Stage 2 Stakeholder Workshop

London Southend Airport FASI(S) ACP

ACP-2018-90

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Introduction

London Southend Airport is in the process of redesigning their arrival and departure routes as part of a nationwide program of airspace modernisation.

This is being done, along with 20 other airports and NATS, following the CAA's CAP 1616 process, as part of the government's Airspace Modernisation programme.

London Southend Airport is responsible for redesigning their routes up to 7000ft.

This presentation details the preliminary options we have developed as part of this initiative. Your feedback on these options is requested as part of the process.

Stage 1 – Design Principles

In September 2021 a document titled LSA FASI(S) ACP: '**An Introduction to Design Principles**' was issued to the stakeholders. This document contained an introduction to the ACP and our draft Design Principles.

Stakeholders were provided with a link to an online survey and 38 days to respond and contribute to the Design Principles.

A total of thirty-four responses were received through the online survey and two additional responses via email. These responses helped us form the Design Principles we are using today, the process is detailed in a document titled '**Response on Design Principles'.**

London Southend Airport passed the Stage 1 Define Gateway on the 31st March 2022.

Both documents and further information about this ACP and its progress to date can be found on the ACP Portal - Titled:

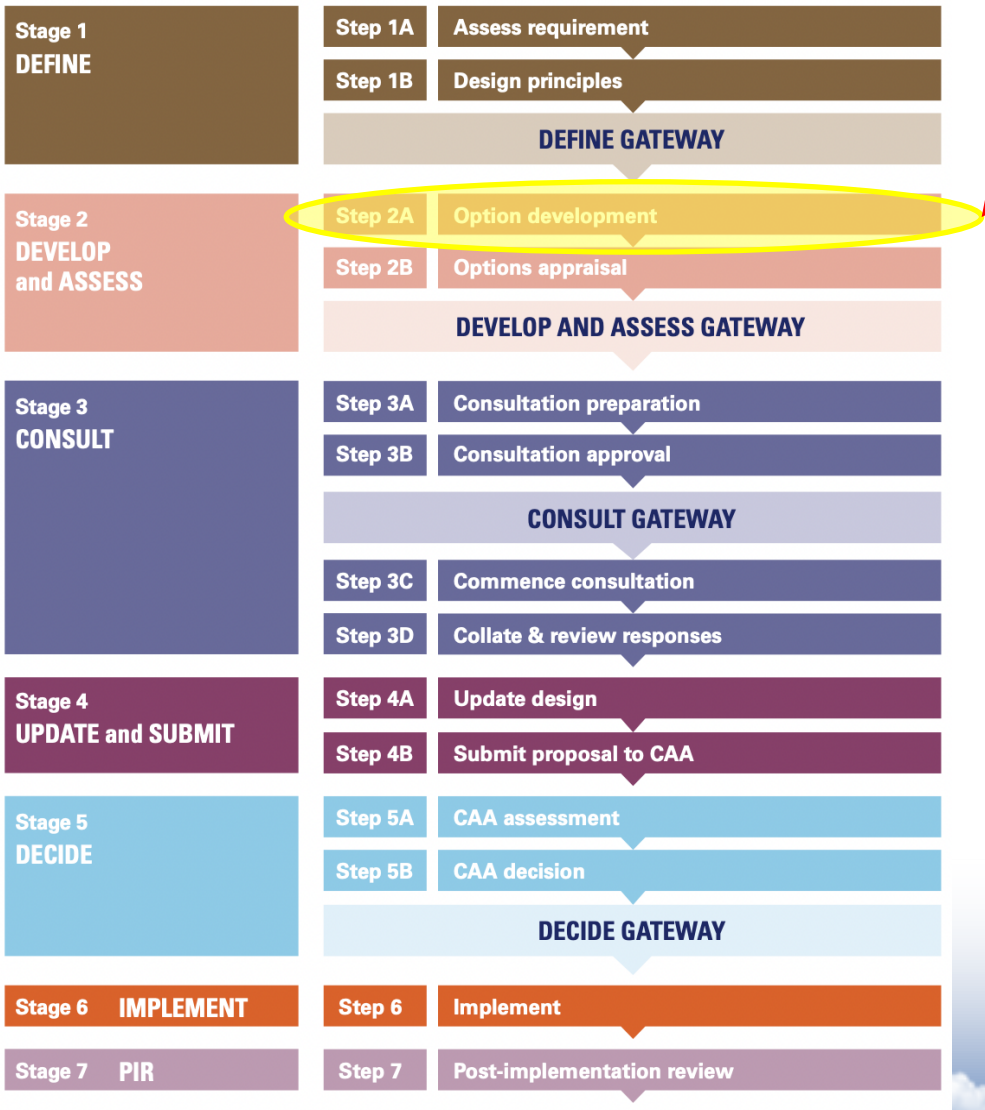
London Southend Airport, FASI- South, redesign of departure and arrival routes

Airspace change ID: ACP-2018-90

Design Principles

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.

CAP1616 Process



We are here

Stage 2A - Option Development

Having passed the 'Define' gateway, Stage 2 is where the change sponsor develops options for the airspace change. In Step 2A, the change sponsor develops a comprehensive list of options that align with the design principles from Stage 1, our Design Principles are detailed on the next slide.

The change sponsor preliminarily tests these with the same stakeholders it engaged with in Step 1B to ensure that they are satisfied that the design options are aligned with the design principles and that the change sponsor has properly understood and accounted for stakeholder concerns specifically related to the design options.

Operational Requirement

Departures

The current operation sees a requirement for departure procedures to the North West, the North East and the South off each runway end.

Arrivals

Arrivals are predominantly from the South and East, however, there remains a need for arrival procedures from the North West.

Constraints

Shoeburyness Range is typically active 0800-1600hrs Monday to Friday. The nature of the activity in this Danger Area precludes LSA from being able 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 expeditious routings for aircraft.

Arrivals to RW23 at LSA need to be spaced in 10 nautical mile trail to afford the opportunity for the preceding aircraft to backtrack the runway. The ground infrastructure is such that there is not a taxiway alternative to conducting a 180 degree turn on the runway and backtracking. Arrivals to RW05 are not constrained in the same way and require only a 5 nautical mile spacing to be applied.

Options Development Methodology

1. Having considered the Operational Requirement, the team set about conceiving options against a backdrop of a 'blank sheet of paper'. Whilst it is accepted that a blank sheet of paper is unrealistic, as there are always immovable constraints and reasons why certain things cannot be achieved, it was important to think broadly in an unrestricted fashion in order to identify a wide range of options.

2. The long list of Options identified and described over the coming slides will be whittled down to a short list through a process of Design Principle Evaluation, Stakeholder Engagement and Options Appraisal (Step 2b).

3. 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 process ahead of formal consultation.

4. It is accepted that it is possible that not all available options may have been thought of in the work done by our consultants. Stakeholders are invited to provide any other options they think merit consideration, and these can be discussed today.

What we need from you

During this initial concept development phase, we will be showing you options in the form of swathes. We have then assessed these swathes against the final Design Principles.

Your help is needed at this stage of the targeted stakeholder engagement to ensure we are applying the final Design Principles in a manner consistent with what you would be expecting.

We will run through the swathes for each departure and arrival and show our assessment of each against our Design Principles. We would then like your input and feedback which will form part of the Options Appraisal for Stage 2b of this CAP1616 process.

It is important to note, we are still early on in the CAP 1616 process and this workshop is not a consultation on final routes, but an assessment of high-level concepts against the Design Principles you helped us develop.

Departures

Departure Procedures

The options conceived for each runway and departure direction are depicted in this Section. These options are depicted in three figures such that they can be seen against Google Earth Mapping with existing NTK, against the En-Route Chart and against Google Mapping.

The extent to which each option does or doesn't meet the Design Principles is covered in the tables and open for discussion today.

Consideration may also be given to the progression of more than one option, for each departure direction, through to implementation. Such a scenario would facilitate dispersion of impacts and the potential for relief and respite.

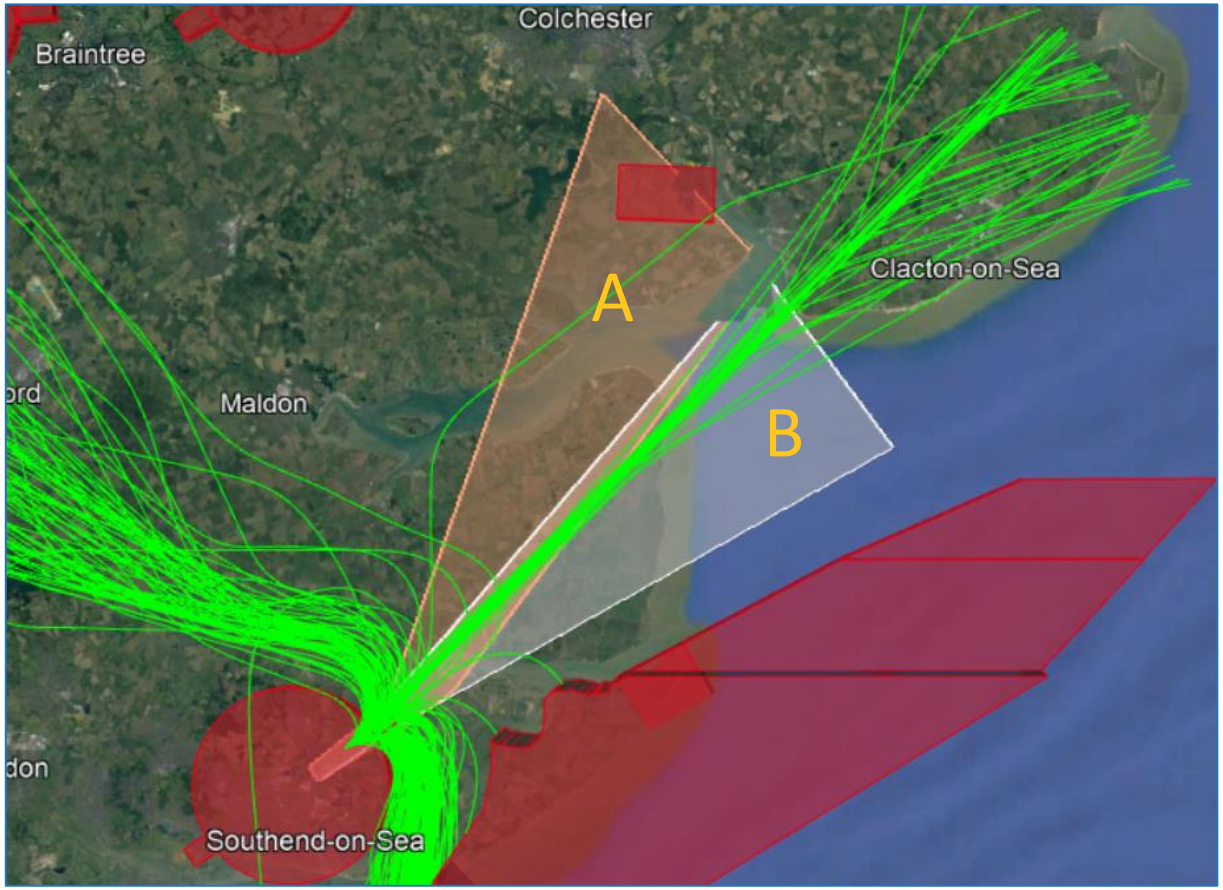
Runway 05 – North East

Departures to the North East off RW05 typically route straight ahead with a slight deviation to the left of track as is evidenced by the green NTK.

Two option swathes were considered, a straight-ahead option (D05-NE-A) and a left turn towards the North East (D05-NE-B).

The option to turn right was considered invalid owing to the routine activity in Shoeburyness Range and the desired direction of travel.

Runway 05 – North East



[1] A05-SE-G
[2] Southminster, Parkdean Holiday Park, Mersea Island
[3] Southminster, Parkdean Holiday Park, Mersea Island
[4] A05-SE-G
[5] Overflight of Wallasea Island

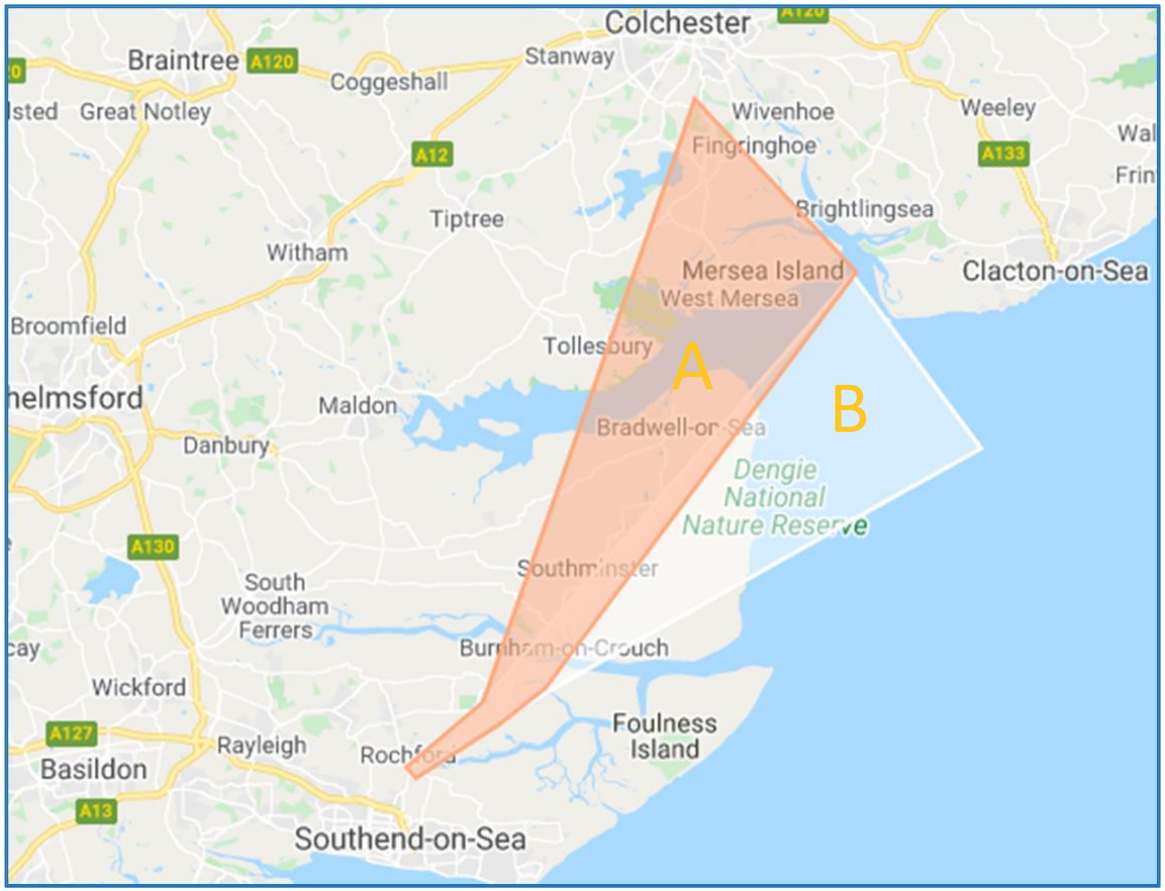
Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NE-A				5						Possible conflict 1			
D05-NE-B		Overflight of built up areas 2	Overflight of built up areas 3	5						Possible conflict 4			

Runway 05 – North East

[1] A05-SE-G
[2] Southminster, Parkdean Holiday Park, Mersea Island
[3] Southminster, Parkdean Holiday Park, Mersea Island
[4] A05-SE-G
[5] Overflight of Wallasea Island

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NE-A				5						Possible conflict 1			
D05-NE-B		Overflight of built up areas 2	Overflight of built up areas 3	5						Possible conflict 4			

Runway 05 – North East



[1] A05-SE-G
[2] Southminster, Parkdean Holiday Park, Mersea Island
[3] Southminster, Parkdean Holiday Park, Mersea Island
[4] A05-SE-G
[5] Overflight of Wallasea Island

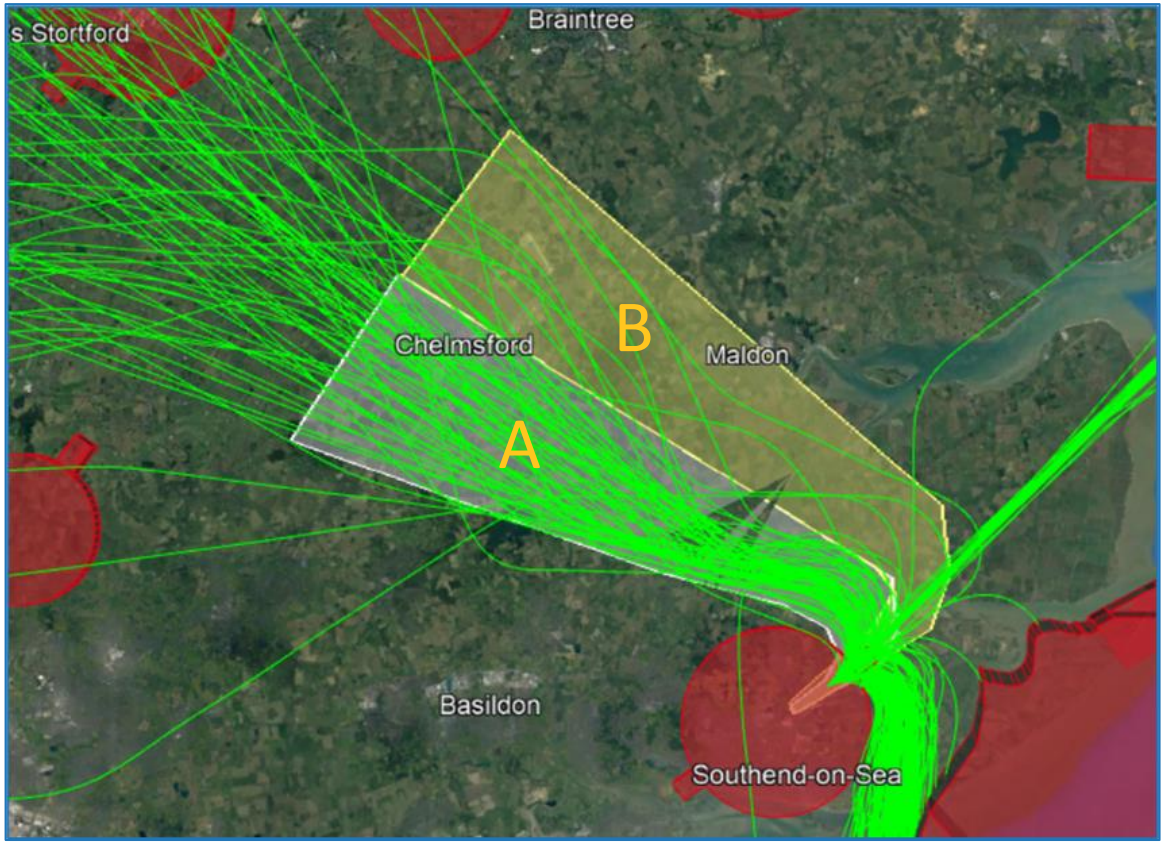
Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NE-A				5						Possible conflict 1			
D05-NE-B		Overflight of built up areas 2	Overflight of built up areas 3	5						Possible conflict 4			

Runway 05 – North West

Departures to the North-West off RW05, turn after adherence to the Noise Abatement Procedures (NAPs) directly to the North-West. However, as can be seen by the data, these tracks disperse quite broadly once North-abeam the Airport.

The two options considered looked at an early turn (D05-NW-A) as per the existing operation, or a wide turn (D05-NW-B) resulting in a swathe that is displaced to the North.

Runway 05 – North West



[1] A05-NW-C & A05-NW-B
[2] A05-NW-C & A05-NW-B
[3] Wallasea Island

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NW-A				3						Possible conflict 1			
D05-NW-B		Different communities, possibly at a lower level	Different communities, possibly at a lower level							Possible conflict 2			

Runway 05 – North West

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NW-A				3						Possible conflict 1			
D05-NW-B		Different communities, possibly at a lower level	Different communities, possibly at a lower level							Possible conflict 2			

[1] A05-NW-C & A05-NW-B
[2] A05-NW-C & A05-NW-B
[3] Wallasea Island

Runway 05 – North West

[1] A05-NW-C & A05-NW-B
[2] A05-NW-C & A05-NW-B
[3] Wallasea Island

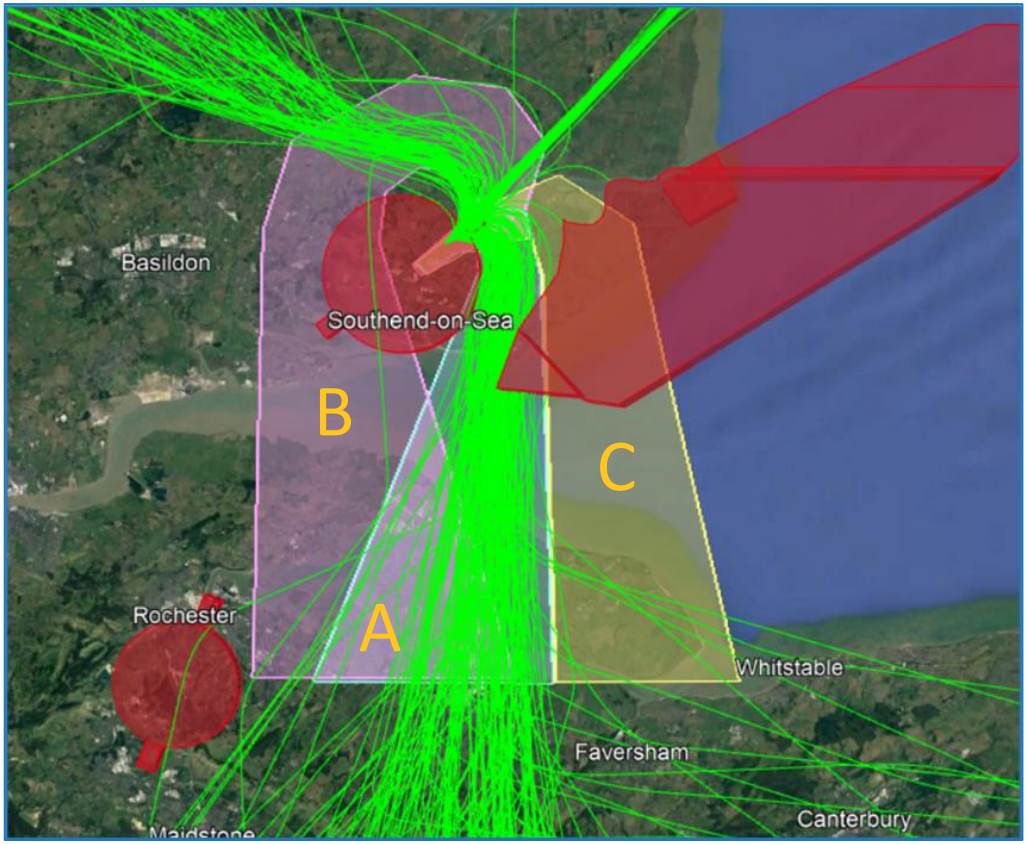
Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-NW-A				3						Possible conflict 1			
D05-NW-B		Different communities, possibly at a lower level	Different communities, possibly at a lower level							Possible conflict 2			

Runway 05 – South/South East

The departures to the South off RW05 turn once they have adhered to the NAPs and route directly to the South.

Option A (D05-S-A) replicates this but the alternatives considered include a wraparound to the North (D05-S-B) and a wider right-turn (D05-S-C) through Shoeburyness Range (albeit this is only possible when the Range is inactive).

Runway 05 – South/South East



Option	D P1	D P2	D P3	D P4	D P5	D P6	D P7	D P8	D P9	D P10	D P11	D P12	D P13
D05-S-A										Possible conflict 1			Increased likelihood of step climb
D05-S-B				5	Extra track miles	Extra track miles				Possible conflict 2	Extra track miles 3		
D05-S-C					Extra track miles					Possible conflict 4	Extra track miles		

[1] A05-SE-F & A05-SE-E

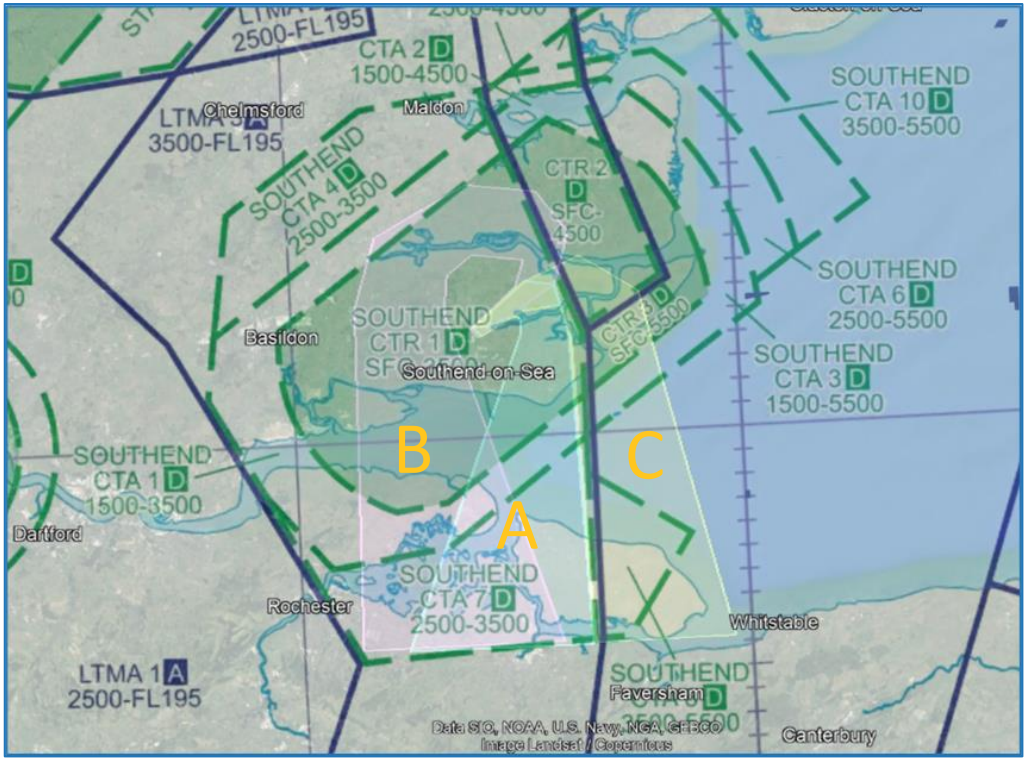
[2] A05-SE-G

[3] Extra track miles potentially affords opportunity for Continuous Climb Operations i.e. removing the need to stop climb at 3000ft.

[4] A05-SE-F & A05-SE-E

[5] Overflight of Rainham & Canvey Marshes.

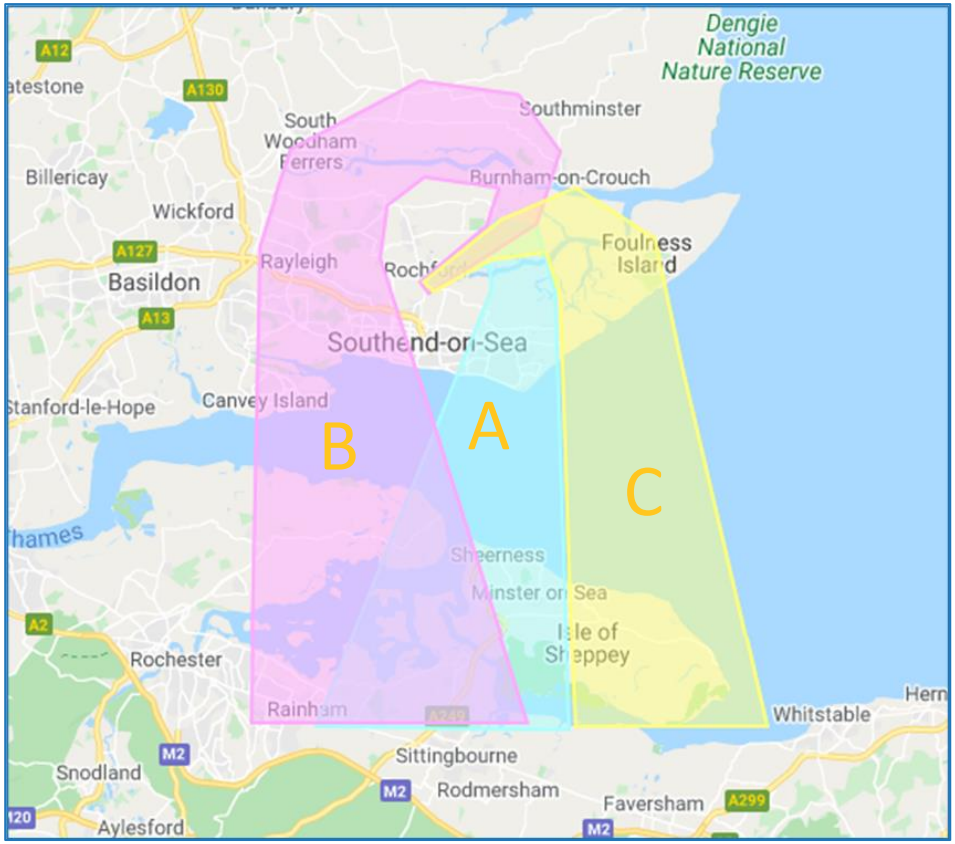
Runway 05 – South/South East



[1] A05-SE-F & A05-SE-E
[2] A05-SE-G
[3] Extra track miles potentially affords opportunity for Continuous Climb Operations i.e. removing the need to stop climb at 3000ft.
[4] A05-SE-F & A05-SE-E
[5] Overflight of Rainham & Canvey Marshes.

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-S-A										Possible conflict 1			Increased likelihood of step climb
D05-S-B				5	Extra track miles	Extra track miles				Possible conflict 2	Extra track miles 3		
D05-S-C					Extra track miles					Possible conflict 4	Extra track miles		

Runway 05 – South/South East



[1] A05-SE-F & A05-SE-E

[2] A05-SE-G

[3] Extra track miles potentially affords opportunity for Continuous Climb Operations i.e. removing the need to stop climb at 3000ft.

[4] A05-SE-F & A05-SE-E

[5] Overflight of Rainham & Canvey Marshes & Wallasea Island

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D05-S-A										Possible conflict 1			Increased likelihood of step climb
D05-S-B				5	Extra track miles	Extra track miles				Possible conflict 2	Extra track miles 3		
D05-S-C					Extra track miles					Possible conflict 4	Extra track miles		

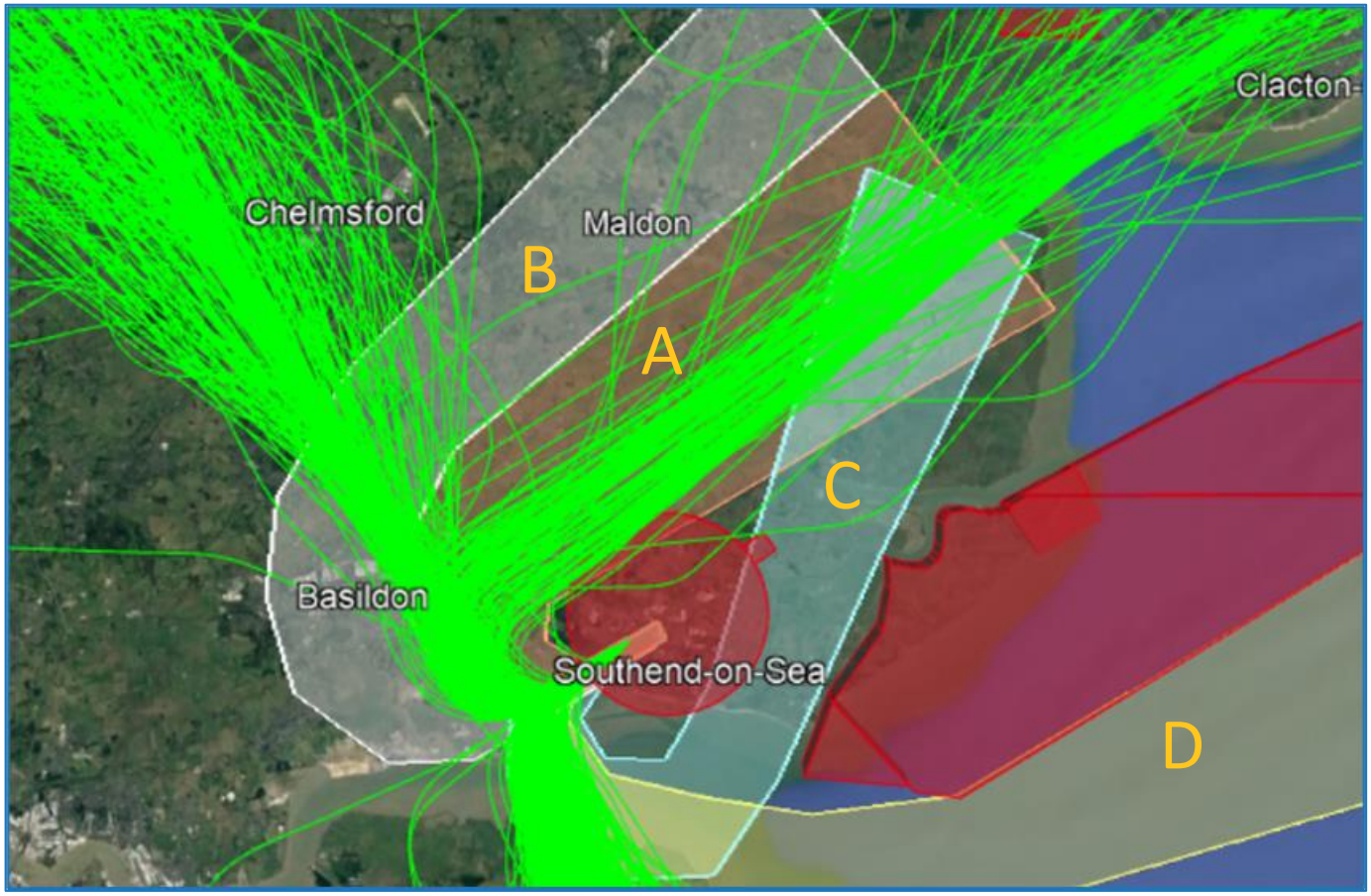
Runway 23 – North East

Departures bound for the North-East off RW23 turn upon adherence to the NAPs and remain in quite a tight and direct North-Easterly swathe; this is replicated in Option A (D23-NE-A).

A wider right turn to the North-East was considered (D23-NE-B) with a North-Easterly track displaced to the North.

A left-turn out with an outbound 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.

Runway 23 – North East



[1] Potential increase in overflight of Canvey Island and Basildon (at a higher level).
[2] Potential increase in noise for Canvey Island and Basildon (at a higher level).
[3] IFP protection areas may fall within Danger Area
[4] IFP protection areas may fall within Danger Area
[5] IFP protection areas may fall within Danger Area
[6] Wallasea Island & Dengie National Nature Reserve

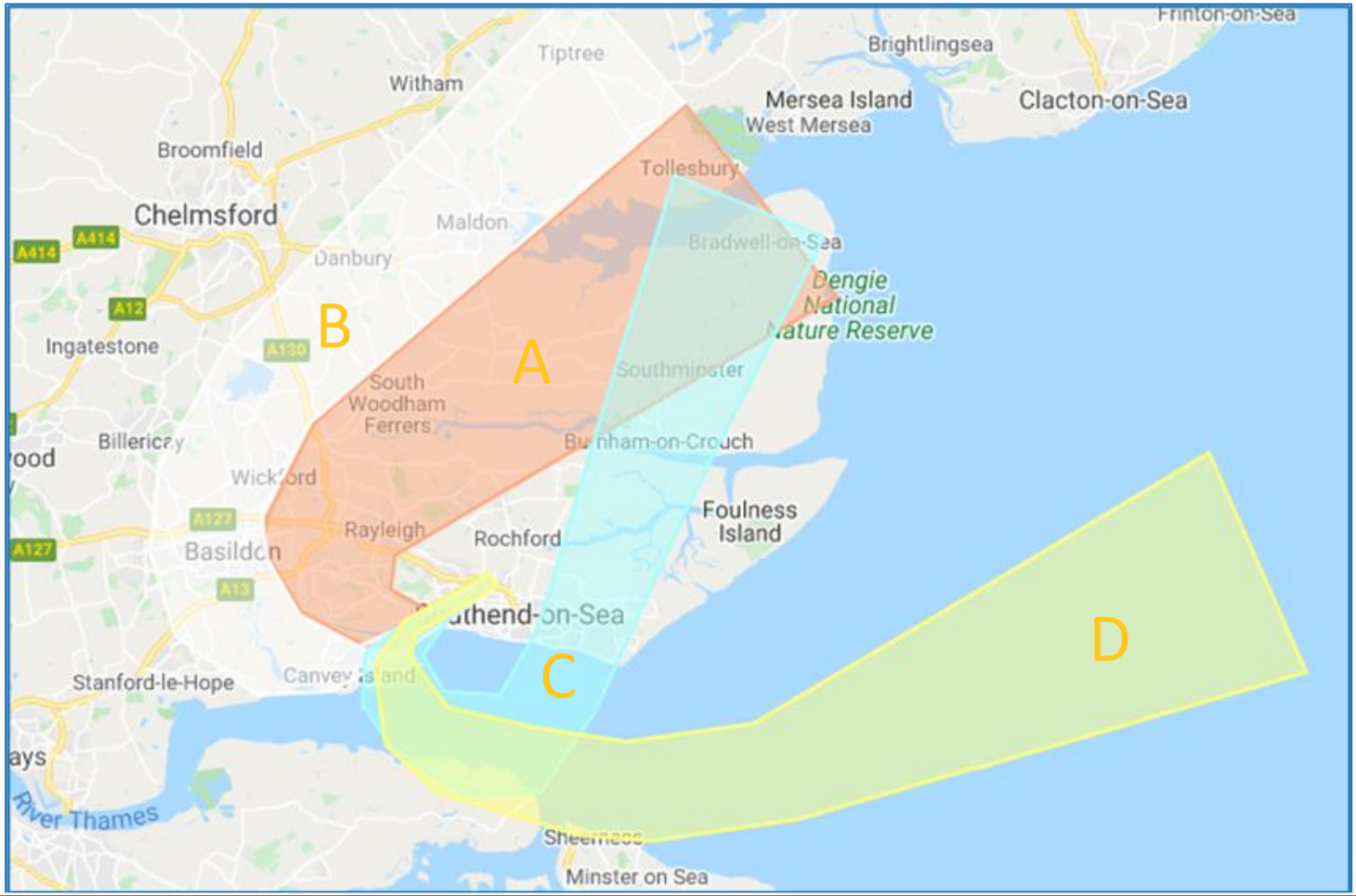
Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NE-A				6									
D23-NE-B		1	2		More track miles			Close to LTMA & LCY traffic				Close to LTMA & LCY traffic	Increased potential for step climb
D23-NE-C	3			6			4		5				
D23-NE-D					More track miles	More track miles					More track miles		

Runway 23 – North East

[1] Potential increase in overflight of Canvey Island and Basildon (at a higher level).
[2] Potential increase in noise for Canvey Island and Basildon (at a higher level).
[3] IFP protection areas may fall within Danger Area
[4] IFP protection areas may fall within Danger Area
[5] IFP protection areas may fall within Danger Area
[6] Wallasea Island & Dengie National Nature Reserve

Option	D P1	D P2	D P3	D P4	D P5	D P6	D P7	D P8	D P9	D P10	D P11	D P12	D P13
D23-NE-A				6									
D23-NE-B		1	2		More track miles			Close to LTMA & LCY traffic				Close to LTMA & LCY traffic	Increased potential for step climb
D23-NE-C	3			6			4		5				
D23-NE-D					More track miles	More track miles					More track miles		

Runway 23 – North East



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[6] Wallasea Island & Dengie National Nature Reserve

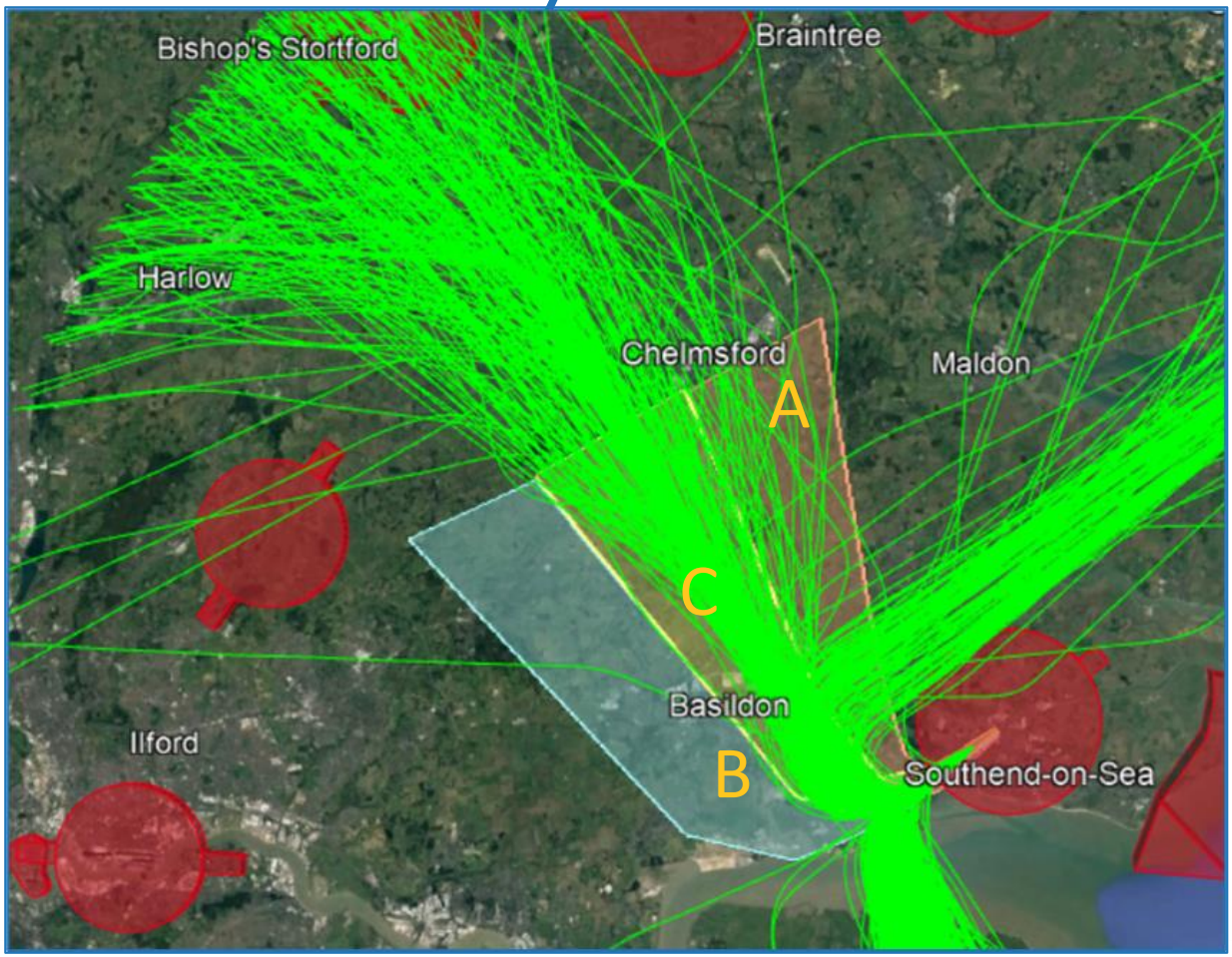
Option	D P1	D P2	D P3	D P4	D P5	D P6	D P7	D P8	D P9	D P10	D P11	D P12	D P13
D23-NE-A				6									
D23-NE-B		1	2		More track miles			Close to LTMA & LCY traffic				Close to LTMA & LCY traffic	Increased potential for step climb
D23-NE-C	3			6			4		5				
D23-NE-D					More track miles	More track miles					More track miles		

Runway 23 – North West

Departures to the North-West off RW23 turn on adherence to the NAPs and tend not to fan out too broadly until aircraft are 15-20nms North West of LSA. Option C (D23-NW-C) seeks to replicate the current operation.

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

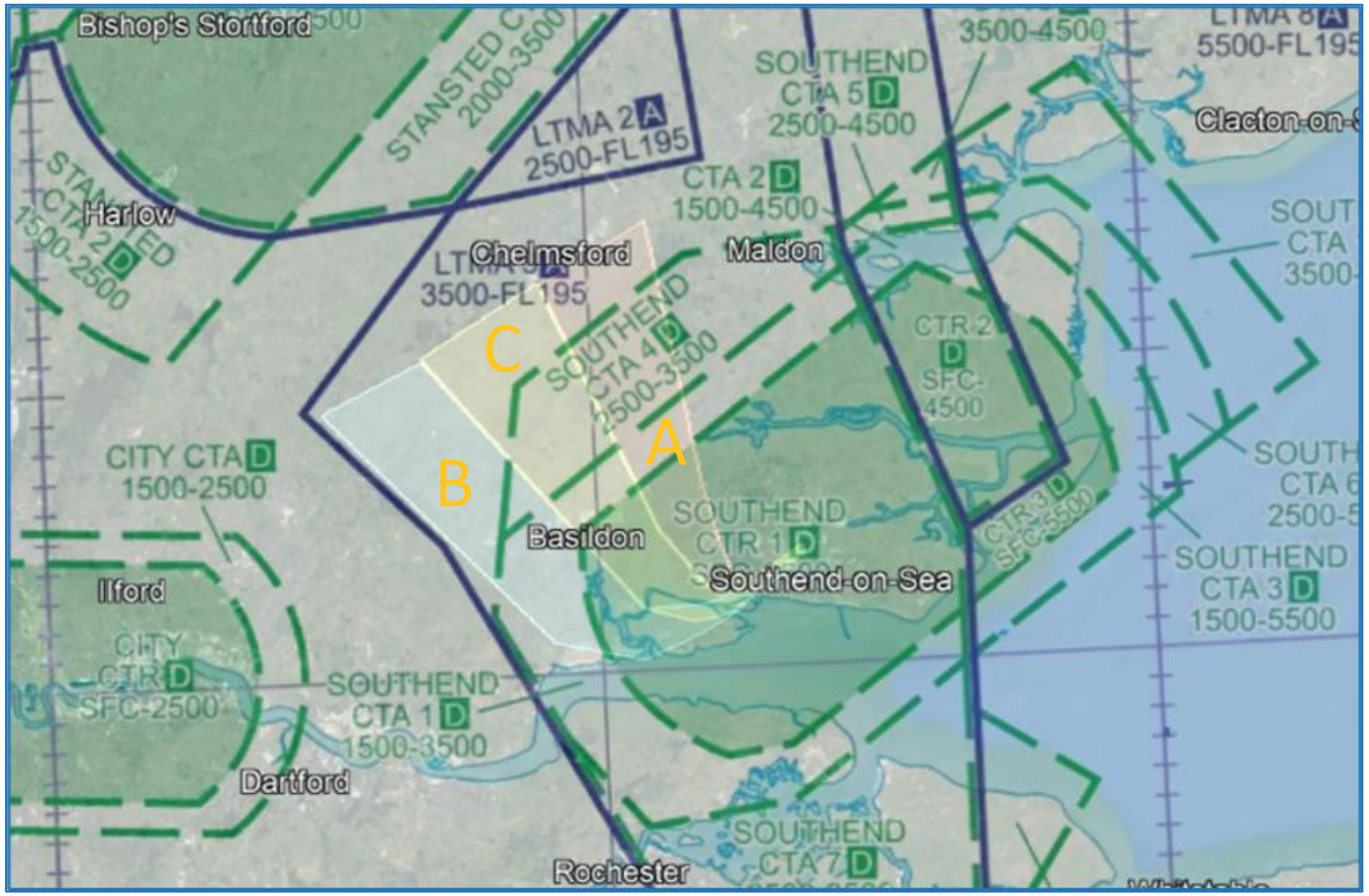
Runway 23 – North West



[1] Potential increase in overflight of Hadleigh
[2] Potential increase in noise for Hadleigh
[3] Potential increase in overflight of Canvey Island and Basildon
[4] Potential increase in noise for Canvey Island and Basildon
[5] Langdon hills, fobbing & Canvey/Bowers Marsh.

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NW-A		1	2		Tight turn at low level								
D23-NW-B				5									
D23-NW-C		3	4					Proximity to LTMA & LCY				Proximity to LTMA & LCY	Increased potential for step climb

Runway 23 – North West



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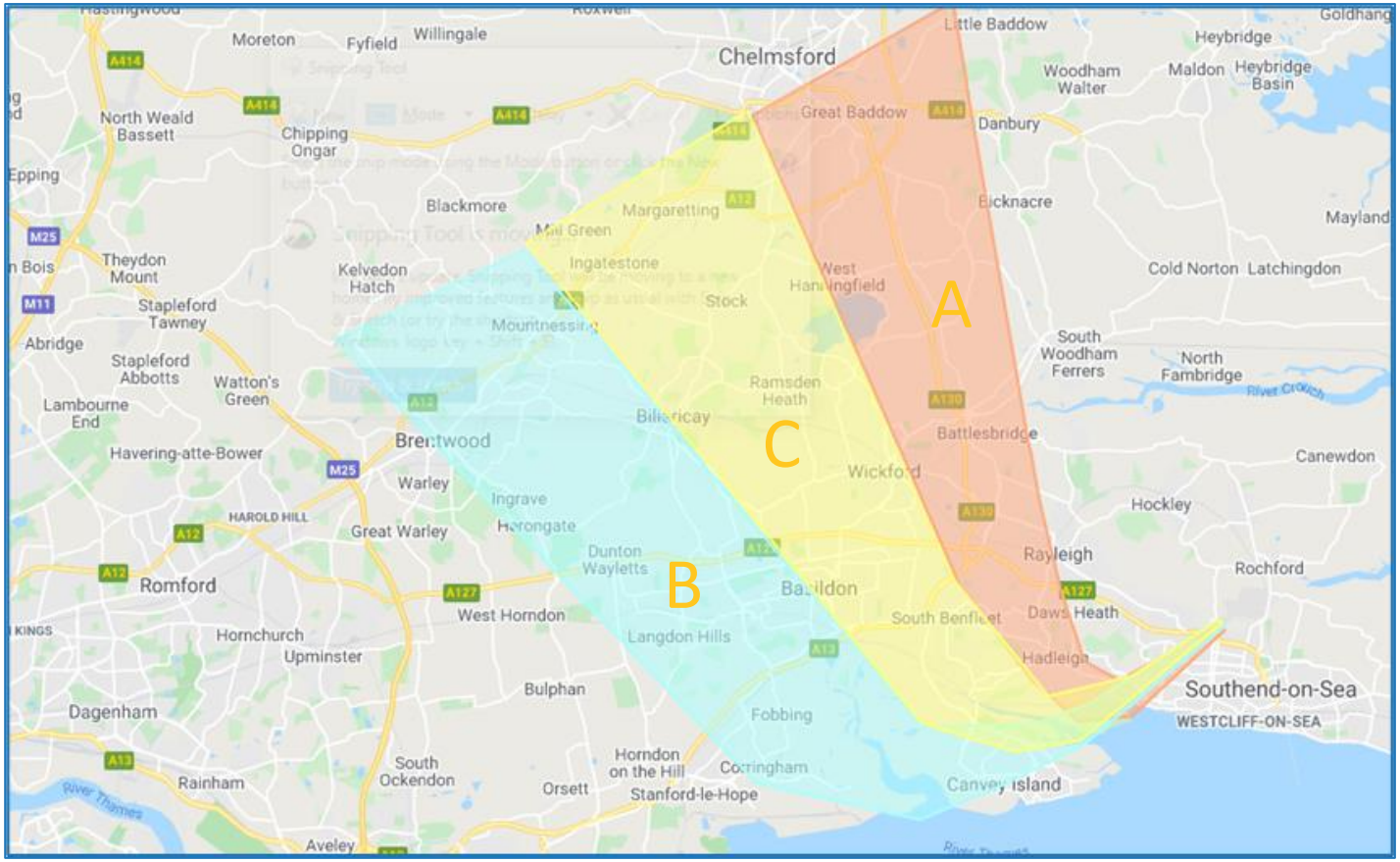
[2] Potential increase in noise for Hadleigh
[3] Potential increase in overflight of Canvey Island and Basildon
[4] Potential increase in noise for Canvey Island and Basildon
[5] Langdon hills, fobbing & Canvey/Bowers Marsh.

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NW-A		1	2		Tight turn at low level								
D23-NW-B				5									
D23-NW-C		3	4					Proximity to LTMA & LCY				Proximity to LTMA & LCY	Increased potential for step climb

Runway 23 – North West



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[2] Potential increase in noise for Hadleigh
[3] Potential increase in overflight of Canvey Island and Basildon
[4] Potential increase in noise for Canvey Island and Basildon
[5] Langdon hills, fobbing & Canvey/Bowers Marsh.

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-NW-A		1	2		Tight turn at low level								
D23-NW-B				5									
D23-NW-C		3	4					Proximity to LTMA & LCY				Proximity to LTMA & LCY	Increased potential for step climb

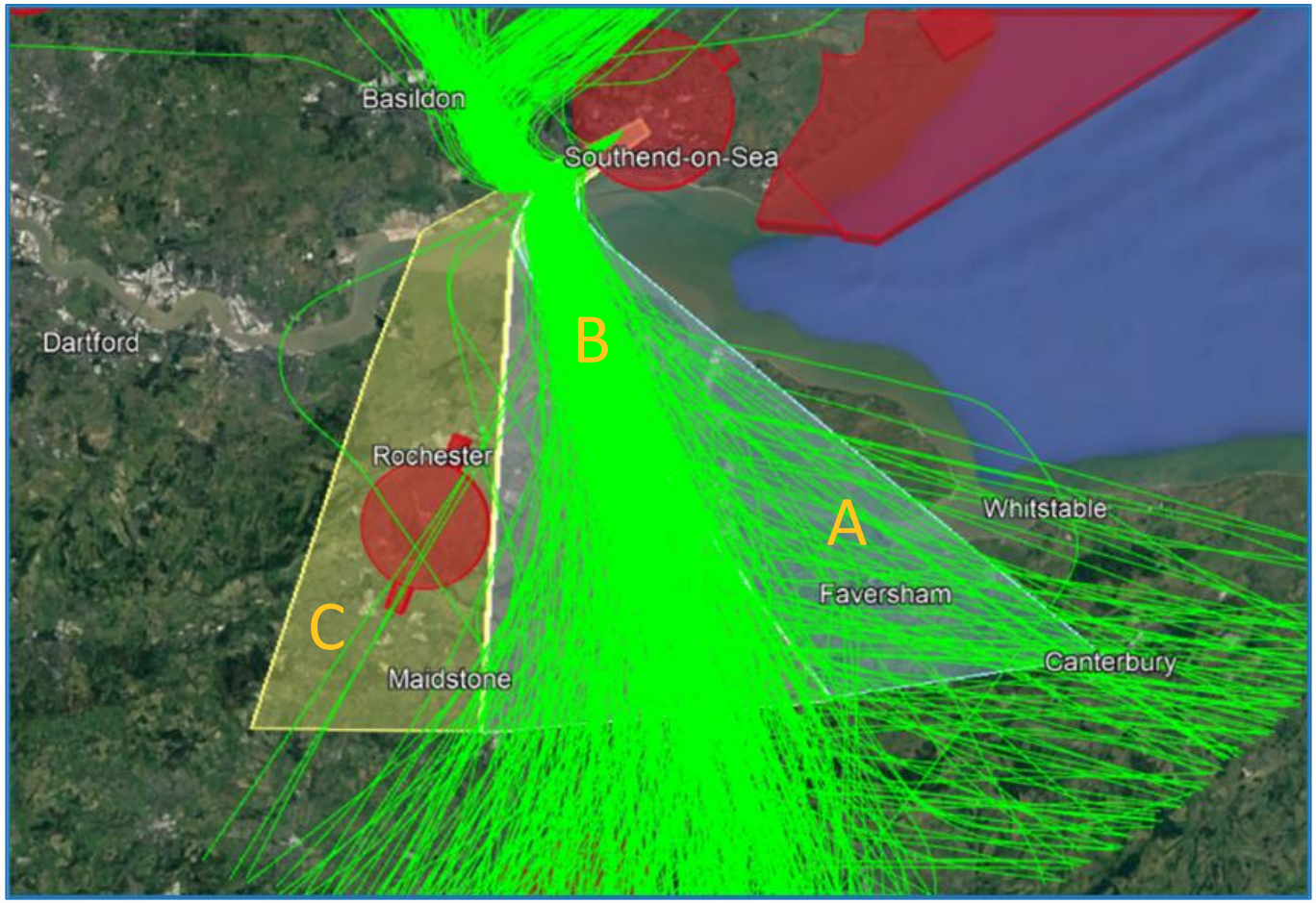
Runway 23 – South/South East

Departures to the South off RW23 turn South upon adherence to the NAPs and start to fan out approximately 10-15nms from take-off.

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 C (D23-S-C) has a wider turn to the South displacing the tracks to the West of where they go today.

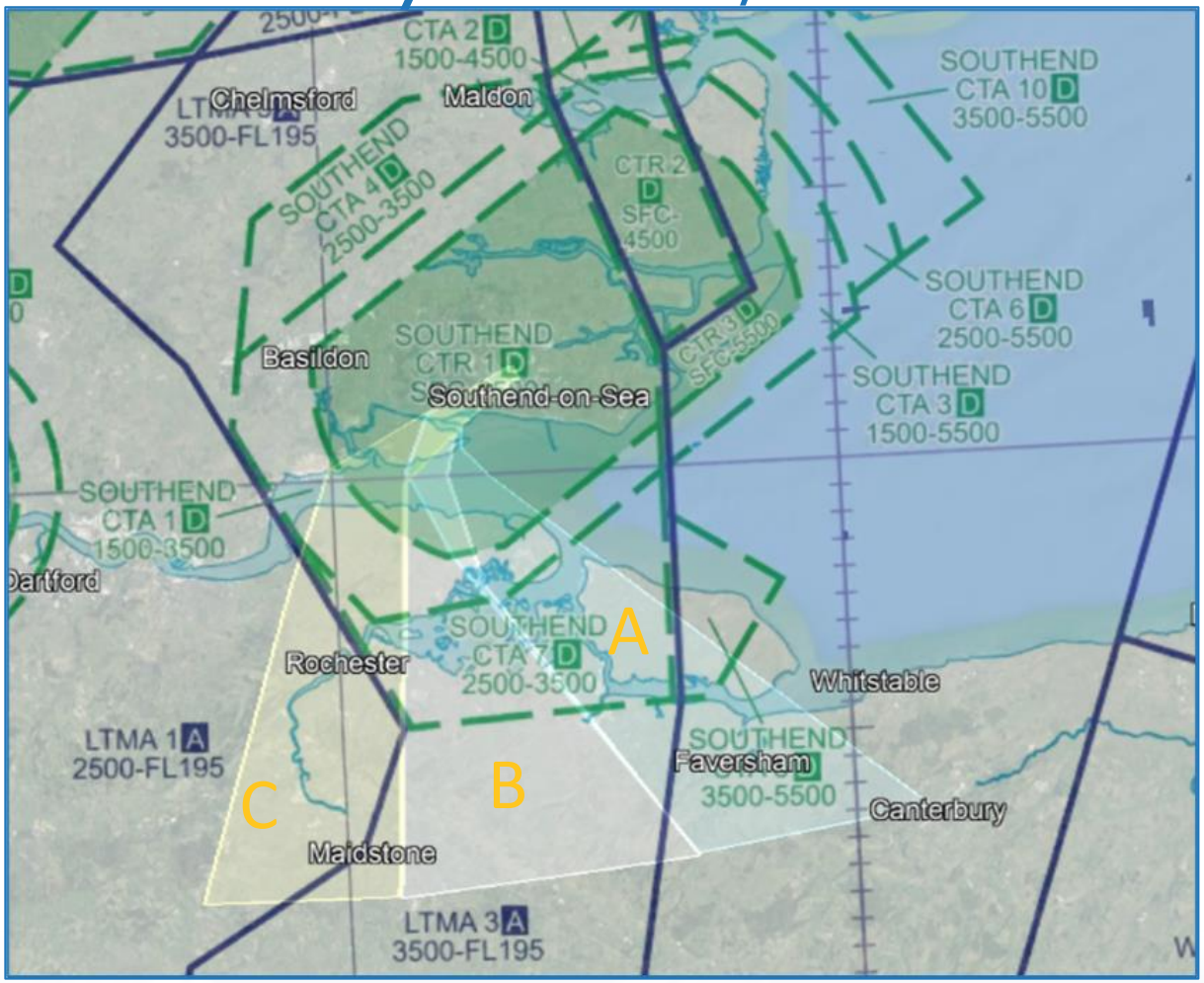
Runway 23 – South/South East



[1] A23-SE-E & A23-SE-F
[2] Depending on position of final track - potential increase in overflight of Rainham & Hempstead
[3] Depending on position of final track - potential increase in noise to Rainham & Hempstead
[4] Potential increase in overflight of Gillingham & Rochester
[5] Potential increase in noise to Gillingham & Rochester

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-S-A										Possible conflict 1			
D23-S-B		2	3										
D23-S-C		4	5					Close to LTMA 1 & Gatwick				Close to LTMA 1 & Gatwick	Close to LTMA 1 & Gatwick

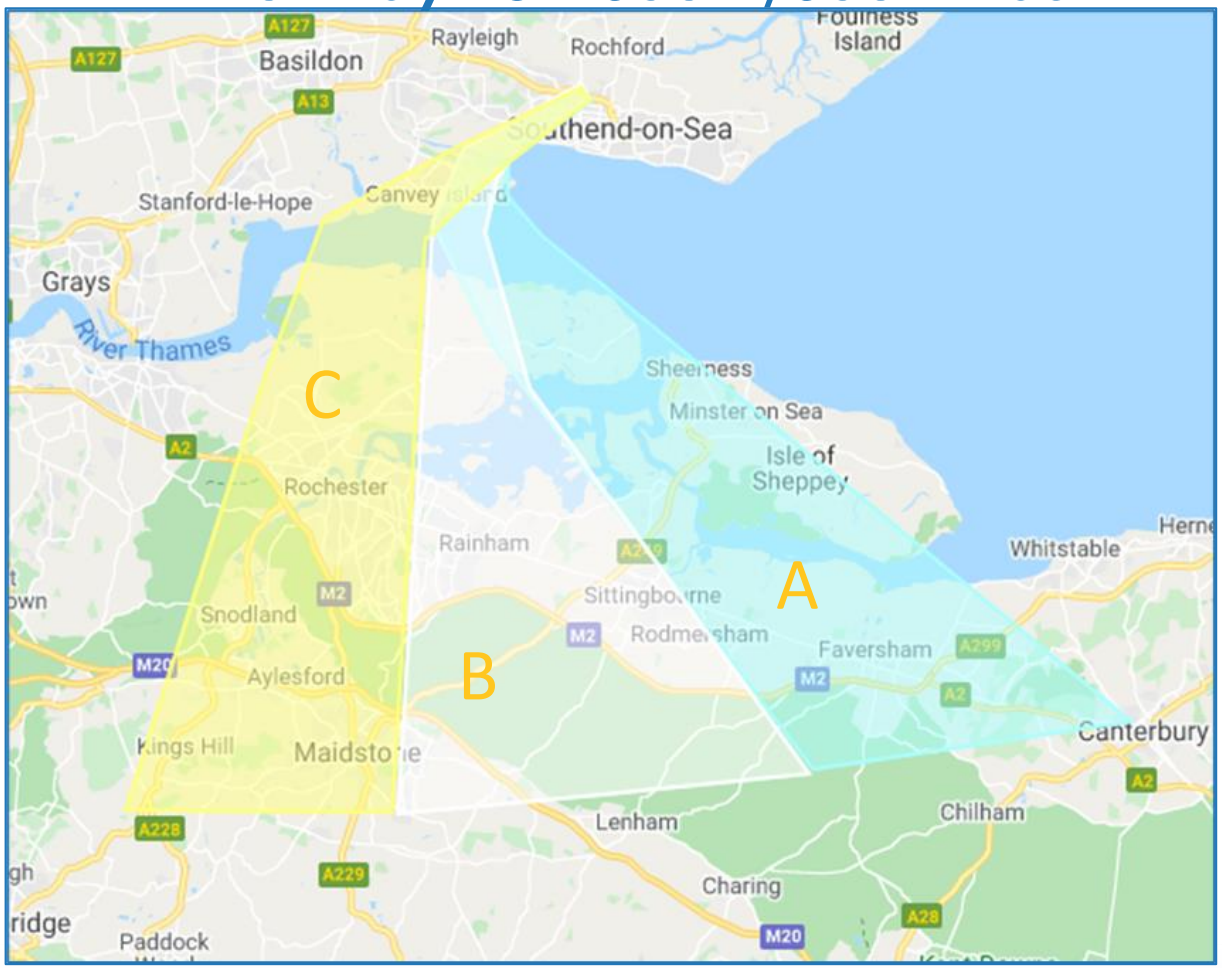
Runway 23 – South/South East



[1] A23-SE-E & A23-SE-F
[2] Depending on position of final track - potential increase in overflight of Rainham & Hempstead
[3] Depending on position of final track - potential increase in noise to Rainham & Hempstead
[4] Potential increase in overflight of Gillingham & Rochester
[5] Potential increase in noise to Gillingham & Rochester

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-S-A										Possible conflict 1			
D23-S-B		2	3										
D23-S-C		4	5					Close to LTMA 1 & Gatwick				Close to LTMA 1 & Gatwick	Close to LTMA 1 & Gatwick

Runway 23 – South/South East



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[2] Depending on position of final track - potential increase in overflight of Rainham & Hempstead
[3] Depending on position of final track - potential increase in noise to Rainham & Hempstead
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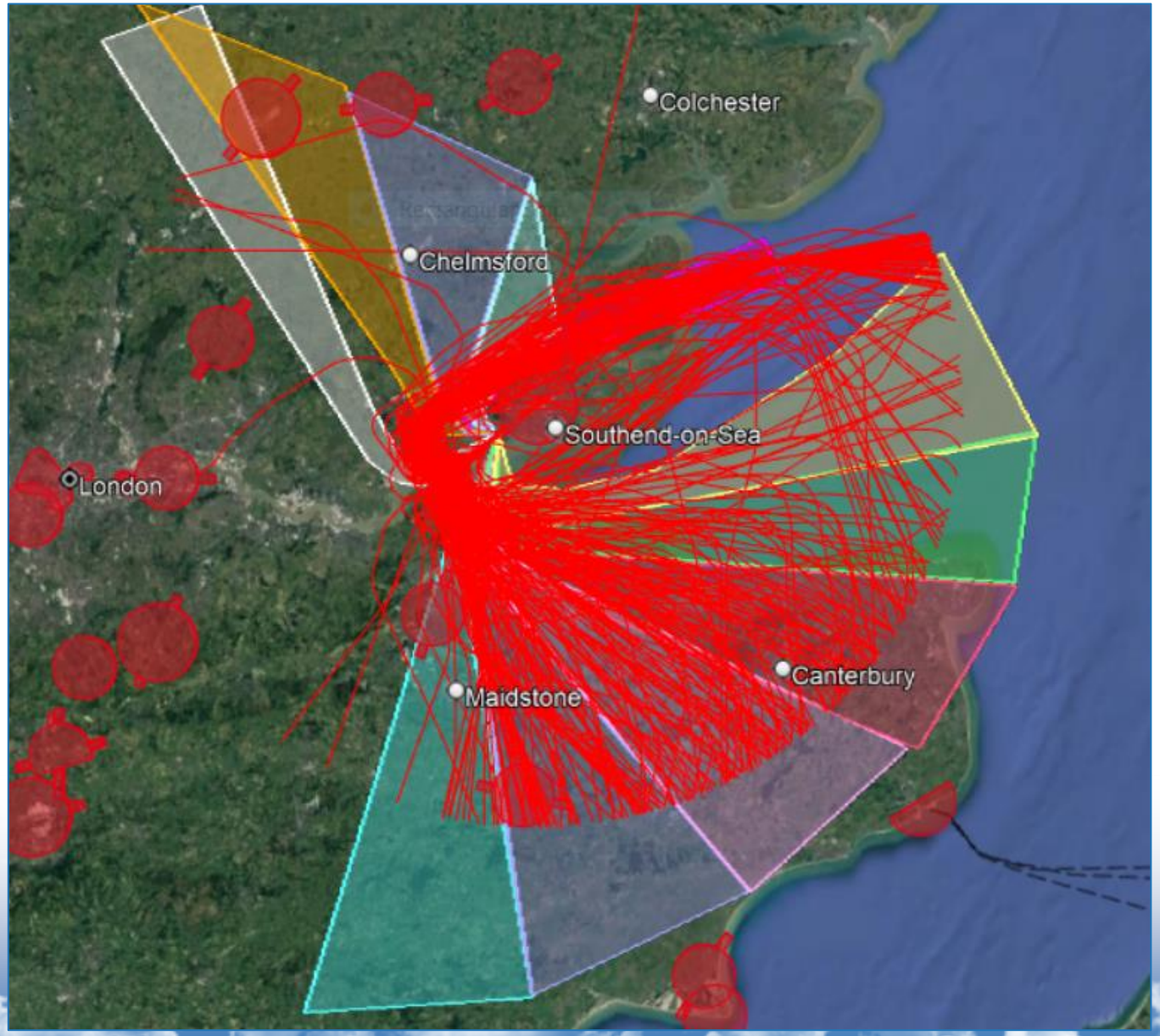
Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
D23-S-A										Possible conflict 1			
D23-S-B		2	3										
D23-S-C		4	5					Close to LTMA 1 & Gatwick				Close to LTMA 1 & Gatwick	Close to LTMA 1 & Gatwick

Arrivals

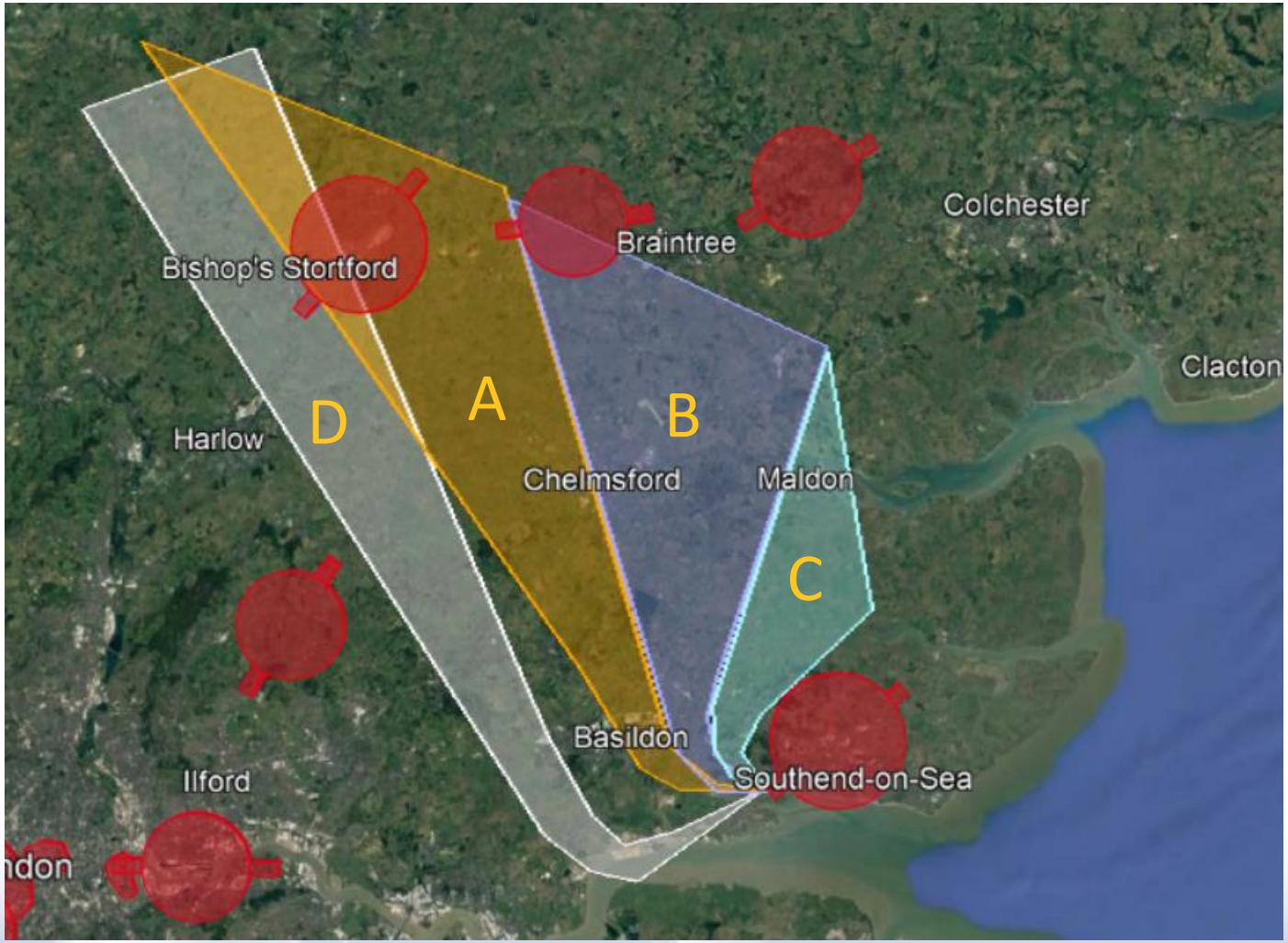
Runway 05 Existing Arrival Routings



Runway 05 Arrivals from Northwest

The options seek to turn right off the STAR and take a variety of direct routings (some more expeditious than others). Option D (A05-NW-D) looked at the potential to route directly from BWY.

Runway 05 Arrivals from Northwest



Runway 05 Arrivals from Northwest

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A05-NW-A		1	2										
A05-NW-B		3	4							Possible conflict 5			
A05-NW-C										Possible conflict 6	Extra track miles		
A05-NW-D													

[1] Potential to increase concentration over eastern Basildon
[2] Potential to increase noise over eastern Basildon
[3] Potential to increase concentration over eastern Basildon
[4] Potential to increase noise over eastern Basildon
[5] D05-NW-A & D05-NW-B
[6] D05-NW-A & D05-NW-B

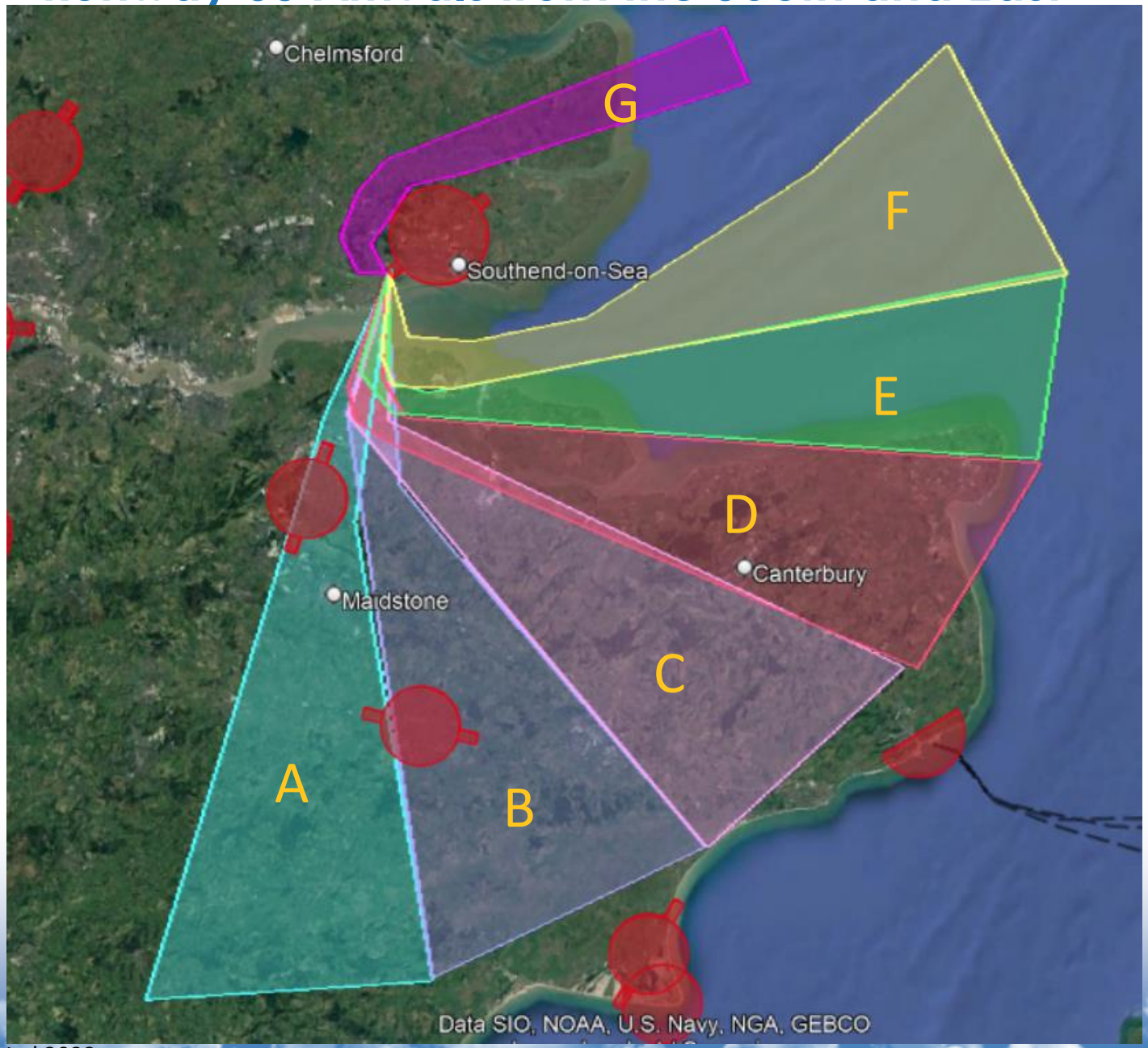
Runway 05 Arrivals from the South and East

The options for arrivals from the South consist of a fan array of options.

The existing arrival traffic data shows aircraft routing right across that fan currently.

The GEGMU option (A05-SE0G) serves as the most likely option from the East although it would be possible to route south of Shoeburyness Range (A05-SE-F). Notably, the GEGMU option has already been designed and submitted as part of the 2018 ACP.

Runway 05 Arrivals from the South and East



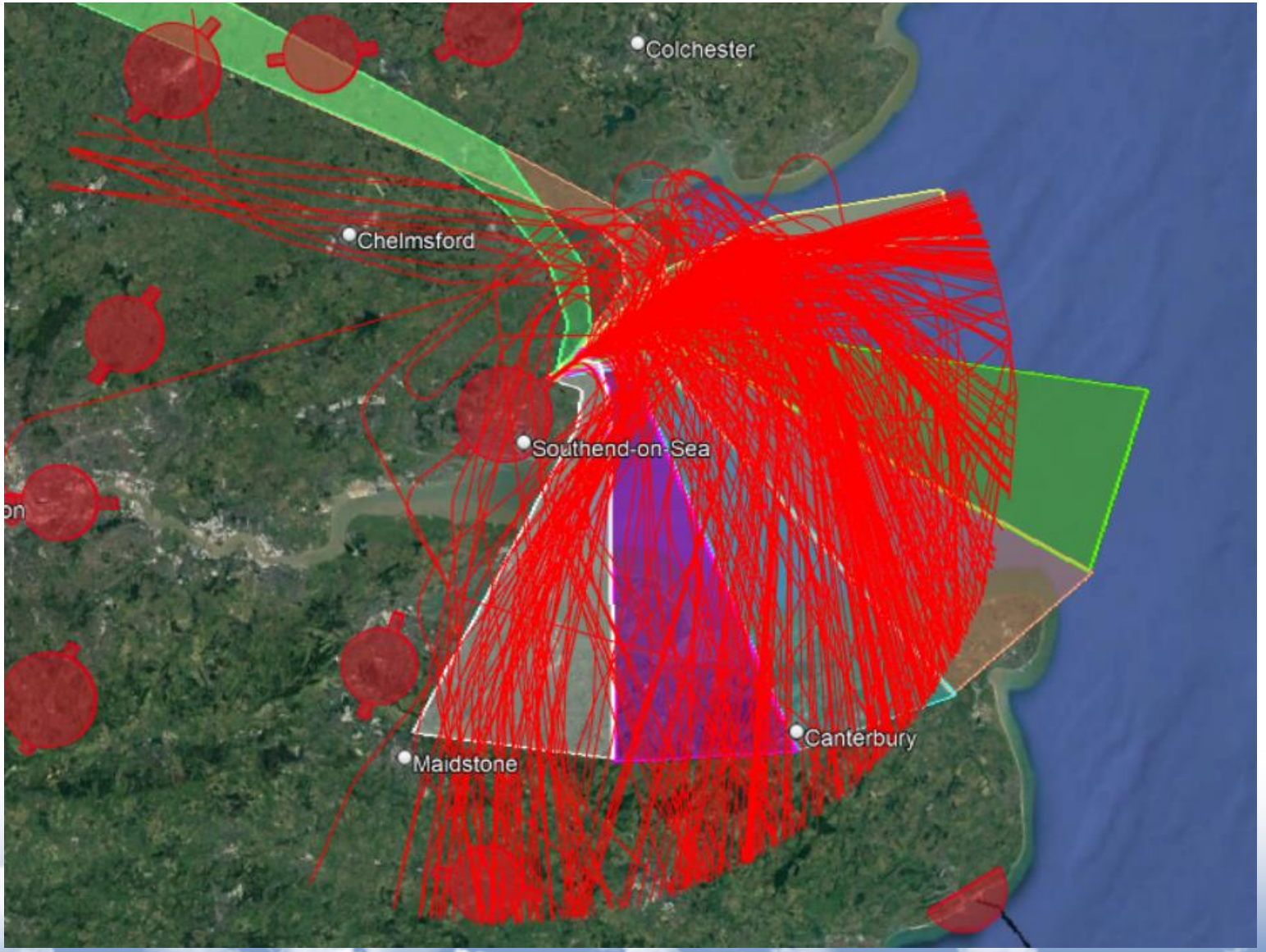
Runway 05 Arrivals from the South and East

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A05-SE-A													
A05-SE-B													
A05-SE-C													
A05-SE-D													
A05-SE-E										Possible conflict 1	Extra track miles*		
A05-SE-F					Extra track miles*					Possible conflict 2	Extra track miles*		
A05-SE-G					Extra track miles*					Possible conflict 3	Extra track miles*		

[1] D05-S-C & D05-S-A
[2] D05-S-C & D05-S-A
[3] D05-S-B, D05-NE-A & D05-NE-B

*If arriving from the South

Runway 23 Existing Arrival Routings



Runway 23 Arrivals from Northwest

The arrival options to RW23 from the North-West largely follow the existing track of the STAR as it represents the most expeditious routing.

Option A (A23-NW-A) then turns earlier whilst Option B (A23-NW-B) is extended.

Runway 23 Arrivals from Northwest

Runway 23 Arrivals from Northwest

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

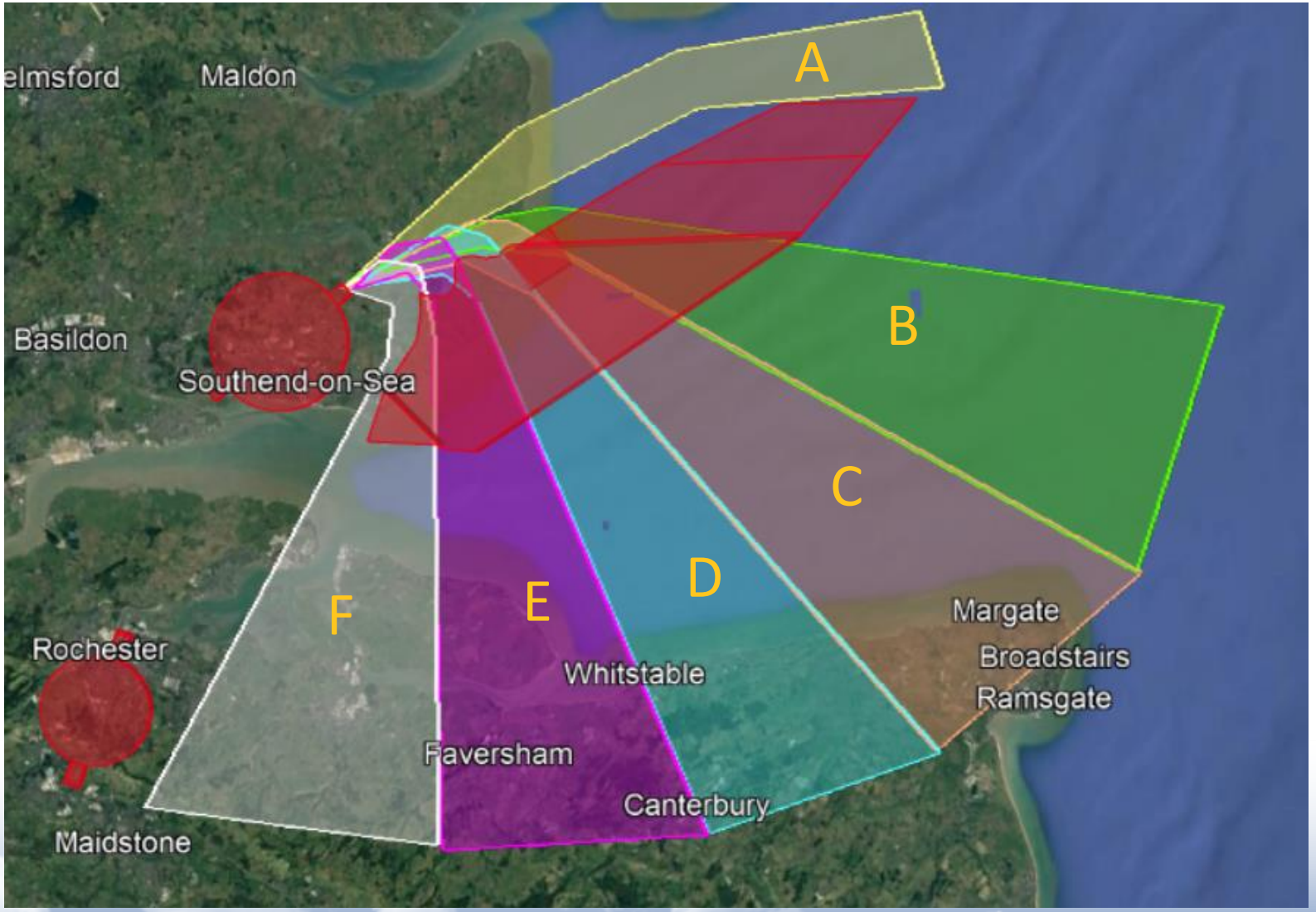
Runway 23 Arrivals from South and East

The options for arrivals from the South consist of a fan array of options.

The existing arrival traffic data shows aircraft routing right across that fan currently.

The GEGMU option (A23-SE-A) serves as the most likely option during the day (Mon-Fri 0800-1600Hrs) when Shoeburyness Range is active although it would be possible to route more directly when it is inactive.

Runway 23 Arrivals from South and East



Runway 23 Arrivals from South and East

Option	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DP11	DP12	DP13
A23-SE-A					Extra track miles*						Extra track miles*		
A23-SE-B					Extra track miles*						Extra track miles*		
A23-SE-C													
A23-SE-D													
A23-SE-E					1					Possible conflict 2			3
A23-SE-F					4					Possible conflict 5			6

[1] Potential to be forced into early descent or step descent
[2] D23-S-A
[3] Potential for step descent if combined with SE departure off RW23
[4] Potential to be forced into early descent or step descent
[5] D23-S-A
[6] Potential for step descent if combined with SE departure off RW23

* If arriving from the South

Thank you for your time are there any Questions?