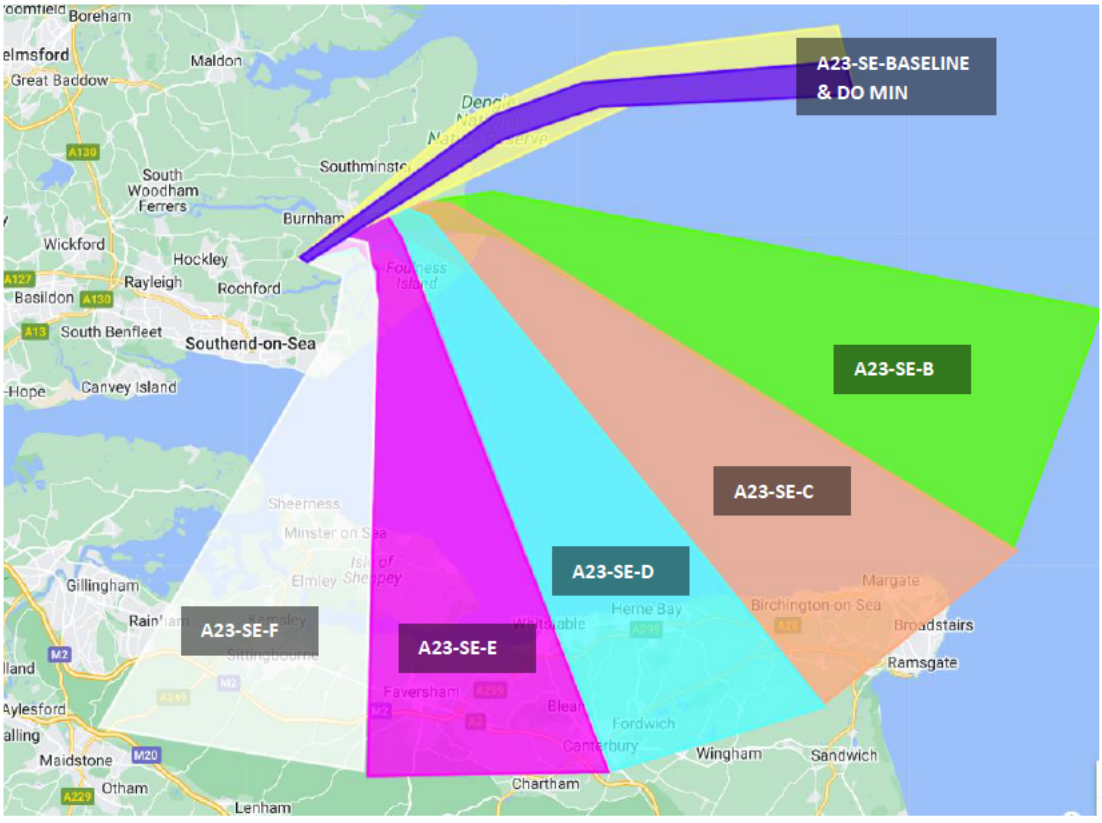


Figure 57: RW23 Arrival Options from the South and the East on Google Maps

5.6. Runway 23 Arrivals - All Options

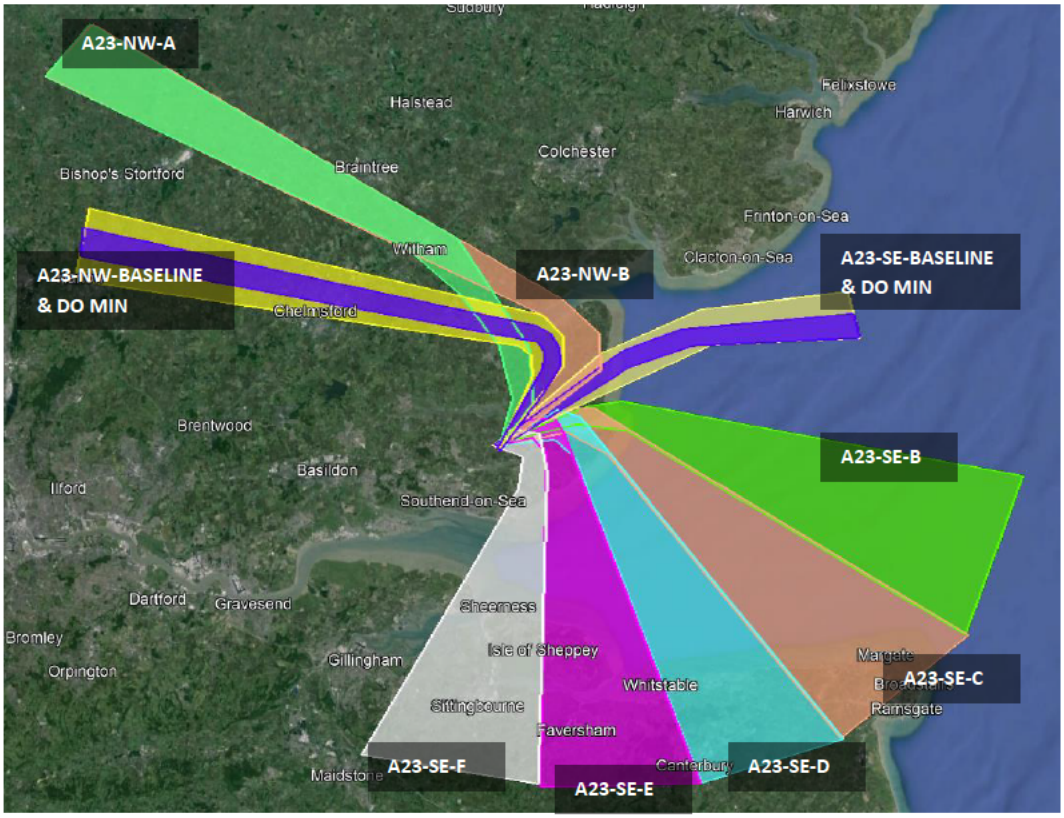


Figure 58: RW23 All Arrival Options

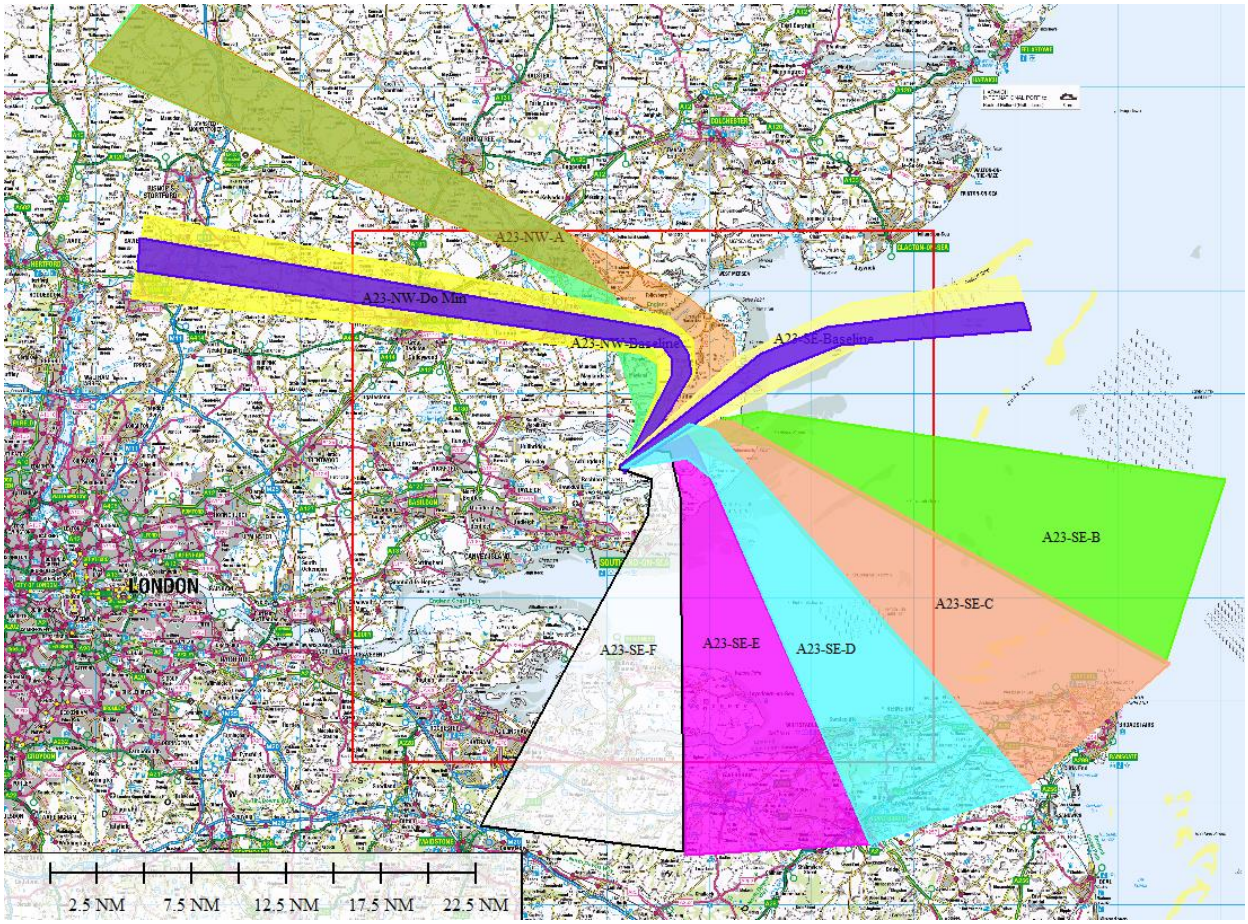


Figure 59: RW23 All Arrival Options on OS Map

6. Design Principle Evaluation

6.1. Methodology

6.1.1. The Design Principle Evaluation (DPE) considers each of the options, including the Baselines, and provides an assessment against the Design Principles (DP) developed in Stage 1 (detailed in **Section 6.2**).

6.1.2. A joint team of LSA and Cyrrus conducted an initial DPE on all of the options prior to the Stakeholder workshops on the 8th of April 2022. This was a basic assessment of the options, where each option, presented as a swathe, was assessed against each DP and assigned a colour depending on whether it was deemed to meet the Design Principle:

- fully met (Green);
- partially met (Amber);
- not met (Red).

6.1.3. This was presented to the Stakeholders at the workshop and their feedback was requested. The DPE can be seen in the presentation titled 'Options Development and Design Principle Stakeholder Workshop Presentation' and is available on the ACP Portal. For reference, the initial Red, Amber, Green (RAG) assessment for each option can also be seen in the full 'Design Principle Evaluation' annex (also available on the ACP Portal) in the column named 'Initial Evaluation 2022.'

6.1.4. Following the Stakeholder workshop, stakeholders were invited to take part in an online survey from the 13th April 2022 to the 16th May 2022. This survey asked whether the stakeholders felt the Design Principles had been correctly and consistently applied to each of the options. It also provided an opportunity to comment on areas where they felt this may not have been the case.

6.1.5. A full DPE for each option was then carried out. This was done by the joint team using the feedback from the survey and the evaluation criteria was followed. Where there had been a change in the initial RAG score, justification is provided within the tables. All stakeholder feedback has been addressed and included where applicable.

6.1.6. During Summer 2023 following feedback from the CAA, we created two additional options and ran a supplementary round of engagement with our stakeholders. Full details can be found in **Section 3.5**.

6.1.7. In 2023 and 2024 some time was spent redefining the Baseline options (see **Section 2.2** for more details). Initially, in 2023, the redefined baseline options had all been assessed as fully meeting the DPs in the full assessment.

6.1.8. In Spring 2024, the Baselines were redrafted to include a Do-Nothing and Do-Minimum option. These new options went through a full evaluation which was shown to stakeholders in July 2024 for their feedback.

6.1.9. Additionally in Spring 2024 the DP Assessment Criteria were rewritten as they, previously, incorrectly assessed the options against the baseline rather than assessing the options

against the specific wording of each DP. (Further details in Section 6.3.) All of the options then went through a further evaluation 'New Criteria Assessment 2024' which was shown to stakeholders for their feedback in July 2024.

6.1.10. The full evaluations and stakeholder feedback are contained within the Design Principles Evaluation document which is available on the ACP Portal.

6.2. Design Principles

6.2.1. The following table details the Design Principles established at the end of Stage 1 that have passed through the CAA CAP1616[2] 'DEFINE' Gateway. These DPs will be used to evaluate each of the options in turn.

Design Principle Number & Title	Description
1- Importance of Safety	The airspace design and its operation must maintain or where possible, enhance current levels of safety.
2- Overflight	The new procedures should not increase the number of people overflown by aircraft using the Airport and where possible options that provide a level of dispersion should also be considered.
3- Noise Footprint	The design should limit, and where practicable reduce, the impact of noise to stakeholders on the ground and where possible periods of built in respite should be considered.
4- Tranquillity	Where practical, route designs should limit effects upon sensitive areas. These may include cultural or historic assets, tranquil or rural areas, sites of care or education and AONB's.
5- Emissions and Air Quality	The proposed design should minimise CO2 emissions per flight.
6- Operational Requirements	The new procedures should address the needs of most operators at LSA.
7- Airspace Dimensions	The volume and classification of controlled airspace required for LSA should be the minimum necessary to deliver an efficient airspace design, considering the needs of all airspace users.
8- Airspace Complexity	The airspace design should seek to reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.
9- Technical Requirements	The design shall be fully compliant with PANS-OPS and UK CAA criteria to meet the technical capability requirements of aircraft using the airport.
10- Systemisation	The arrival transitions and departure procedures shall be deconflicted and integrate with the en-route network, as per the FASI(S) programme, and in the case of the arrival transitions shall integrate with the Instrument Approach Procedures (IAPs) reducing the requirement for tactical coordination.
11- Operational Cost	Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.
12- AMS Realisation	This ACP must serve to further, and not conflict with, the realisation of the AMS.
13- PBN	The new procedures should capitalise on as many of the potential benefits of PBN implementation as are practicable.

Figure 60: Design Principles

6.3. Design Principle Evaluation Assessment Criteria

6.3.1. To ensure consistency when evaluating each option, we have followed the assessment criteria detailed below for all the options.

6.3.2. The criteria we used for the assessment of the options for the DPE was re-evaluated and revised following feedback from the CAA in 2024, where it was noted that the assessment

criteria methodology for the DPE incorrectly assessed the options against the Baseline, rather than against the specific wording of each Design Principle. The table below contains the old and new criteria and a description of the change.

6.3.3. These changes were presented to stakeholders in July 2024, and they were given an opportunity to provide any feedback, further details can be found in the stakeholder engagement section 3.12 of this document.

DP #	Design Principle		Qualitative Assessment	Description of change
DP1	**Importance of Safety –** The airspace design and its operation must maintain or where possible, enhance current levels of safety.		Initial qualitative assessment to determine any potential safety concerns. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Safety'.	Minor changes to the criteria wording with no impact on the assessment outcome.
Old Criteria	No safety concerns	Work needed to make safe	Unsafe	
New Criteria	**Fully Met:** No safety issues identified.	**Partially Met:** Issues identified that would require a more robust safety argument than today's operation.	**Not Met:** Issues identified that are unlikely to be overcome without prohibitively restrictive safety mitigations.	
DP2	**Overflight-**The new procedures should not increase the number of people overflown by aircraft using the Airport and where possible options that provide a level of dispersion should also be considered.		High level qualitative assessment of people overflown, utilising population density maps and identifying new areas affected. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Noise impact on health and quality of life'.	We are now able to show where an option may be an improvement from today's operation. Previously options were assessed as fully meeting the criteria if it was 'no different to today or less'. With the new criteria, options are assessed as fully meeting the criteria only if there is likely to be a reduction, and partially meeting the criteria if there is minimal change.
Old Criteria	No different to today or less people overflown	Different not necessarily more	More AND different	
New Criteria	**Fully Met:** Limits or has the potential to reduce the number of people overflown.	**Partially Met:** Number of people overflown is broadly similar but could be different communities to today.	**Not Met:** Has the potential to increase the number of people overflown.	
DP3	**Noise Footprint –** The design should limit, and where practicable reduce, the impact of noise to stakeholders on the ground and where possible periods of built-in respite should be considered.		Initial high level qualitative assessment of noise impact to stakeholders on the ground (approximately 2000ft and below). A more detailed assessment will be conducted in Stage 2B in the IOA section 'Noise impact on health and quality of life'.	We are now able to show where an option may be an improvement from today's operation. Previously options were assessed as fully meeting the criteria if it was 'no different to today or less'. With the new criteria, options are assessed as fully meeting the criteria only if there is likely to be a reduction, and partially meeting the criteria if there is minimal change.
Old Criteria	No different to today or less people overflown	Different not necessarily more	More AND different	
New Criteria	**Fully Met:** Limits or has the potential to reduce overall impacts of aircraft noise.	**Partially Met:** Impacts of aircraft noise likely to be broadly similar in terms of the number of people affected, new or different communities may be affected.	**Not Met:** Has the potential to increase the overall impacts of aircraft noise on local communities.	

DP #	Design Principle	Qualitative Assessment	Description of change
DP4	**Tranquillity -** Where practical, route designs should limit effects upon sensitive areas. These may include cultural or historic assets, tranquil or rural areas, sites of care or education and AONB's.	Initial high level qualitative assessment. A more detailed assessment will be conducted in Stage 2B in the IOA sections 'Tranquillity' and 'Biodiversity'. Reference to sites of care or education, cultural or historic assets have not been included at this stage due to the 'swathe approach' covering too large an area to be useful when assessing individual sites– these will be fully assessed later in the options appraisal stages when the swathes are refined to more precise routes - 'lines on the map'.	Reference to today's operation has been removed from the assessment criteria as this is not relevant to the wording of the DP. The impact of the options on sites of tranquillity is individual to each option and assessed as such.
Old Criteria	No different to today or less people overflown	Different not necessarily more	More AND different
New Criteria	**Fully Met:** Limits effects on Noise Sensitive Areas and does not result in any overflight of a AONB or a NP below 7000ft.	**Partially Met:** May result in overflight of a portion of an AONB or a NP, also may result in overflight of tranquil areas important to local communities such as reservoirs or parks.	**Not Met:** Results in direct and significant overflight of AONBs or NPs and/or various tranquil areas important to local communities.
DP5	**Emissions and Air Quality –** The proposed design should minimise CO2 emissions per flight.	Initial high level qualitative assessment based on track miles. A more detailed assessment will be conducted in Stage 2B in the IOA sections 'Greenhouse gas impact' and 'Fuel burn'.	We are now able to show where an option may be an improvement from today's operation. Previously options were assessed as fully meeting the criteria if it was 'no different to today or less'. With the new criteria, options are assessed as fully meeting the criteria only if there is likely to be a reduction, and partially meeting the criteria if there is minimal change.
Old Criteria	No different or less than today	Different and more	Extra track miles - significantly more than baseline
New Criteria	**Fully Met:** Has potential to minimise CO_2 emissions.	**Partially Met:** CO_2 emissions likely to be the same or similar to today's operation.	**Not Met:** Has the potential to increase CO_2 emissions.
DP6	**Operational Requirements –** The new procedures should address the needs of most operators at LSA.	Initial high level qualitative assessment against current and forecast aerodrome users and whether the option will meet their operational requirements in terms of flyability, efficiency and service. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.	The assessment criteria has been rewritten to be more representative of the DP wording. There has been minimal changes to the assessment of the options.
Old Criteria	Fully	Partially	Not Met
New Criteria	**Fully Met:** Meets the operational needs of almost all airport operators.	**Partially Met:** Meets the operational needs of most airport operators.	**Not Met:** Does not meet the operational needs of airport operators.
DP7	**Airspace Dimensions –** The volume and classification of controlled airspace required for LSA should be the minimum necessary to deliver an efficient airspace design, considering the needs of all airspace users.	High level qualitative assessment of the airspace required for each option. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Access'. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.	The assessment criteria has been rewritten to be more representative of the DP wording. There has been minimal changes to the assessment of the options.
Old Criteria	Contained within existing controlled airspace	Would require more controlled airspace- but the minimum necessary	Significant new volume of controlled airspace required (minimum necessary)

DP #	Design Principle		Qualitative Assessment	Description of change
New Criteria	**Fully Met:** Allows for either a reduction in the volume of CAS required or does not require any additional CAS.	**Partially Met:** May require more controlled airspace but the minimum necessary.	**Not Met:** Significant additional volumes of CAS are required to contain the proposed option.	
DP8	**Airspace Complexity –** The airspace design should seek to reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.		High level qualitative assessment on the airspace complexity of the swathe. Further assessment will be conducted in Stage 2B in the IOA section 'Capacity/resilience'.	The assessment criteria has been rewritten to be more representative of the DP wording. There has been minimal changes to the assessment of the options.
Old Criteria	No worse or different to today	Potential for more complexity	Marked increase in complexity	
New Criteria	**Fully Met:** Does not result in a complex CTA/CTR configuration with numerous different base levels likely to lead to inadvertent CAS penetrations.	**Partially Met:** Results in changes to the CAS configuration that may cause other aviators some minor challenges.	**Not Met:** Results in a highly complex CAS configuration.	
DP9	**Technical Requirements –** The design shall be fully compliant with PANS-OPS and UK CAA criteria to Meet the technical capability requirements of aircraft using the airport.		High level qualitative assessment of whether the options meet the technical requirements of all airspace users including aircraft types, equipment and performance. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.	The assessment criteria has been rewritten to be more representative of the DP wording. Previously this DP was not fully assessed as it was deemed all options would fully meet the criteria at this stage as there would be somewhere within each swathe with a compliant route. The options have now been reassessed.
Old Criteria	Fully	Partially	Not Met	
New Criteria	**Fully Met:** Meets the technical requirements of almost all airport operators.	**Partially Met:** Meets the technical requirements of most airport operators.	**Not Met:** Does not meet the technical requirements of airport operators.	
DP10	**Systemisation –** The arrival transitions and departure procedures shall be deconflicted and integrate with the en-route network, as per the FASI(S) programme, and in the case of the arrival transitions shall integrate with the Instrument Approach Procedures (IAPs) reducing the requirement for tactical coordination.		Initial high level qualitative assessment of the systemisation potential of the swathe. Further assessment will be conducted in Stage 2B in the IOA section 'Capacity/resilience'.	The assessment criteria has been rewritten to be more representative of the DP wording. There has been minimal changes to the assessment of the options.
Old Criteria	No current conflicts	Possibility of resolvable conflicts	Unable to be separated from other interdependent airports current procedures	
New Criteria	**Fully Met:** Integrates with the en-route network and is likely to reduce the need for tactical coordination and vectoring within the CTA/CTR.	**Partially Met:** Integrates with the en-route network but may not reduce the need for tactical coordination and vectoring within the CTA/CTR.	**Not Met:** Does not integrate with the en-route network and will not decrease the need for tactical coordination and vectoring within the CTA/CTR.	

DP #	Design Principle		Qualitative Assessment	Description of change
DP11	**Operational Cost –** Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.		Assessed similarly to DP5 - Emissions and Air Quality, more track miles will incur more fuel cost. Initial high level qualitative assessment. Further assessment relating to this DP will be conducted in Stage 2B in the IOA section 'Fuel burn'.	The assessment criteria has been rewritten to be more representative of the DP wording. There has been minimal changes to the assessment of the options.
Old Criteria	No different or less than today	Different and more	Extra track miles, significantly more than baseline	
New Criteria	**Fully Met:** Fuel efficiency is optimal without an adverse impact on local communities.	**Partially Met:** Fuel efficiency is optimal however there is some impact on local communities.	**Not Met:** Fuel efficiency not optimised.	
DP12	**AMS Realisation –** This ACP must serve to further, and not conflict with, the realisation of the AMS.		Initial high level qualitative assessment on whether the swathe aligns with the strategic objectives of the AMS. Where an option meets the AMS objective but does not provide any improvement from today then this has been noted in the assessment.	The assessment criteria has been rewritten to be more representative of the DP wording. Previously this DP was not fully assessed as it was deemed all options would fully meet the criteria at this stage as there would be somewhere within each swathe with a compliant route. The options have now been reassessed against the AMS indicators.
Old Criteria	Fully	Partially	Not Met	
New Criteria	**Fully Met:** Aligned with the AMS.	**Partially Met:** Partially aligned with the AMS.	**Not Met:** Not aligned with the AMS.	
DP13	**PBN –** The new procedures should capitalise on as many of the potential benefits of PBN implementation as are practicable.		Initial high level qualitative assessment on whether the options for routes will utilise PBN and its benefits, e.g. simplifying route integration, more direct routes and less track mileage.	The assessment criteria has been rewritten to be more representative of the DP wording. Previously this DP was not fully assessed as it was deemed all options would fully meet the criteria at this stage as there would be somewhere within each swathe with a compliant route. The options have now been reassessed.
Old Criteria	Fully	Partially	Not Met	
New Criteria	**Fully Met:** Fully compliant with the latest navigational standards.	**Partially Met:** Some PBN benefits utilised but potential to not be fully compliant.	**Not Met:** PBN not utilised.	

Figure 61: Design Principle Evaluation Criteria Changes

6.4. Discounting of Options

6.4.1. Due to our high-level approach using swathes, we have decided that none of the options will be discounted on the basis of the DPE alone. This enabled us to take all of the proposed options through to Stage 2b and conduct an individual IOA on each one. The assessment of the DPs has been carried forward to the IOA and included in the relevant sections, this has allowed us to perform one overall assessment of the options to decide which will be taken forward to Stage 3. The assessment criteria table above and in Annex D describes where and when the DPE assessments will be utilised[32].

[32] In the document titled 'Initial Options Appraisal' - section 3.2 – available on the ACP Portal, the IOA assessment methodology also describes which DPs are considered and where.

7. Design Principle Evaluation Summary

7.1. Assessments

7.1.1. Full details of the Design Principle Evaluation can be found in the Design Principles Evaluation document[7] which is on the ACP Portal.

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NE-BASSELINE													
D05-NE-DO MIN													
D05-NE-A													
D05-NE-B													

Table 7: Departures Runway 05 - Northeast DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NW-BASELINE													
D05-NW-DO MIN													
D05-NW-B													

Table 8: Departures Runway 05 - Northwest DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-S-BASELINE													
D05-S-DO MIN													
D05-S-A													
D05-S-B													
DO5-S-C													

Table 9: Departures Runway 05 - South/Southeast DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NE-BASELINE													
D23-NE-DO MIN													
D23-NE-A													
D23-NE-B													
D23-NE-C													
D23-NE-D													
D23-NE-E													

Table 10: Departures Runway 23 - Northeast DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NW-BASELINE													
D23-NW-DO MIN													
D23-NW-A													
D23-NW-B													

Table 11: Departures Runway 23 - Northwest DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-S-BASELINE													
D23-S-DO MIN													
D23-S-A													
D23-S-B													
D23-S-C													

Table 12: Departures Runway 23 - South/Southeast DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A05-NW-BASELINE													
A05-NW-DO MIN													
A05-NW-A													
A05-NW-B													
A05-NW-C													
A05-NW-D													

Table 13: Arrivals Runway 05 - Northwest DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A05-SE-BASELINE													
A05-SE-DO MIN													
A05-SE-A													
A05-SE-B													
A05-SE-C													
A05-SE-D													
A05-SE-E													
A05-SE-F													
A05-SE-H													

Table 14: Arrivals Runway 05 - South and East DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A23-NW-BASELINE													
A23-NW-DO MIN													
A23-NW-A													
A23-NW-B													

Table 15: Arrivals Runway 23 - Northwest DP Assessment

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A23-SE-BASELINE													
A23-SE-DO MIN													
A23-SE-B													
A23-SE-C													
A23-SE-D													
A23-SE-E													
A23-SE-F													

Table 16: Arrivals Runway 23 - South and East DP Assessment

8. Next Steps

8.1. Overview

8.1.1. In the next stage, Stage 2B of this ACP, we will take each of the Options in this report through an Initial Options Appraisal as stipulated in CAP1616.

Extract from CAP1616 below:

'Step 2B requires the change sponsor to carry out an 'Initial' appraisal of the impacts of each of the viable options identified in Step 2A using the design criteria against which the options are being assessed (the first of three iterative phases of options appraisal, as explained below). The Initial appraisal should, as a minimum, contain qualitative assessments of the different options. This highlights to change sponsors, stakeholders, and the CAA the relative differences between the impacts, both positive and negative, of each option. The change sponsor assesses each option against a 'do nothing' scenario (the 'counterfactual'), even where there is only a single change option, to understand these impacts.'

8.1.2. The Gateway for this ACP, London Southend Airport FASI(S) ACP-2018-90, is scheduled for October 2024.

A. Additional Options Feedback Session-September 2023

Project Title/No:	Stage 2 Rework for Additional Swathes. London Southend Airport (LSA) FASI(S) ACP	Date:	26/09/2023
Venue:	LSA and online	Time:	10:00
Attendees:	[redacted]		

A.1. PRESENTATION

Reference	Subject	Description
	Intro	Overview of presentation. [redacted] covers progress to date; Stage 1 Design Principles (DP). Response on DP. 15 responses to online survey and 2 additional via email. Further information available on the portal. DP list recap.
	Stage 2	Options Development. Stage 2 was submitted in December 2022 and did not pass. One of the issues highlighted was: potential options not exhaustive; two areas where swathes could have been designed but were not, these routes are through Shoeburyness Danger area. Following internal workshop, it was decided to introduce these options. Now additional options require engagement.
	Review CAP1616	[redacted] provided recap on CAP1616 process.
	DPE	Recap of Design Principle Evaluation (DPE) process.
	Purpose	Additional feedback required for 2 additional swathes. These areas have already been considered; therefore, the airspace and land have already been assessed during the consideration of other options. DPE required for these 2 swathes only.
	Required	Presentation is being sent to all stakeholders for feedback on: Departures D23-NE-E and Arrivals A05-SE-H. Stakeholders are those engaged with in stage one and stage 2 initial engagement. We are holding this session as part of the engagement. High level feedback on 2 swathes only against the DPs. (full DPE list available in the portal)
	Gateway	15th December, submission 3rd November.

Reference	Subject	Description
	Runway 23 NE-E	[redacted] shows comparison of original swathes with new option (E) over different maps. Recap pf DPE including new option.
	Arrivals A05-SE-H	Additional options for Arrivals shown over map identifying danger area. New option illustrated alongside original swathes. DPE reviewed.

A.2. Feedback session

Reference	Question/comment	Response	Action
Question in the room.	Operating hours of Shoeburyness Danger area?	Monday – Friday 9.00am -4.00pm are core operating hours. Makes sense to consider utilising this area out of operating hours.	

Reference	Question/comment	Response	Action
See 'questions doc' ref Q1 & Q2	Understanding feedback from the CAA (Southend CC & Essex CC)	Sponsors must set out how decisions they have taken relate to stakeholder feedback (CAP1616). In addition to the 2 new swathes feedback from the CAA, in the submission was not clear where we made changes to reflect the stakeholder feedback, and who the feedback was from. [redacted]. The changes will be clear in the resubmitted documentation. [redacted]. Additionally, the DPE was enhanced, and we will make clearer by including the RAG scores for the initial submission, therefore easy to see where feedback has been influential. [redacted] Need to demonstrate consistent approach to the RAG rating, have identified inconsistencies in the new options. Recommend getting document peer reviewed to check this. [redacted]. We have expanded our team to address this. [redacted]. Also need to be clear about the definitions of the RAG rating, provide the rationale behind the RAG rating.	[redacted]. Review consistency and RAG descriptions

Reference	Question/comment	Response	Action
See questions doc, ref. Q3	Heights of aircraft over Barling and Wakering. (Seawing)	[redacted]. Difficult to answer before feedback from NERL and decisions as to which options are going forward. Won't be fundamentally different from today due to the Section 106 agreement. We would look for opportunities to improve this situation where possible. [redacted]. Need to consider noise as well as efficiency.	
See questions doc, ref. Q4	Proposals to allow large aircraft to expedite vacating runway 23 on landing. (Private pilot)	[redacted]. Not part of this proposal however, no plans at present, will be considered at a strategic level and on a mid-long-term plan.	
Question in the room.	Q. do you have any preferred options, or ones you are hoping will be accepted? [redacted]	[redacted]. There are preferred routes but have to be in development with NERL. If the network has a requirement for us to be in a particular area, then this is a strong consideration. In terms of the DP, this is pivotal for the project, needs to be part of the wider modernisation project. Additionally, we need to work with neighbouring stakeholders / airfields.	
Question in the room.	[redacted] When are these routes and potentially routes for respite be covered? (thinking about noise.)	[redacted]. this will be considered at the next stage. Need to consider the (dis) benefits associated with respite routes etc. If operationally there is a preferred route, yet another which could provide respite, then we would seek to look into the (dis) benefits providing it's feasible. Possibly costs involved so therefore also a consideration.	

A.3. Questions for feedback session

Question Reference	Question	Asked by
Q1	It would be useful to understand more about the feedback from CAA because as I understand it there were some comments regarding the consultation process, but we are not clear what these were. The previous submission indicated that Consultee responses had been received but didn't explain how they had been incorporated or influenced the submission.	Southend City Council
Q2	Can we receive a clear understanding on the feedback from the Civil Aviation Authority? and an appreciation of how previous consultee views have been considered and shaped future proposals.	Essex County Council
Q3	What heights are the aircraft expected to strain passing barling and Wakering please look at the map and use the space over the danger area to keep away from population or turn aircraft earlier to the south, so they are on track before they get near Wakering and Barling	Seawing
Q4	Are there any proposals to allow larger aircraft to expedite vacating runway 23 on landing. Taxiway Charlie requires a 180 turn and significant backtrack	Private Pilot

B. Qinetiq/DAATM Meeting Notes - 18th October 2023

Qinetiq / DAATM

[redacted]

LSA

[redacted]

Introductions

Talked through the process to date and why LSA was conducting further engagement.

LSA not successful in Stage 2 Gateway.

Did not consider all viable options.

LSA has added two new swathes and has engaged on these.

DAATM confirmed D136/138 would remain operational, which LSA confirmed they understood and that if any routes were designed in that area, they would only be available outside of the operational hours of the Danger Area with appropriate LoAs in place.

DAATM confirmed they had responded to the previous engagement and also the additional engagement. LSA confirmed that feedback would be taken on board as part of the resubmitted documentation for Stage 2, which would be available on the CAA portal following submission.

LSA confirmed currently NOTAMed closed at night to facilitate ATCO training during the daytime period but that H24 operations would return.

[redacted] asked about the next steps in the process and timescales. LSA confirmed Stage 2 resubmission would be made in Nov for the Dec 23 gateway. If successful, Stage 3 would begin early in 2024. Stage 3 requires LSA to consult with stakeholders on more defined routes. Consultation anticipated end of 2024 / beginning of 2025. In terms of implementation, assuming a successful ACP, this wouldn't be until at least 2030.

LSA confirmed that they would share regular updates with progress via email.

C. Stakeholder List

C.1. Community Stakeholders

LSA Consultative Committee (ACC) members	
Castle Point Borough Council	Southend Residents Association (including West Leigh Residents Association)
Essex County Council	Independent Representative
Leigh Town Council	Essex Chambers of Commerce
Maldon District Council	Rochford Board of Trade
Rochford District Council	Southend Business Partnership
Rochford Hundred Association of Local Councils	Southend Flying Clubs
Southend-on-Sea Borough Council	

Community Stakeholders	
Friends of North Kent Marshes	Kent County Council
RSPB – Wallasea Island	
SAEN (Stop Airport Expansion & Noise)	

C.2. Environmental Stakeholders

Environmental Bodies	
CPRE Essex	Friends of the Earth
CPRE Kent	National Trust
English Heritage	Natural England
Environment Agency	Kent Downs AONB

C.3. Technical Stakeholders

Air Navigation Services Providers/ATC/DA Operators	
NATS En-Route Ltd (NERL)	D&D (Distress & Diversion)
LTC (London Terminal Control)	QinetiQ (Operator of Danger Area)

Aircraft Operators	
ASL Airlines	TBMI Aviation
easyJet	Titan
Essex Air Ambulance	Wizz
Essex PASU	2Excel Aviation
Vista Jet ltd	Net Jets
London Executive Aviation (LUX)	Muskany Ltd

C.4. Local Aviation Stakeholders

Neighbouring Airports/Airfields/Flying Clubs/LSA Tenants	
London Luton Airport	London City Airport
London Stansted Airport	London Gatwick Airport
London Heathrow Airport	London Biggin Hill Airport
Headcorn Aerodrome	Stapleford Aerodrome
Rochester Airport	Earls Colne Airfield
St Lawrence Aerodrome	Stoke Airfield
Tillingham Aerodrome	Barling Airfield
Stow Maries Great War Aerodrome	Maylandsea (Paragliding)
Avionicare Ltd	Air Livery Ltd
Seawing Flying Club	Southend Flying Club
Canewdon Paragliding	Essex and Suffolk Gliding Club
Kent Gliding Club	Manston Airport

C.5. Statutory Aviation Stakeholders

National Air Traffic Management Advisory Committee	
Airspace4All	General Aviation Alliance (GAA)
Airfield Operators Group (AOG)	Honourable Company of Air Pilots (HCAP)
Aircraft Owners and Pilots Association (AOPA)	Helicopter Club of Great Britain (HCGB)
Aviation Environment Federation (AEF)	Isle of Man CAA
British Airways (BA)	Light Aircraft Association (LAA)
BAe Systems	Low Fare Airlines

National Air Traffic Management Advisory Committee	
British Airline Pilots Association (BALPA)	Military Aviation Authority (MAA)
British Balloon and Airship Club	Ministry of Defence - Defence Airspace and Air Traffic Management (MoD DAATM)
British Gliding Association (BGA)	NATS
British Helicopter Association (BHA)	PPL/IR (Europe)
British Microlight Aircraft Association (BMAA) / General Aviation Safety Council (GASCo)	UK Airprox Board (UKAB)
British Parachute Association (BPA)	

D. Feedback for Stage 3

D.1. Feedback from Essex County Council

Section 2 - Overarching Matters for Consideration:

Local Factors to be Considered

Table 1 sets out some of the environmental and noise sensitive receptors that should be considered when reviewing possible airspace arrival and departure options at London Southend Airport. These may be used as part of the assessment for DP4 – tranquillity.

Table 1 – Information that ECC can Supply to Inform Airspace Change Proposals

Data Theme	Data Type	Information Source
Environmental	RSPB Sites	https://opendata-rspb.opendata.arcgis.com/datasets/
	Special Areas of Conservation (SACs)	https://naturalengland-defra.opendata.arcgis.com/datasets/special-areas-of-conservation-england
	Special Protection Areas (SPAs)	https://naturalengland-defra.opendata.arcgis.com/datasets/
	RAMSAR Sites	https://naturalengland-defra.opendata.arcgis.com/datasets/ramsar-england
	Priority Habitats	http://naturalengland-defra.opendata.arcgis.com/datasets/
Social and Community Infrastructure	• Location of Primary and Secondary Schools • Location of Early Years and Child Care Facilities. • Location SEN Facilities • Location of Residential Care Homes	ECC can provide GIS coordinates and data for school locations

ECC recommends that as part of DP4 the sensitive receptors include schools, Early Years and Child Care Facilities, facilities for Special Educational Needs, and Residential Care Homes. It should be noted that the noise threshold to avoid a breach on school sites is 55db LAeq (30min).

It is also recommended that DP4 gives consideration to designated and non-designated heritage sites. Some of these sites are protected and the impact of overflight may impact the sites status of designation.

ECC recommends that consideration be given to the relevant authorities adopted and emerging Local Plans. Local Plans shape growth and development within the respective Local Authority administrative boundary. They allocate land for housing, jobs and infrastructure as well as providing protection for the natural environment. They also contain policies and proposals that will be considered when assessing planning applications.

It is recommended that in determining the impact and constraints evident in certain areas, due consideration should be given to Essex Green Infrastructure, 2020, in particular the following sites of environmental importance within Essex including SSSI, AONB, RAMSAR, SAC, Local Wildlife Sites - (sites of national, regional and local importance) etc. It is recommended that appropriate assessments are undertaken including Environment Impacts Assessment, Ecology assessment etc.

In assessing sites of environmental importance, consideration should be given to the impact of air and noise pollution have on these environmental sites, as some wildlife are sensitive to aircraft noise. This may lead to wildlife changing their patterns of migration and impact on the ecology of the sites and justification for designation.

Any alterations to routes should assess the impact this may have on local air pollution and wildlife. ECC recommends that consideration be given to biodiversity net gain. It should be noted that ECC is working with Essex Wildlife Trust, RSPB and Natural England outlining a Local Nature Recovery Strategy and opportunity mapping as one of their core action of the Essex Local Nature Partnership (LNP). The LNP will be setting up a Task and Finish group to take this forward.

Airspace Modernisation Strategy

ECC welcomes the need for reviewing and modernising UK airspace. It is supported that London Southend Airport have sought and continue to develop air routes and air traffic management practices that use modern technology. It is also expected that with reviewing the departure and arrival routes at London Southend provides the opportunity to ensure that future routes can benefit from using the capabilities of modern technology.

ECC notes that CAA is keen to modernise airspace use, to ensure that modern technology is used, and that aircraft can climb and reach their optimum cruising altitude as soon as possible. ECC appreciates that this ensures greater efficiency, less fuel burn and lower emissions. Whilst ECC supports the environmental benefits that modernising airspace can bring, ECC is eager to ensure that noise impacts are reduced/minimised for our local, living and investing communities. It is therefore recommended that for the public consultation, the information presented from each route highlights how the route has been designed to optimise environmental and noise benefits.

Respite

ECC is interesting in appreciating how the proposed air routes may provide respite. It is important that persons engaging have a full appreciation of the respite options available. ECC are mindful there are many options available for respite including time-based variations, and alternate routes for differing days. It is important that partners have a full appreciation of the respite potential and limitations for routes (e.g. the prevailing wind may limit the use of some routes for respite purposes).

Concluding Remarks

ECC welcome ongoing discussions with the airport and welcome working with the airport as you seek to progress the airspace change proposals.

If you require any further information or wish to discuss this response my contact details are below.

D.3. Non-DP related Survey Feedback – Round 1 - 2022

DPE Feedback

Option **D05-NE-A**

'No; the departure DO5 NE-A Aircraft should be encouraged to have a maximum gradient of climb, utilising maximum performance, ensuring thrust reduction altitude is at 1500' and acceleration altitude is 3,000'or preferably 4,000 which will then ensure a minimum noise impact on Great Stambridge, aircraft are then to be kept mid-way between Ashingdon and Canewdon avoiding the major population areas of these villages, and being at the base of London airspace by the river Crouch, reducing the noise footprint at Burnham. How does the current proposal meet (Design principle 9, page 4 of the presentation). DP9. The current actual green lines take aircraft over the populated areas of the area which is unnecessary however with the reduction of VOR and increased RNP the requirement to route to CLN will be reduced allowing a more varied departure routing and aircraft to be higher when over local villages.'

'No; Looking at runway 05 NE-A DP4 have 5 possible conflict areas, with a bit of tweaking and use of RNP (RNAV) positions the overflight of populated areas 2,3 and the bird sanctuary 5 could be completely avoided, certainly the aircraft could be a lot higher overpopulated areas if departure option 2 described above is stated in the text on the departure routes. Aircraft then don't have to follow the green tracks to CLN before turning. TUGPO TRIPO then enroute could be the solution. Overflight of the bird sanctuary at Wallasea could easily be at or above 6,000' if departure option 2 described above would be stated.'

Option **D05-NE-B**

'No; the departure DO5 NE-B Aircraft should be encouraged to have a maximum gradient of climb, utilising maximum performance, ensuring thrust reduction altitude is at 1500' and acceleration altitude is 3,000'or preferably 4,000 which will then ensure a minimum noise impact on the villages of Great Stambridge Paglesham ,improving the importance of safety by ensuring aircraft are significantly above the major hazard of the increased number of birds around the RSPB Wallesea Island area. Not below 4000 on reaching the river crouch or increase the base of the Southend Class D airspace to allow reduction of the noise footprint at Burnham. How does the current proposal meet DP9. The current actual green lines take aircraft over the populated areas of the area, which is unnecessary, however with the reduction of VOR and increased RNP the requirement to route to CLN will be reduced allowing a more varied departure routing and aircraft to be higher when over local villages.'

Option **D05-NW-A**

'No; DO5 NWA Aircraft should be encouraged to have a maximum gradient of climb, utilising maximum performance, ensuring thrust reduction altitude is at 1500' and acceleration altitude is 3,000'or preferably 4,000 and allowed unrestricted climb to be above 5,000' by the river crouch, avoiding all built up areas, by at 400' turning to follow the river roach until clear of Great Stambridge then turning North until above 5000' and east abeam canewdon before turning northwest. How does the current proposal meet DP9. The current actual green lines take aircraft over the populated areas of the area which is unnecessary however with the reduction of VOR and increased RNP the requirement to route to LAM or

BPK will be reduced allowing a more varied departure routing and aircraft to be higher when over local villages.'

Option **D05-NW-B**

'No; Aircraft should be encouraged to have a maximum gradient of climb, utilising maximum performance, ensuring thrust reduction altitude is at 1500' and acceleration altitude is 3,000'or preferably 4,000 which will then ensure a minimum noise impact on the villages of Great Stambridge Paglesham, improving the importance of safety by ensuring aircraft are significantly above the major hazard of the increased number of birds around the RSPB Wallesea Island area. Routing to SABRE or south of SABRE but being above 4000' on reaching the river crouch or increase the base of the Southend Class D airspace to allow reduction of the noise footprint at Burnham. How does the current proposal meet DP9. The current actual green lines take aircraft over the populated areas of the area which is unnecessary however with the reduction of VOR and increased RNP the requirement to route to LAM or BPK will be reduced allowing a more varied departure routing and aircraft to be higher when over local village'

Option **D05-S-C**

'No; Departures runway 05 South /Southeast D05 C DP 2 Over flight DP 3 Noise DP 4 Tranquillity. This could be adopted if the initial routings kept the aircraft along the river crouch to potton creek keeping them away from overflying the towns of Southend, Shoeburyness Great and Little Wakering and Barling or ensuring the aircraft fly not below 6000' over these areas. Utilisation/ coordination of the DA/ other air traffic control agencies would have to be more proactive and should be easy to co -ordinate allowing aircraft unrestricted climb to their cruise altitude.'

Option **D23-S-C**

'Allow aircraft maximum rate of climb.'

Option **A05-SE-A**

'Arrivals allow aircraft a constant 500' 1000' descent rate which will keep engine power at a minimum and slow down, so they are 180kts at 10 miles slowing to 160kts then from 4nm free speed which is best for noise and fuel burn.'

Option **A05-SE-G**

'No; Very convoluted to fly and takes the aircraft into areas of training.'

Option **A23-SE-E**

'Arrivals 23 via e and f over the built-up areas and flying level isn't a good plan, re design these to avoid the built-up areas isn't difficult.'

Option **A23-SE-F**

'No; A variant of F is to go closer to the EGMC ATC, to maybe Southend Pier and then fly 055 before hooking left into 23. Keeps you further away from the DA.'

'Arrivals 23 via e and f over the built-up areas and flying level isn't a good plan, re design these to avoid the built-up areas isn't difficult.'

E. Design Principle Evaluation Criteria

DP #	Design Principle	Qualitative Assessment		
DP1	**Importance of Safety –** The airspace design and its operation must maintain or where possible, enhance current levels of safety.	Initial qualitative assessment to determine any potential safety concerns. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Safety'.		
New Criteria	**Fully Met:** No safety issues identified.	**Partially Met:** Issues identified that would require a more robust safety argument than today's operation.	**Not Met:** Issues identified that are unlikely to be overcome without prohibitively restrictive safety mitigations.	
DP2	**Overflight-**The new procedures should not increase the number of people overflown by aircraft using the Airport and where possible options that provide a level of dispersion should also be considered.	High level qualitative assessment of people overflown, utilising population density maps and identifying new areas affected. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Noise impact on health and quality of life'.		
New Criteria	**Fully Met:** Limits or has the potential to reduce the number of people overflown.	**Partially Met:** Number of people overflown is broadly similar but could be different communities to today.	**Not Met:** Has the potential to increase the number of people overflown.	
DP3	**Noise Footprint –** The design should limit, and where practicable reduce, the impact of noise to stakeholders on the ground and where possible periods of built-in respite should be considered.	Initial high level qualitative assessment of noise impact to stakeholders on the ground (approximately 2000ft and below). A more detailed assessment will be conducted in Stage 2B in the IOA section 'Noise impact on health and quality of life'.		
New Criteria	**Fully Met:** Limits or has the potential to reduce overall impacts of aircraft noise.	**Partially Met:** Impacts of aircraft noise likely to be broadly similar in terms of the number of people affected, new or different communities may be affected.	**Not Met:** Has the potential to increase the overall impacts of aircraft noise on local communities.	
DP4	**Tranquillity -** Where practical, route designs should limit effects upon sensitive areas. These may include cultural or historic assets, tranquil or rural areas, sites of care or education and AONB's.	Initial high level qualitative assessment. A more detailed assessment will be conducted in Stage 2B in the IOA sections 'Tranquillity' and 'Biodiversity'. Reference to sites of care or education, cultural or historic assets have not been included at this stage due to the 'swathe approach' covering too large an area to be useful when assessing individual sites– these will be fully assessed later in the options appraisal stages when the swathes are refined to more precise routes - 'lines on the map'.		
New Criteria	**Fully Met:** Limits effects on Noise Sensitive Areas and does not result in any overflight of a AONB or a NP below 7000ft.	**Partially Met:** May result in overflight of a portion of an AONB or a NP, also may result in overflight of tranquil areas important to local communities such as reservoirs or parks.	**Not Met:** Results in direct and significant overflight of AONBs or NPs and/or various tranquil areas important to local communities.	
DP5	**Emissions and Air Quality –** The proposed design should minimise CO2 emissions per flight.	Initial high level qualitative assessment based on track miles. A more detailed assessment will be conducted in Stage 2B in the IOA sections 'Greenhouse gas impact' and 'Fuel burn'.		
New Criteria	**Fully Met:** Has potential to minimise CO_2 emissions.	**Partially Met:** CO_2 emissions likely to be the same or similar to today's operation.	**Not Met:** Has the potential to increase CO_2 emissions.	
DP6	**Operational Requirements –** The new procedures should address the needs of most operators at LSA.	Initial high level qualitative assessment against current and forecast aerodrome users and whether the option will meet their operational requirements in terms of flyability, efficiency and service. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.		
New Criteria	**Fully Met:** Meets the operational needs of almost all airport operators.	**Partially Met:** Meets the operational needs of most airport operators.	**Not Met:** Does not meet the operational needs of airport operators.	

DP #	Design Principle	Qualitative Assessment	
DP7	**Airspace Dimensions –** The volume and classification of controlled airspace required for LSA should be the minimum necessary to deliver an efficient airspace design, considering the needs of all airspace users.	High level qualitative assessment of the airspace required for each option. A more detailed assessment will be conducted in Stage 2B in the IOA section 'Access'. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.	
New Criteria	**Fully Met:** Allows for either a reduction in the volume of CAS required or does not require any additional CAS.	**Partially Met:** May require more controlled airspace but the minimum necessary.	**Not Met:** Significant additional volumes of CAS are required to contain the proposed option.
DP8	**Airspace Complexity –** The airspace design should seek to reduce complexity and bottlenecks in controlled and uncontrolled airspace and contribute to a reduction in airspace infringements.	High level qualitative assessment on the airspace complexity of the swathe. Further assessment will be conducted in Stage 2B in the IOA section 'Capacity/resilience'.	
New Criteria	**Fully Met:** Does not result in a complex CTA/CTR configuration with numerous different base levels likely to lead to inadvertent CAS penetrations.	**Partially Met:** Results in changes to the CAS configuration that may cause other aviators some minor challenges.	**Not Met:** Results in a highly complex CAS configuration.
DP9	**Technical Requirements –** The design shall be fully compliant with PANS-OPS and UK CAA criteria to Meet the technical capability requirements of aircraft using the airport.	High level qualitative assessment of whether the options meet the technical requirements of all airspace users including aircraft types, equipment and performance. This DP will also be assessed more thoroughly in Stage 3 when the options are refined to give more precise routes.	
New Criteria	**Fully Met:** Meets the technical requirements of almost all airport operators.	**Partially Met:** Meets the technical requirements of most airport operators.	**Not Met:** Does not meet the technical requirements of airport operators.
DP10	**Systemisation –** The arrival transitions and departure procedures shall be deconflicted and integrate with the en-route network, as per the FASI(S) programme, and in the case of the arrival transitions shall integrate with the Instrument Approach Procedures (IAPs) reducing the requirement for tactical coordination.	Initial high level qualitative assessment of the systemisation potential of the swathe. Further assessment will be conducted in Stage 2B in the IOA section 'Capacity/resilience'.	
New Criteria	**Fully Met:** Integrates with the en-route network and is likely to reduce the need for tactical coordination and vectoring within the CTA/CTR.	**Partially Met:** Integrates with the en-route network but may not reduce the need for tactical coordination and vectoring within the CTA/CTR.	**Not Met:** Does not integrate with the en-route network and will not decrease the need for tactical coordination and vectoring within the CTA/CTR.
DP11	**Operational Cost –** Provided it does not have an adverse impact of community disturbance, procedures should be designed to optimise fuel efficiency.	Assessed similarly to DP5 - Emissions and Air Quality, more track miles will incur more fuel cost. Initial high level qualitative assessment. Further assessment relating to this DP will be conducted in Stage 2B in the IOA section 'Fuel burn'.	
New Criteria	**Fully Met:** Fuel efficiency is optimal without an adverse impact on local communities.	**Partially Met:** Fuel efficiency is optimal however there is some impact on local communities.	**Not Met:** Fuel efficiency not optimised.
DP12	**AMS Realisation –** This ACP must serve to further, and not conflict with, the realisation of the AMS.	Initial high level qualitative assessment on whether the swathe aligns with the strategic objectives of the AMS. Where an option meets the AMS objective but does not provide any improvement from today then this has been noted in the assessment.	
New Criteria	**Fully Met:** Aligned with the AMS.	**Partially Met:** Partially aligned with the AMS.	**Not Met:** Not aligned with the AMS.
DP13	**PBN –** The new procedures should capitalise on as many of the potential benefits of PBN implementation as are practicable.	Initial high level qualitative assessment on whether the options for routes will utilise PBN and its benefits, e.g. simplifying route integration, more direct routes and less track mileage.	
New Criteria	**Fully Met:** Fully compliant with the latest navigational standards.	**Partially Met:** Some PBN benefits utilised but potential to not be fully compliant.	**Not Met:** PBN not utilised.

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