ROYAL AIR FORCE NORTHOLT

FASI-S ACP-2018-66
CAP1616 STAGE 2

Appendix E – Comprehensive List of Options Engagement Material

PRE-COVID PAUSE

2019-2020
Engagement

RAF Northolt [redacted] Airspace Design

[redacted]

Aim

To explain the method RAF Northolt is using to design its future airspace.

Why conduct an Airspace Change Proposal?

Airspace Modernisation Strategy

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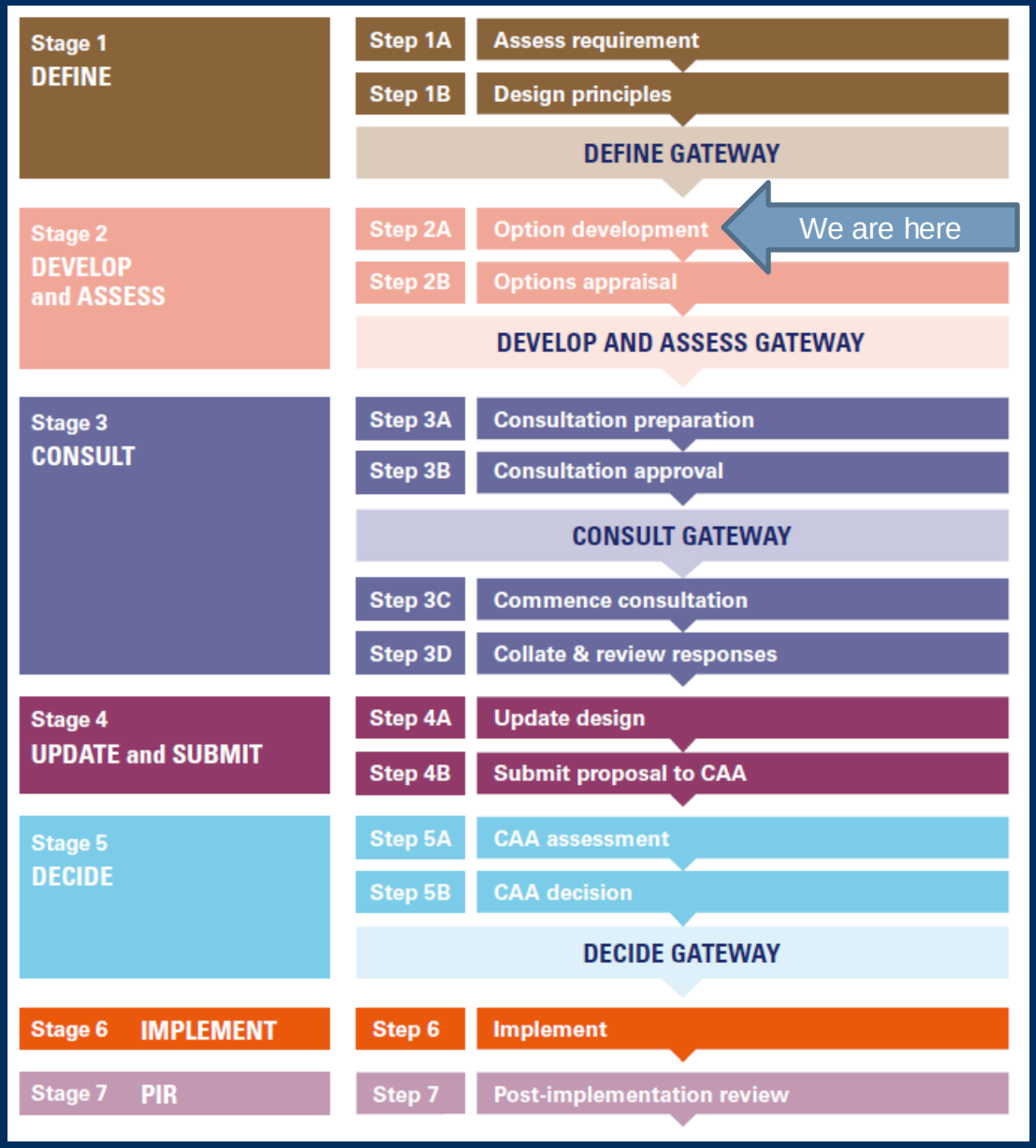
> Reforming the way we use our airspace is among the most pressing of tasks.
>
> – Secretary of State for Transport

CAP 1616 Process



CAA Approved Design Principles (Stage 1)

	Design Principle
1.	Must be safe
2.	Must ensure continuation of military and governmental operational activity
3.	Should minimise impact on other airspace users
4.	Should facilitate design using modern navigational technology
5.	Should facilitate operational efficiencies to maximise benefits to as many stakeholders as possible
6.	Should minimise fuel and greenhouse gases
7.	Should minimise the impact of aircraft noise by:
	a. Minimising the number of people newly overflown
	b. Minimising the total number of people affected by noise
	c. Where possible minimise overflight of communities with multiple routes

How is RAF Northolt developing potential designs?

The rules of today's meeting:

This stage of engagement is to:

Show our approach to developing route options based on the design principles set at Stage 1

Answer questions in relation to our approach

Seek your feedback on our approach

This stage of the engagement is **not** to:

Examine the detailed specific geographical position of the route options

Discuss the pros and cons of individual route options

Describe the impact of route options

Seek feedback on individual route options

Current Departure Flight Paths

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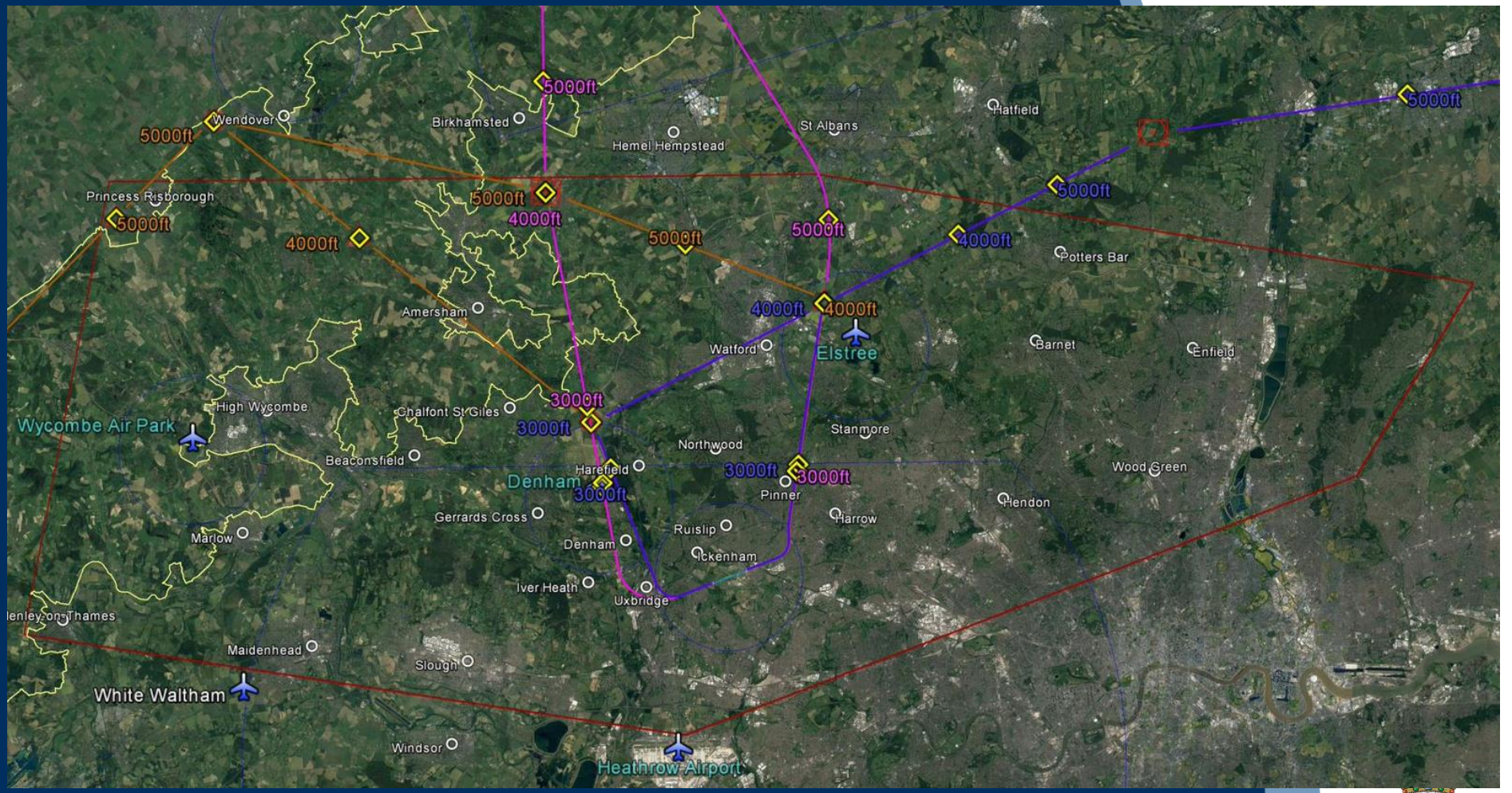
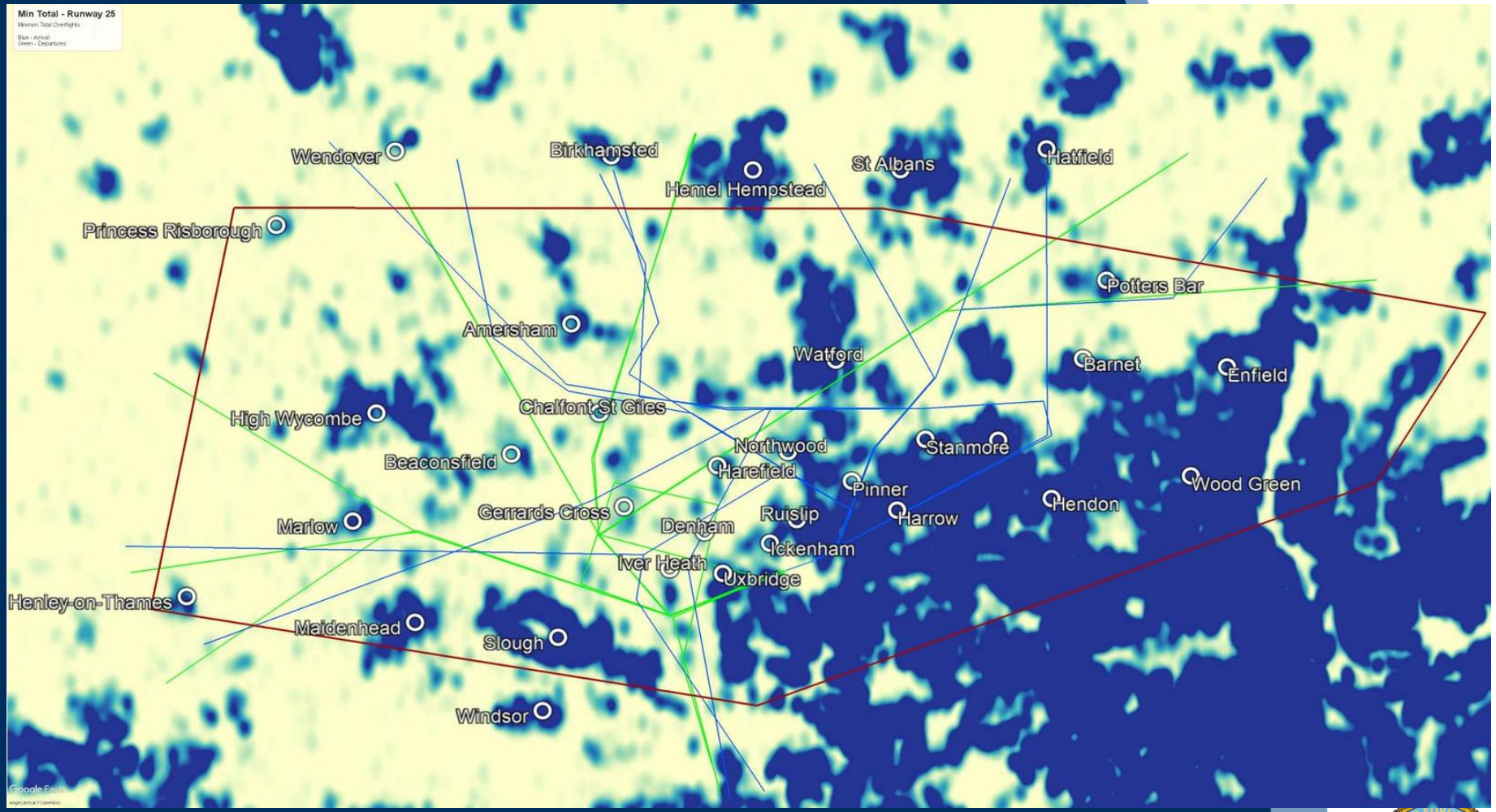


Step 1 – Population



Step 1 – RAF Northolt Route Map

Step 1 – Heat map of other airspace users

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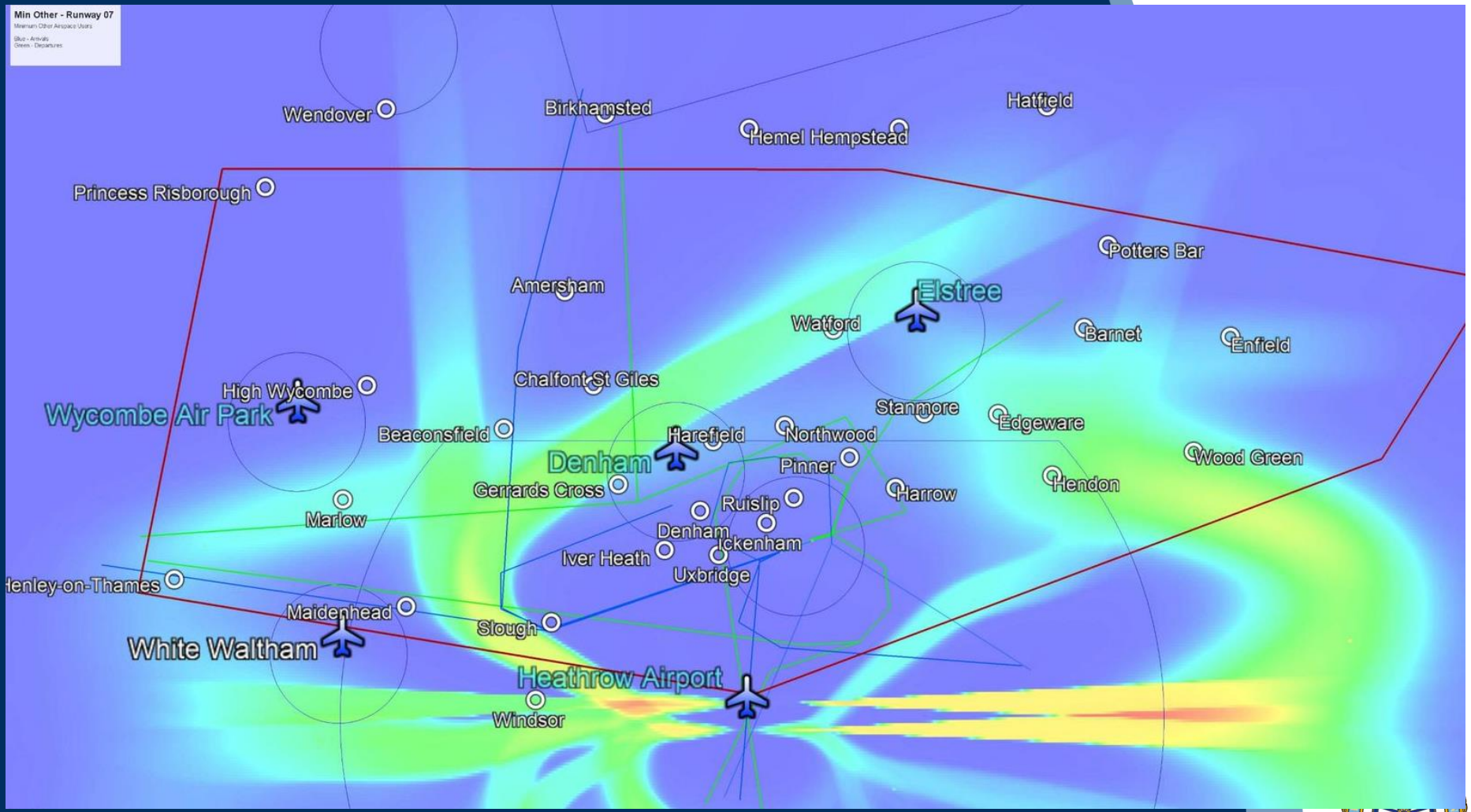
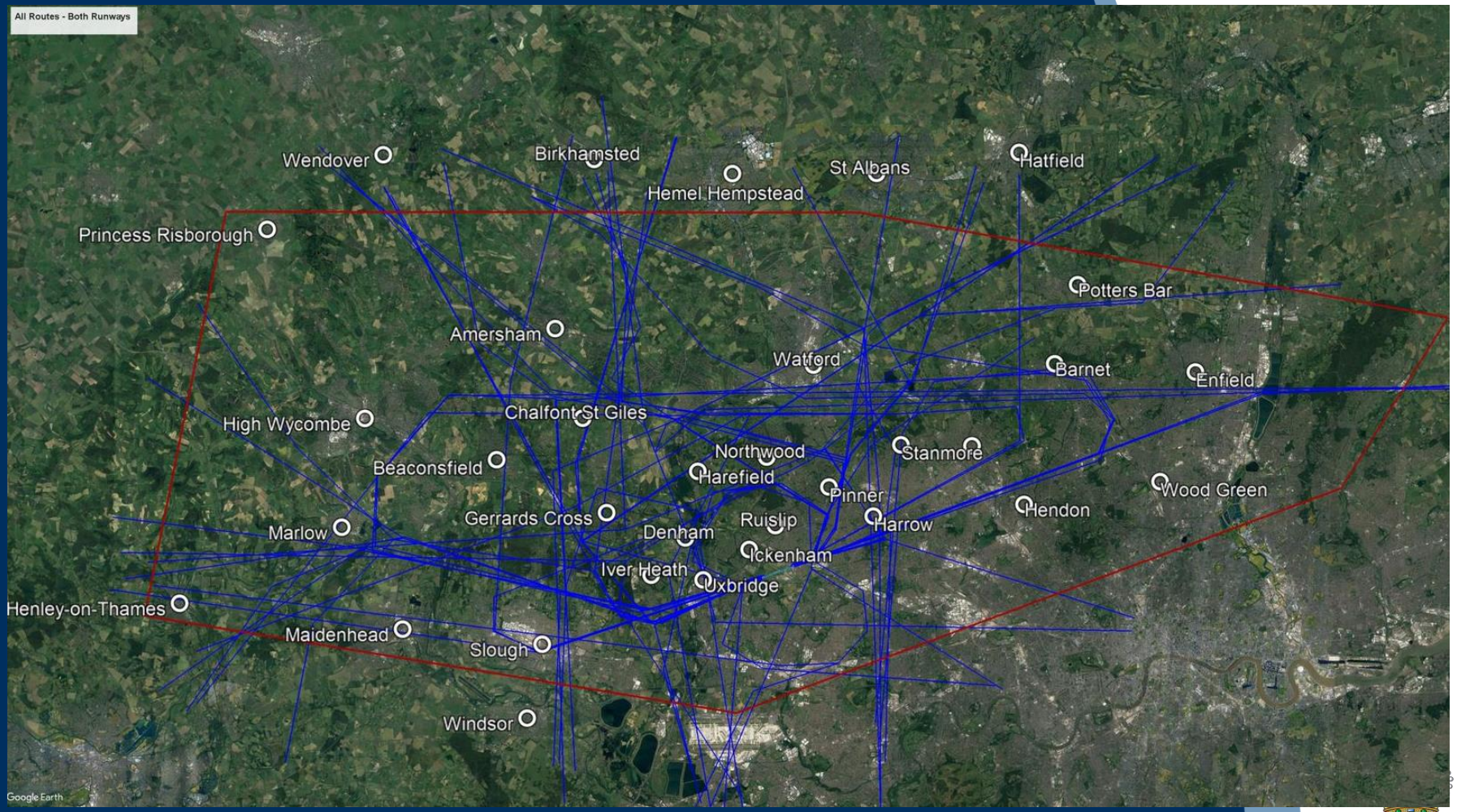
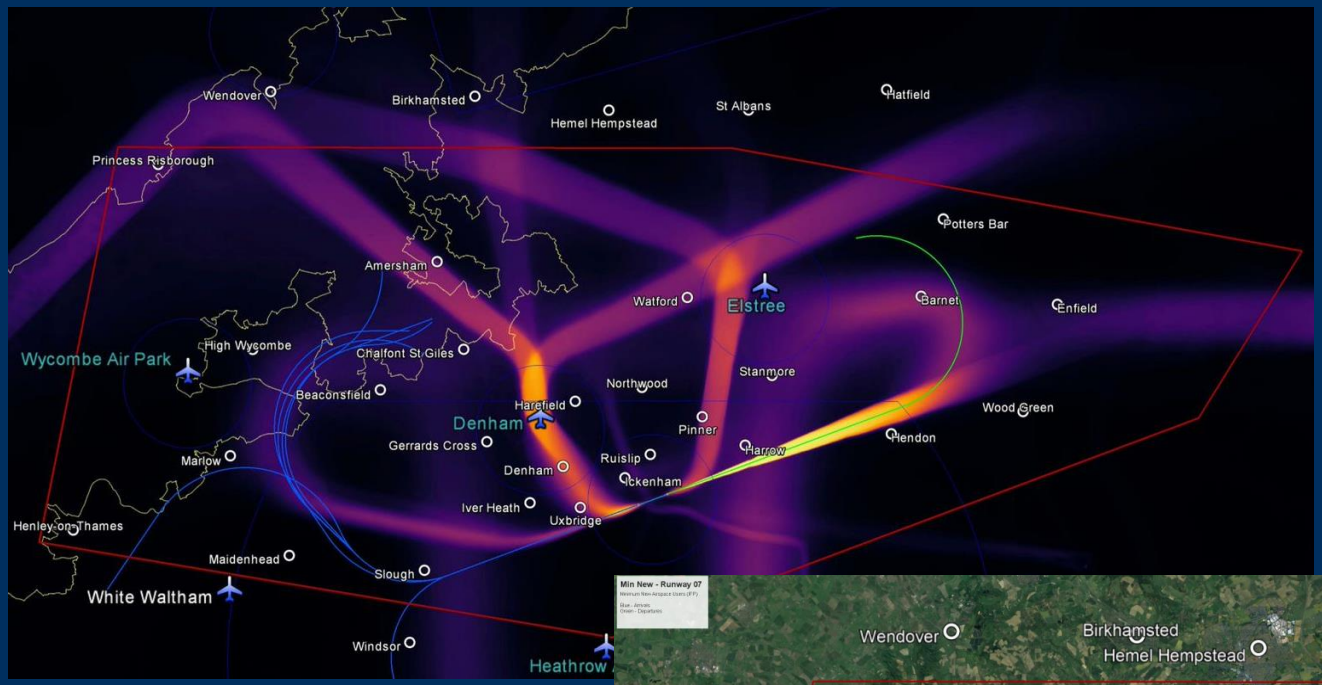
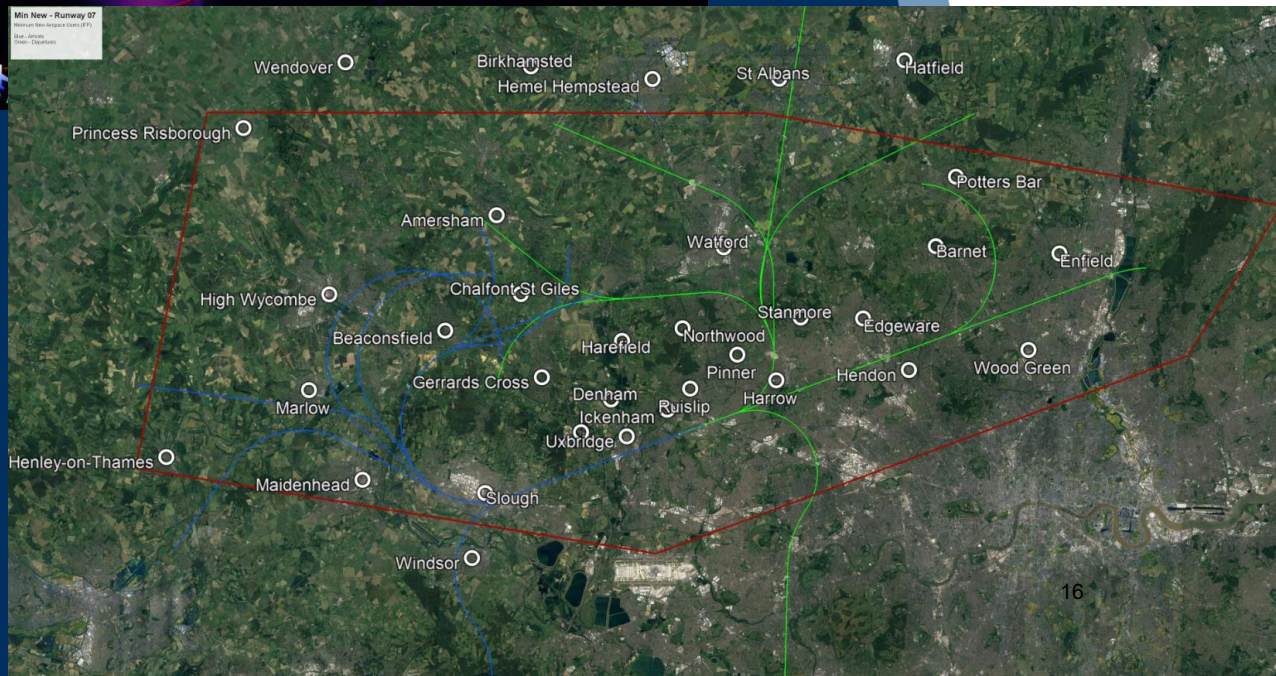


A Comprehensive List



Step 2 – Procedural Design





Other Considerations

- Designs conform to modern navigational technology
- Considering 7% & 10% climb gradients
  - Efficiency and greenhouse gas emissions gains
- Considering current Controlled Airspace dimensions

CAA Approved Design Principles (Stage 1)

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Future Activity

- January to June 2020 – Stage 2B options appraisal:
  - Continue to refine workable options
  - Produce a manageable number of options to take forward to stage 3, which includes consultation
- Not before 2021 – Conduct consultation on our proposed options

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Questions?

POST-COVID PAUSE

2022 Engagement

RAF Northolt ACP

Comprehensive List of Options

June 2022

Background

- RAF Northolt is part of a wider programme to modernise the airspace in the UK in order to meet the aims of the Govt's Airspace Modernisation Strategy (CAP 1711).

- Airspace modernisation in Southern England is being delivered as a single coordinated programme known as FASI (Future Airspace Strategy Implementation) South.

- All Airspace Change Proposals are required to follow the UK Civil Aviation Authority's (CAA) 7 stage process for changing the airspace design, known as CAP1616.

Master Plan

- Due to the number, complexity and overlapping scope of the individual airspace change proposals, strategic coordination is required.
- ACOG (Airspace Change Organising Group) was set up to create the 'Masterplan' and they have proposed that the final Masterplan is developed through a series of iterations.
- We are currently in Iteration 2, the purpose of which is to provide a system-wide view of the scope of the ACPs and identify potential interdependencies between proposals.
- Each ACP has been placed into a regional cluster where it is likely airports will have dependencies on one another. RAF Northolt is in the London Terminal Manoeuvring Area Regional Cluster.

- Iteration 3 of the Masterplan will consider the approach to consultation with stakeholders affected by more than one airspace change proposal.

CAP1616

- CAP1616 is a 7 stage process. RAF Northolt are currently at Stage 2A.
- At Stage 1, RAF Northolt submitted and Statement of Need and developed Design Principles through engagement with stakeholders.

Design Principles

- RAF Northolt passed Stage 1 in June 2019.

	Design Principle
1	Must be safe
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7	Should minimise the impact of aircraft noise by: a. Minimising the number of people newly overflown b. Minimising the total number of people affected by noise c. Where possible, minimise overflight of communities with multiple routes

Stage 2A – Options Development

- RAF Northolt is in Stage 2A, which is Options Development.

- In this stage, we develop a comprehensive list of options that align with the design principles and address the issues set out in the Statement of Need.

- The purpose of this engagement is to test the comprehensive list of options with the same group of stakeholders who were engaged during Stage 1.

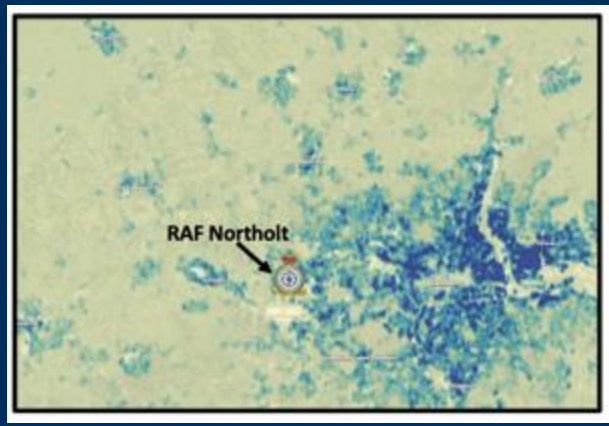
How the initial design options were generated

- The initial design activity was unconstrained with regards to potential dependencies on adjacent airport operations.

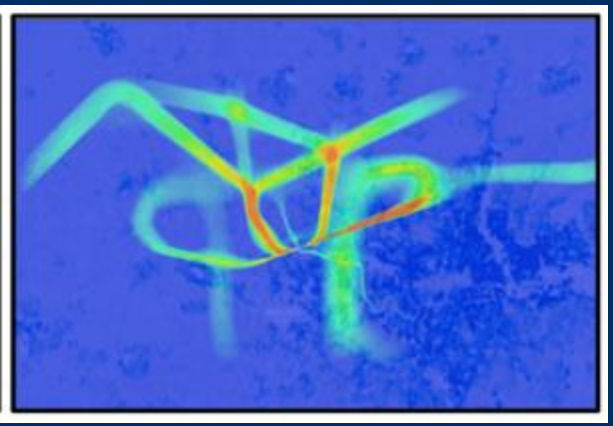
- Experts used a variety of different data layers in-turn and sketched flight paths that aimed to be optimised for each design principle:

How the initial options were generated

- Population density maps
- Existing overflight data, based on CAA's definition of overflight
- Track intensity – location of where the aircraft currently fly

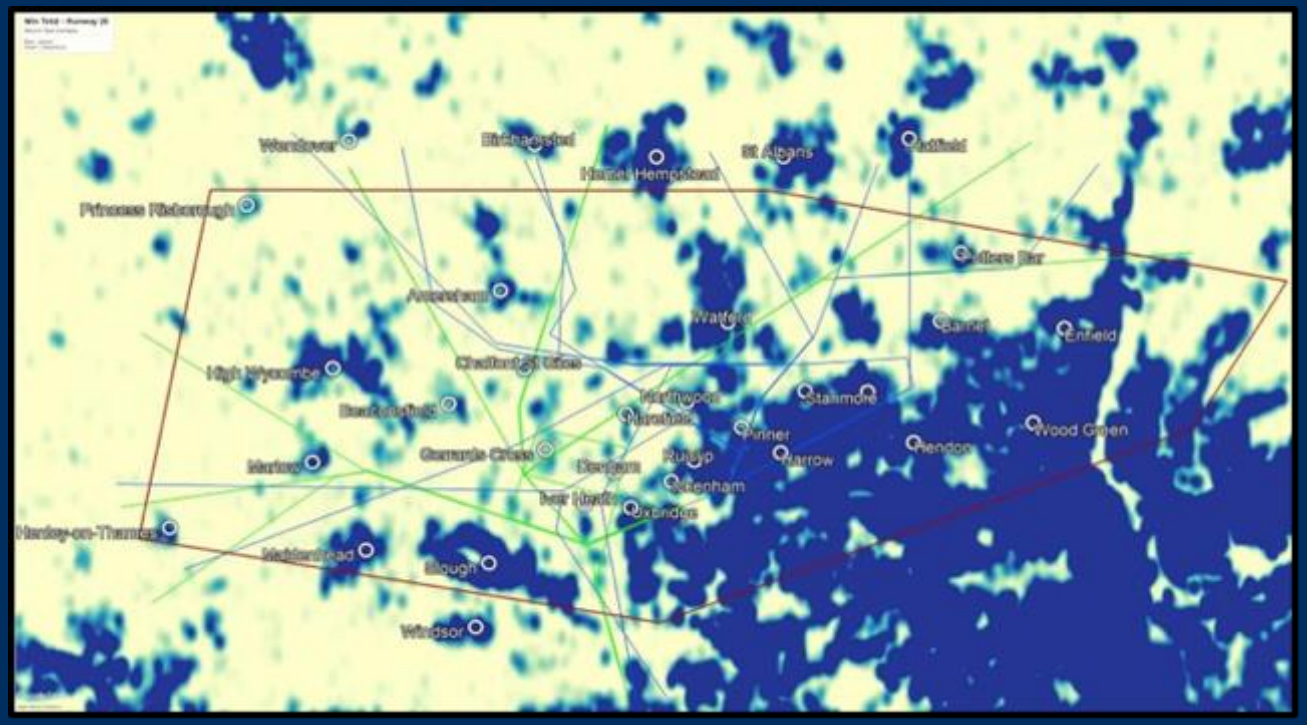


Population Density



RAF Northolt Radar Track Heat Map

How the initial options were generated



Example of tracks designed to avoid population density

How the initial options were generated

Example of tracks designed to remain within areas currently overflown

Engagement in 2019

As a result of this work, in 2019 RAF Northolt shared the following initial options with you

Summary of 2019 Stakeholder Feedback

FEEDBACK	NORTHOLT RESPONSE
Ensure the most modern navigational equipment is used, which enables surrounding area not to be 'as impacted'	We are looking at what is possible with all PBN specifications although we do need to ensure that all our operators will be able to utilise the new route structure
Needs to be consideration of the impact on tranquillity in relation to green spaces e.g. Colne Valley Regional Park and Chilterns AONB. Minimise overflight of Chilterns AONB	Tranquillity will be explored in the Initial and Full Options Appraisals however we have added Chilterns AONB boundary (yellow outline) and Colne Valley Regional Park boundary (white outline) to each of the options on the following slides
Consider cumulative disturbances and impacts.	Yes cumulative noise, overflight and CO_2 impacts from adjacent airports are taken into account in Stage 3 of the ACP
Would like to know how many flights will use each route.	We have added details of movement numbers to this slide pack
Minimisation of impacts on airfield site drainage.	The airspace design will not affect site drainage
Raise Denham LFA (from 1000ft) to 1200ft and create a fillet to the NW of Denham to improve safety and reduce infringements	We have airspace design options which still route through the Denham ATZ as well as options that avoid Denham ATZ and this request will be taken into consideration in the appraisals of those options. Denham ATZ is illustrated in the RWY 25 departure options on the following slides (black outline).
Should include potential sharing of routes with Luton and Heathrow.	We do have illustrative flight path options which, as today, would be likely to share the same lateral volume of airspace as Heathrow flight paths however this would mean that Northolt traffic may receive less optimal vertical profiles than if they are laterally separated. This in turn could leave to greater cumulative impacts for some communities

Engagement in 2019

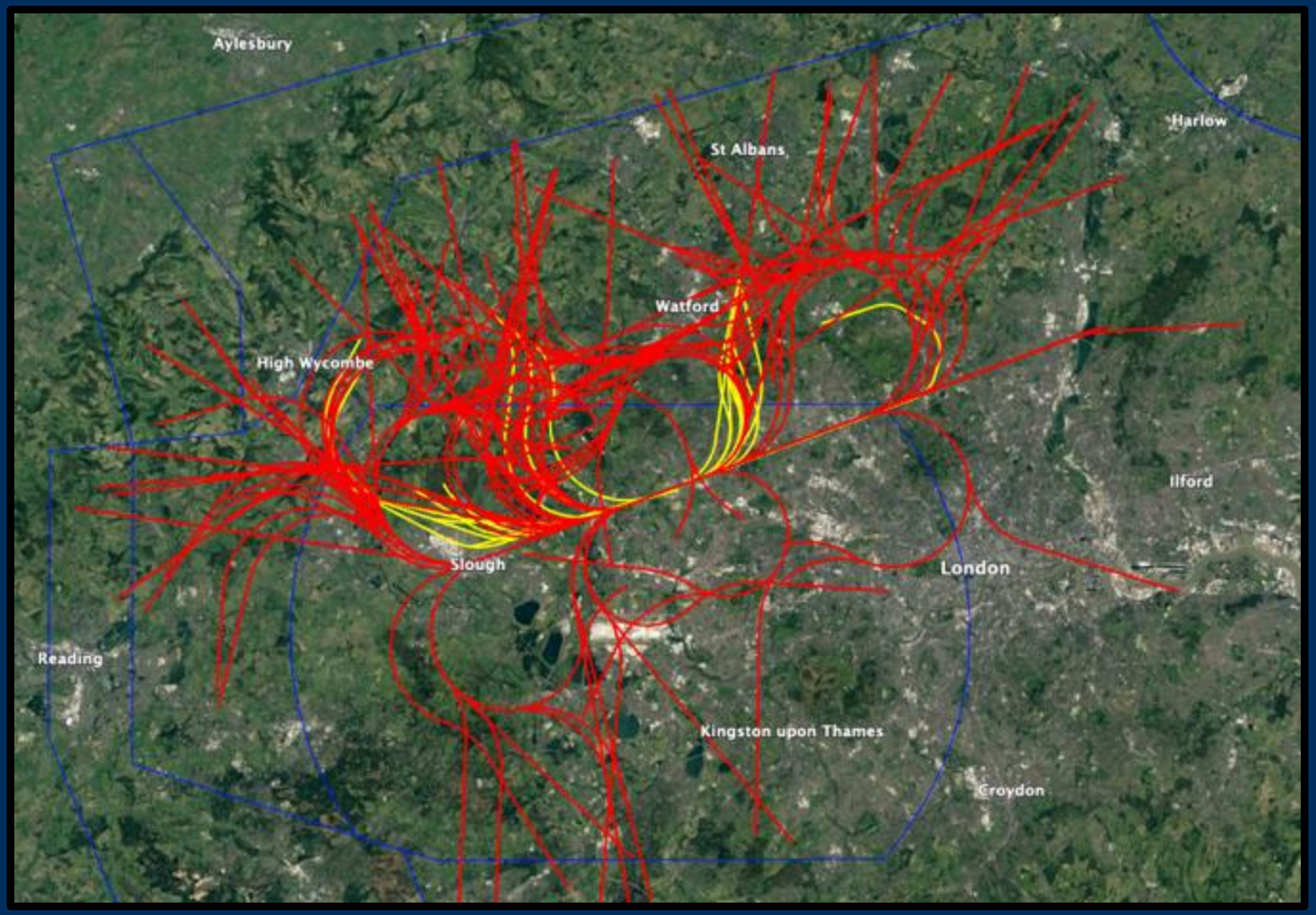
These sketches were then passed to an IFP designer, to generate options that were as close as possible to the hand sketched tracks

Work during 2021-2022

- The project was paused during the COVID-19 pandemic and work restarted in 2021.

- We since have added more illustrative options to:
  - Take account of constraints from Heathrow operations, which are likely to remain in any future design and perform some more detailed IFP design to see where illustrative flight paths can be enhanced (DP1 to DP6)
  - Have some options more closely aligned to today's operation to reduce numbers of people newly overflown (DP7a)

Updated Options *(yellow)*



Updated options development

- We have grouped all the options so far into ‘Design Envelopes’ which will aid engagement, retain flexibility and help how we evaluate options for the airspace change process.

- These envelopes form our Comprehensive List of Options at this stage.

- We will use the illustrative flight paths within each envelope to generate a range of data to inform our later Stage 2A work, the Design Principle Evaluation and the Stage 2B Initial Options Appraisal.

RAF Northolt Movements

Movements* 2016-2021

YEAR	RUNWAY 25	RUNWAY 07	TOTAL
2016	11,373	5,089	16,462
2017	11,776	2,986	14,762
2018	6,007	2,867	8,874
2019	3,390	914	4,304
2020	3,413	967	4,380
2021	4,895	1,670	6,565

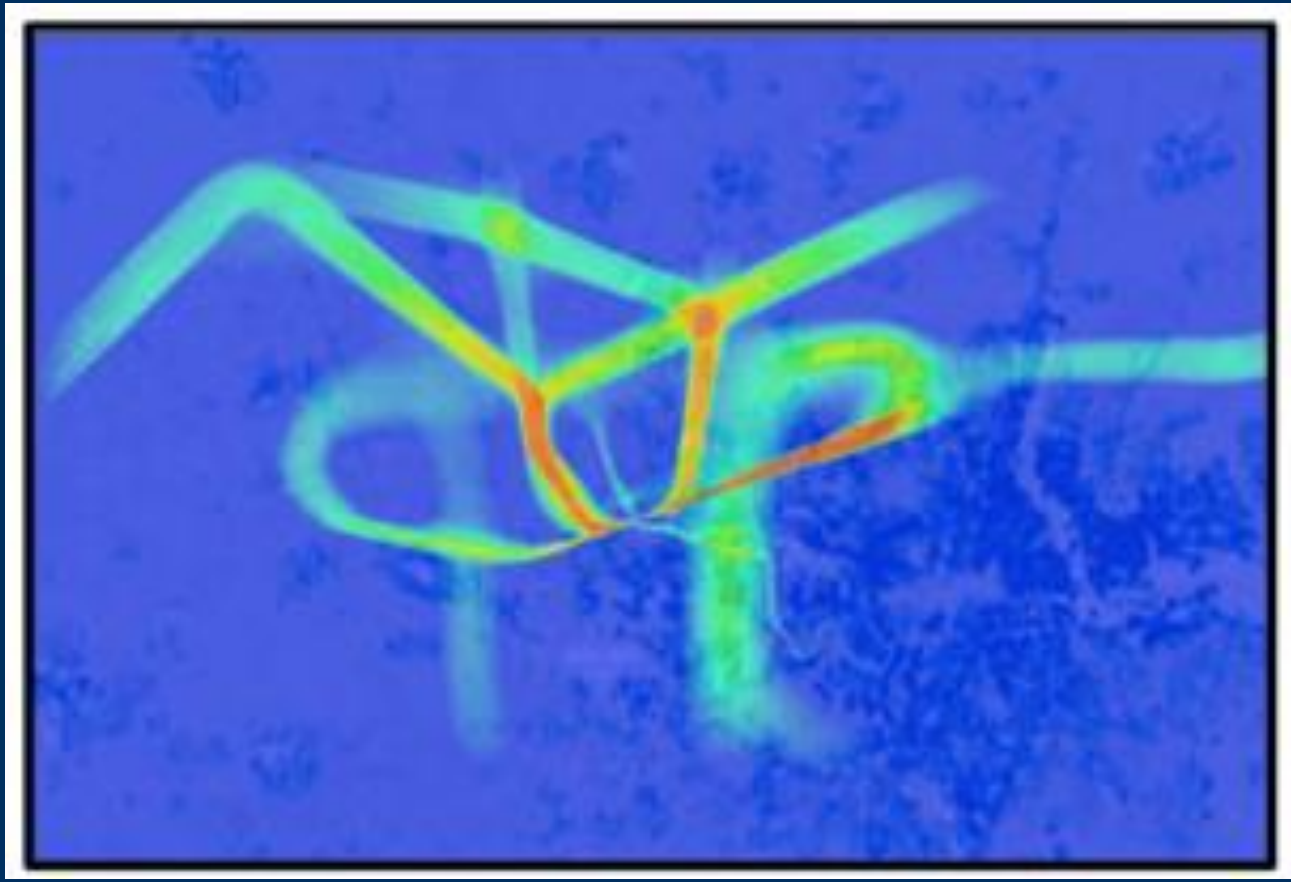
2016 Breakdown (Average)

TOTAL	Per Day	Per Hour	Peak Hour
16,462	45	3-4	12

*A movement is an arrival or a departure.
Figures include military and civilian fixed wing and rotary flights

Break

Do Nothing

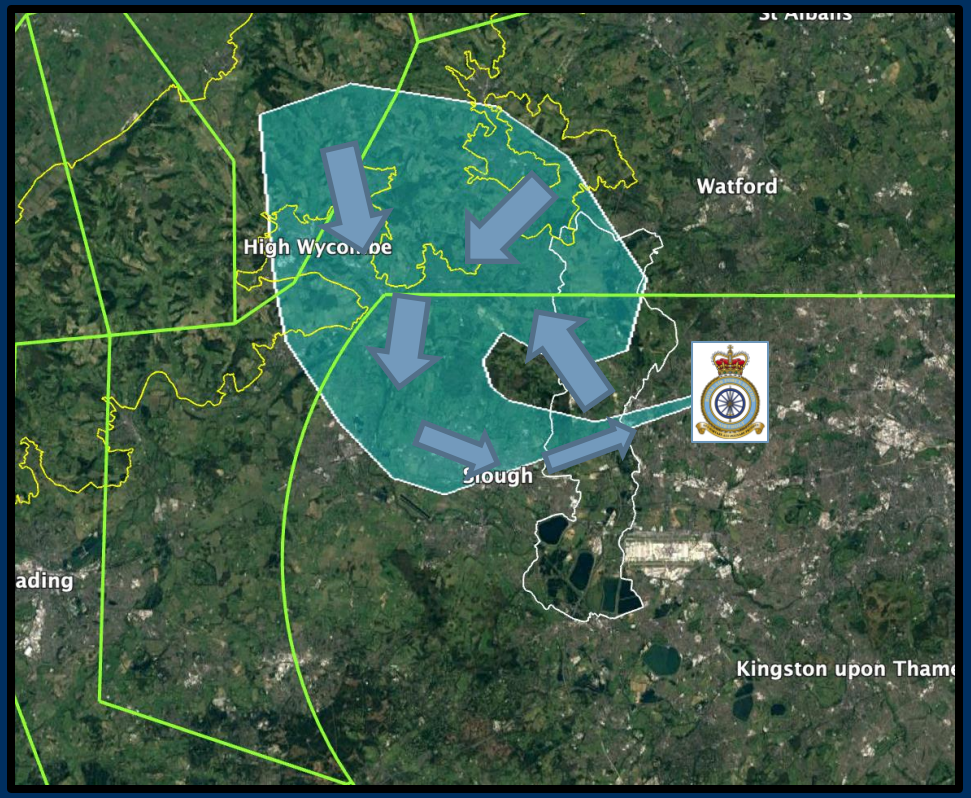


Runway 07 (Easterly) Arrival Options

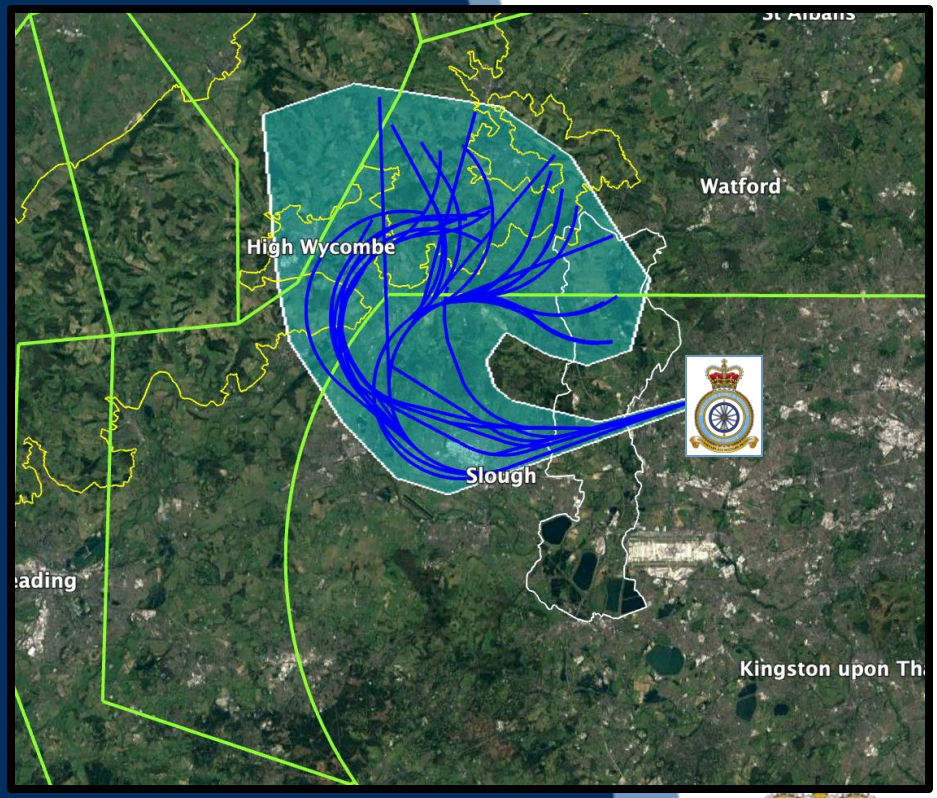
Easterly Operations 25% of the time

2016 RWY 07 Arrivals	Per Day	Per Hour (0800-2200)	Peak Hour
2057	5-6 (Avg 365 days)	0-1 (Avg 365 days)	6

Runway 07 (Easterly) Arrivals: OPTION 1 – Approach from the North/North East

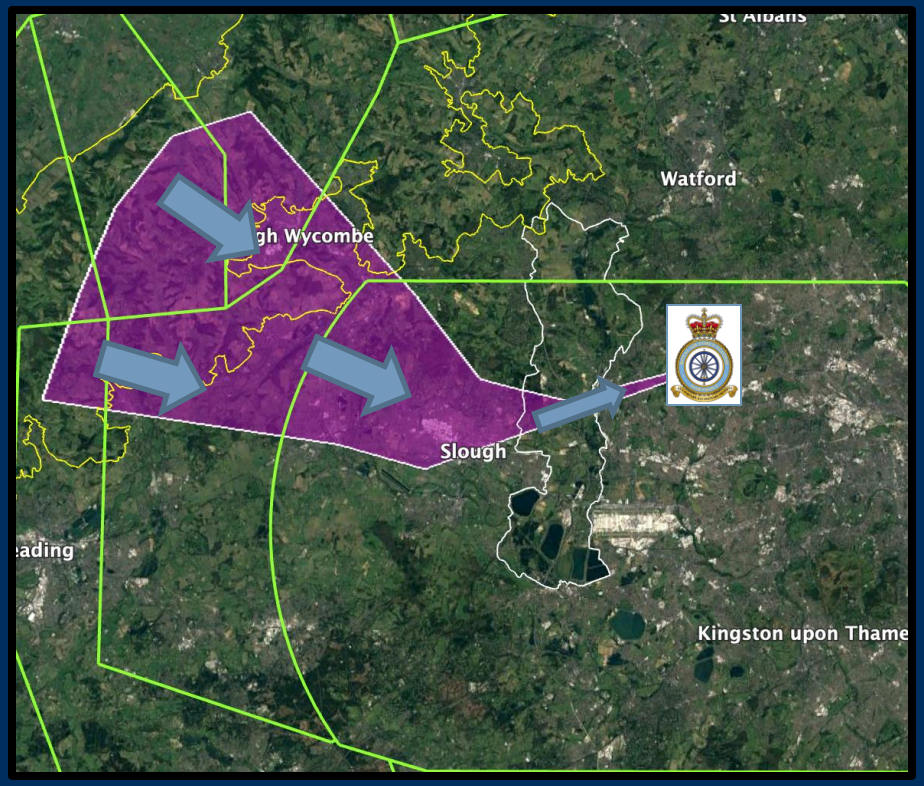


Option with general flows

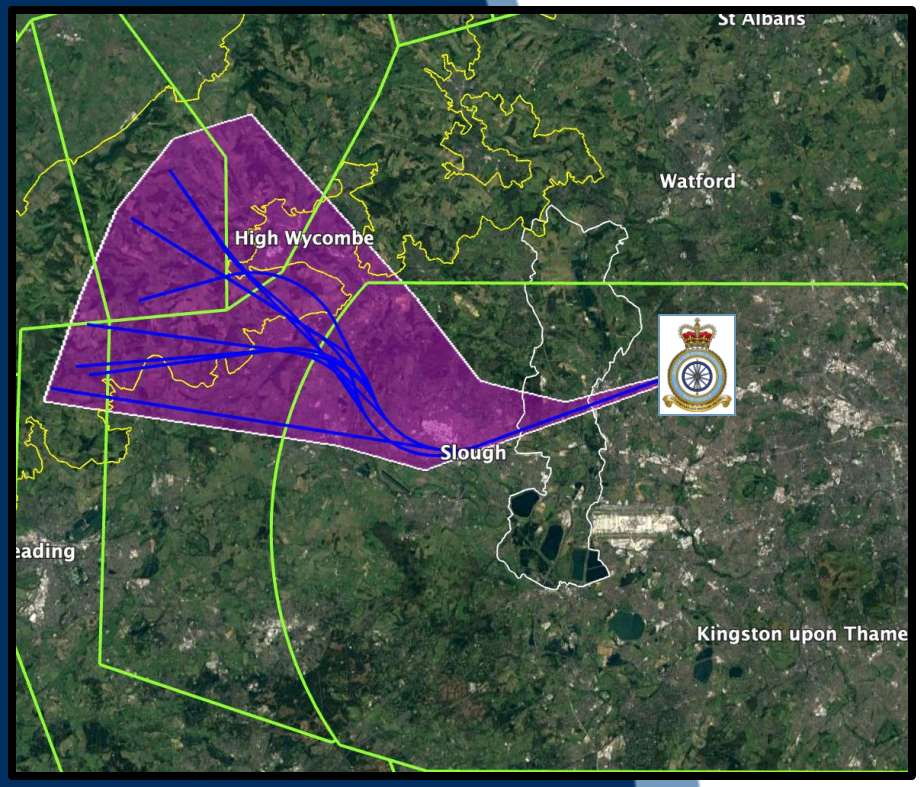


Option with illustrative flight paths

Runway 07 (Easterly) Arrivals: OPTION 2 – Approach from the North West/West

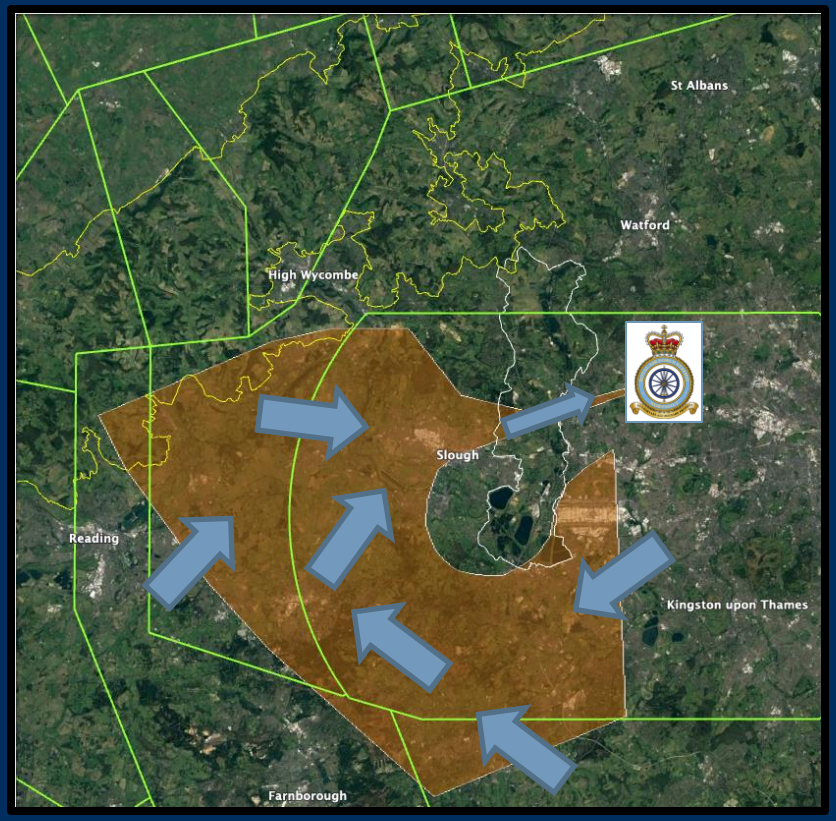


Option with general flows

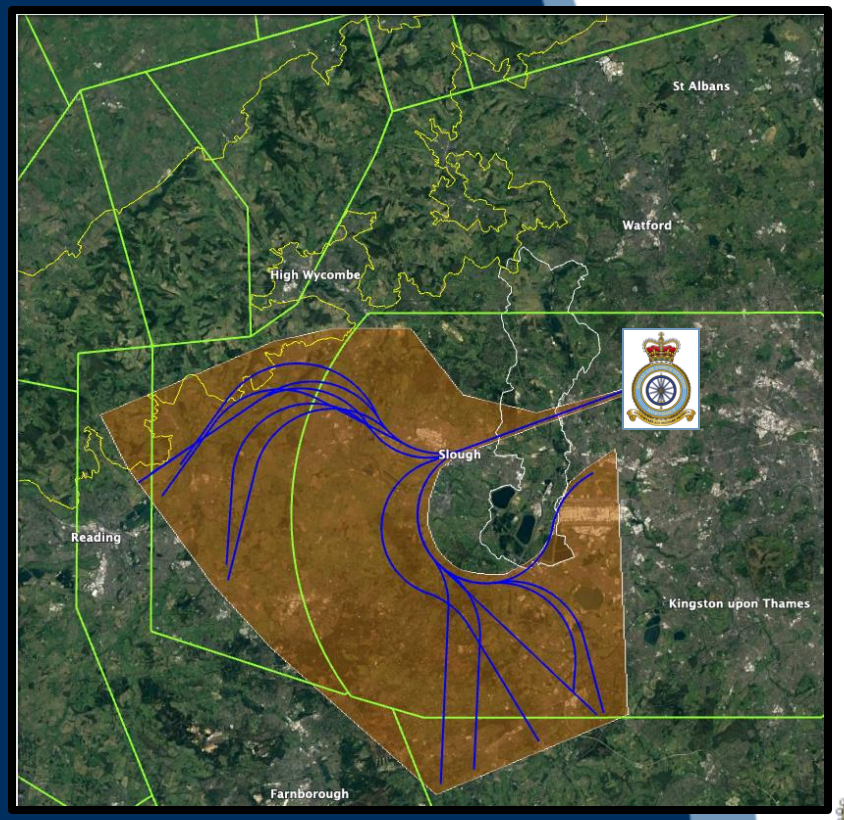


Option with illustrative flight paths

Runway 07 (Easterly) Arrivals: OPTION 3 – Approach from the South



Option with general flows



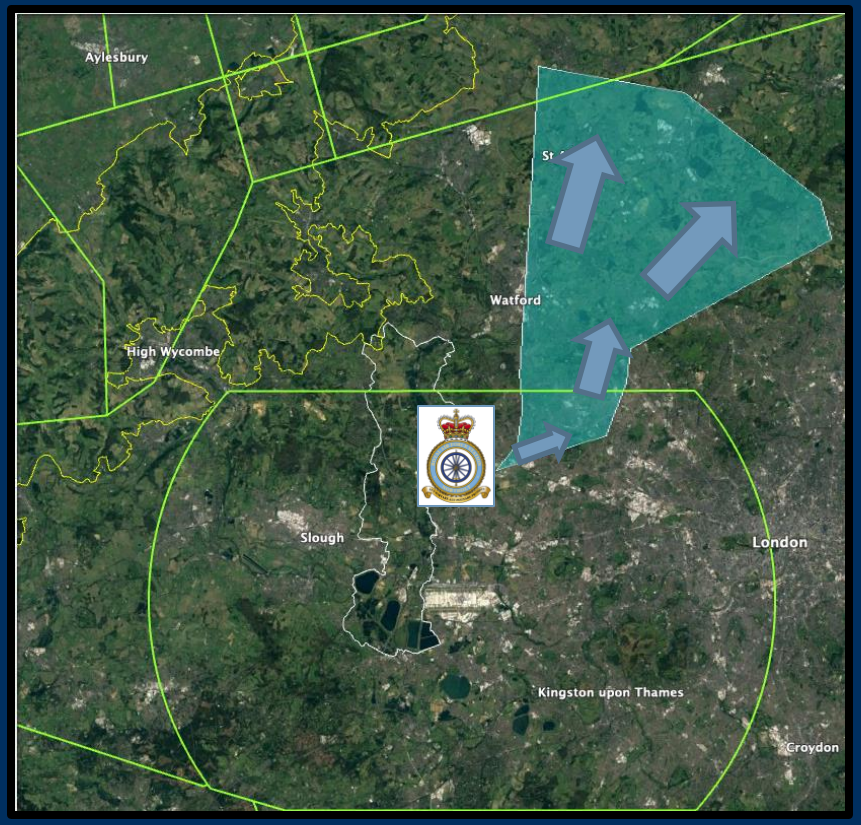
Option with illustrative flight paths

Runway 07 (Easterly) Departure Options

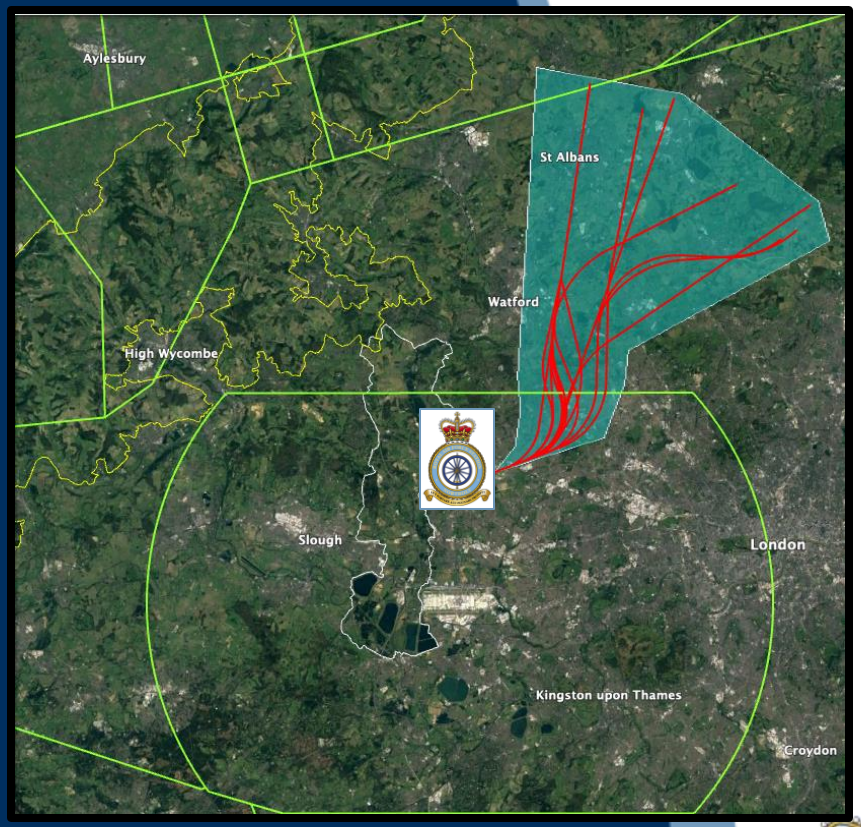
Easterly Operations 25% of the time

2016 RWY 07 Departures	Per Day	Per Hour (0800-2200)	Peak Hour
2057	5-6 (Avg 365 days)	0-1 (Avg 365 days)	6-8

Runway 07 (Easterly) Departures: OPTION 1 – Depart to the North East

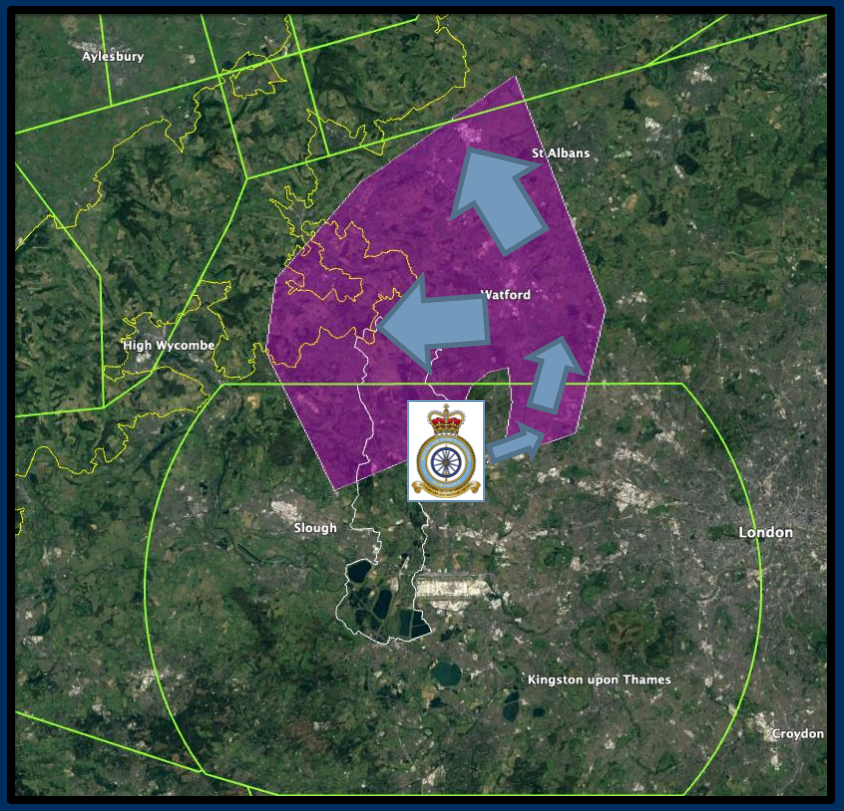


Option with general flows

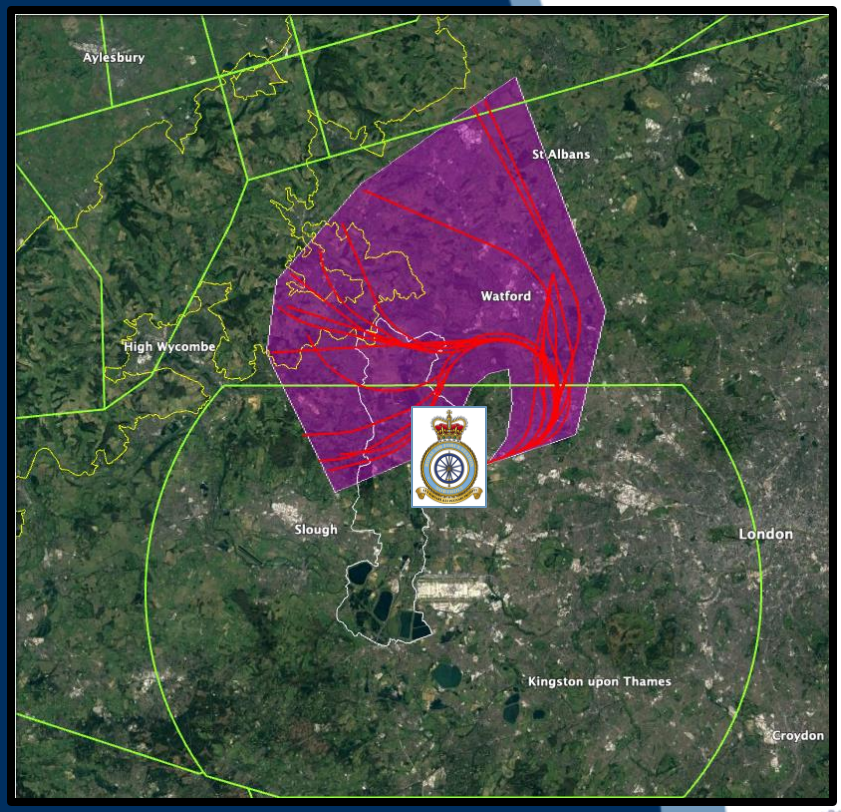


Option with illustrative flight paths

Runway 07 (Easterly) Departures: OPTION 2 – Depart to the North, North West

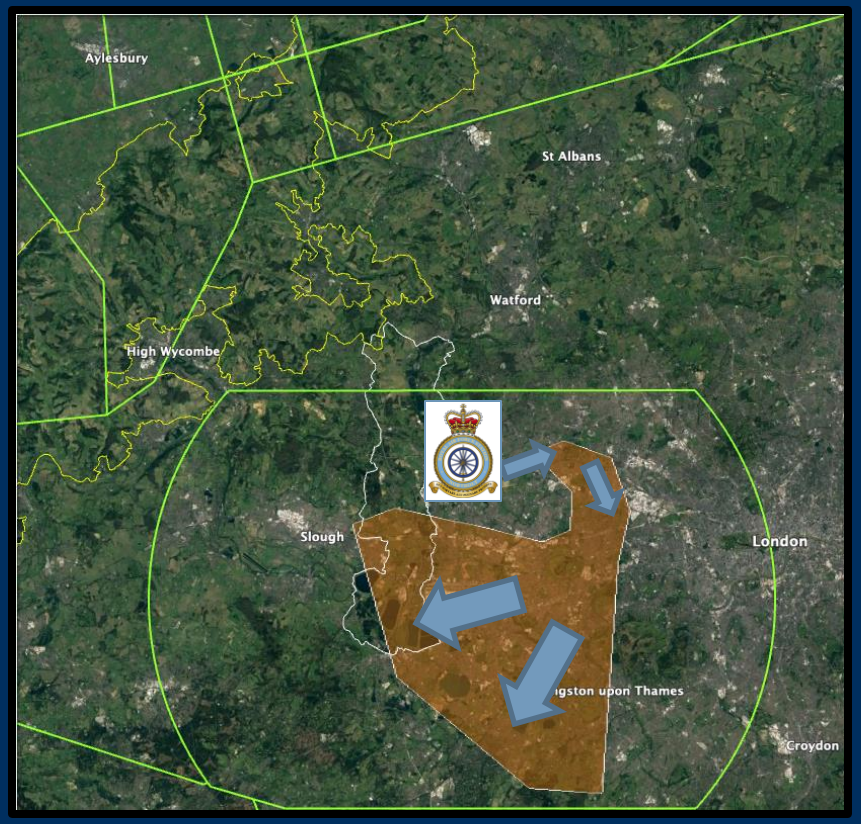


Option with general flows



Option with illustrative flight paths

Runway 07 (Easterly) Departures: OPTION 3 – Depart to the South



Option with general flows

Option with illustrative flight paths

Runway 07 (Easterly) Departures: OPTION 4 – Depart to the East

Option with general flows

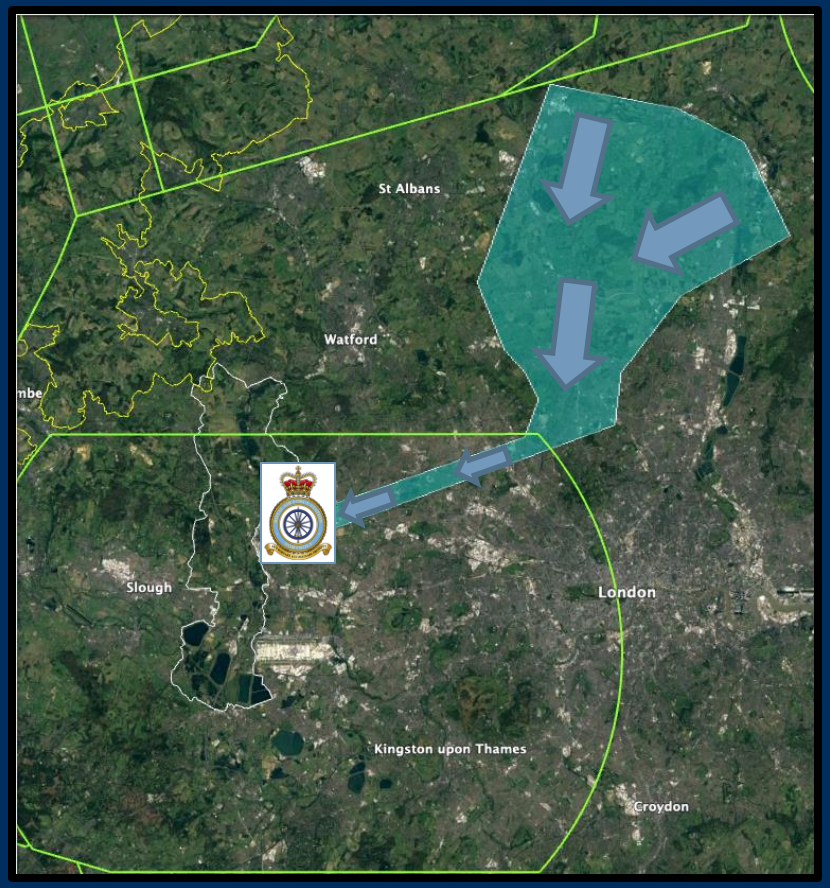
Option with illustrative flight paths

Runway 25 (Westerly) Arrival Options

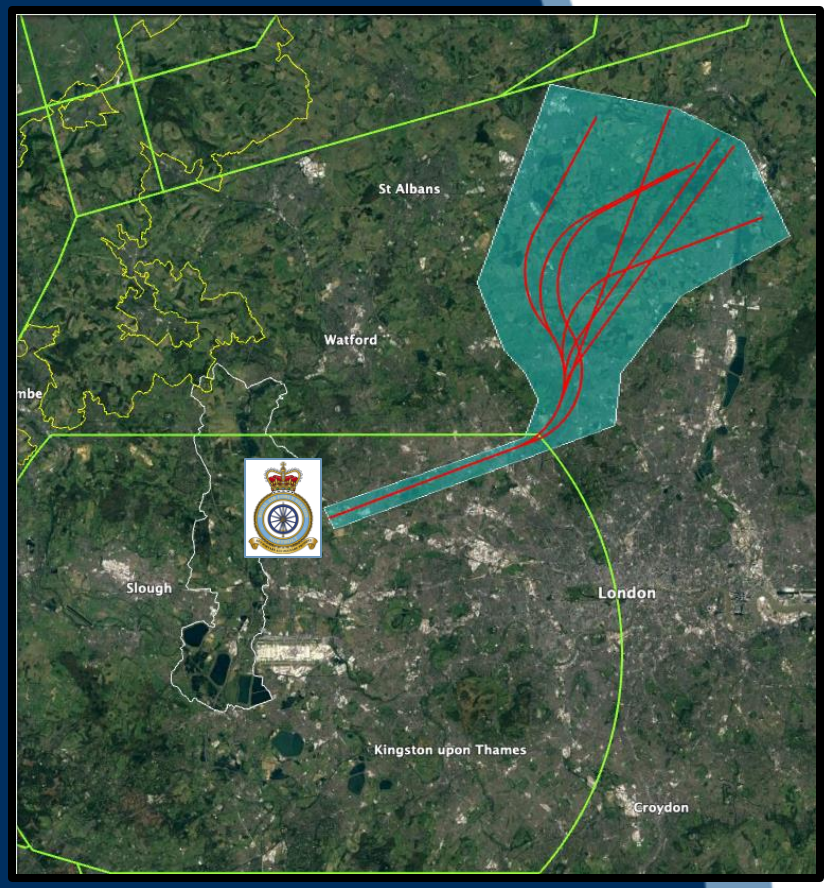
Westerly Operations 75% of the time

2016 RWY 25 Arrivals	Per Day	Per Hour (0800-2200)	Peak Hour
6174	17 (Avg 365 days)	1-2 (Avg 365 days)	6

Runway 25 (Westerly) Arrivals: OPTION 1 – Approach from the North East

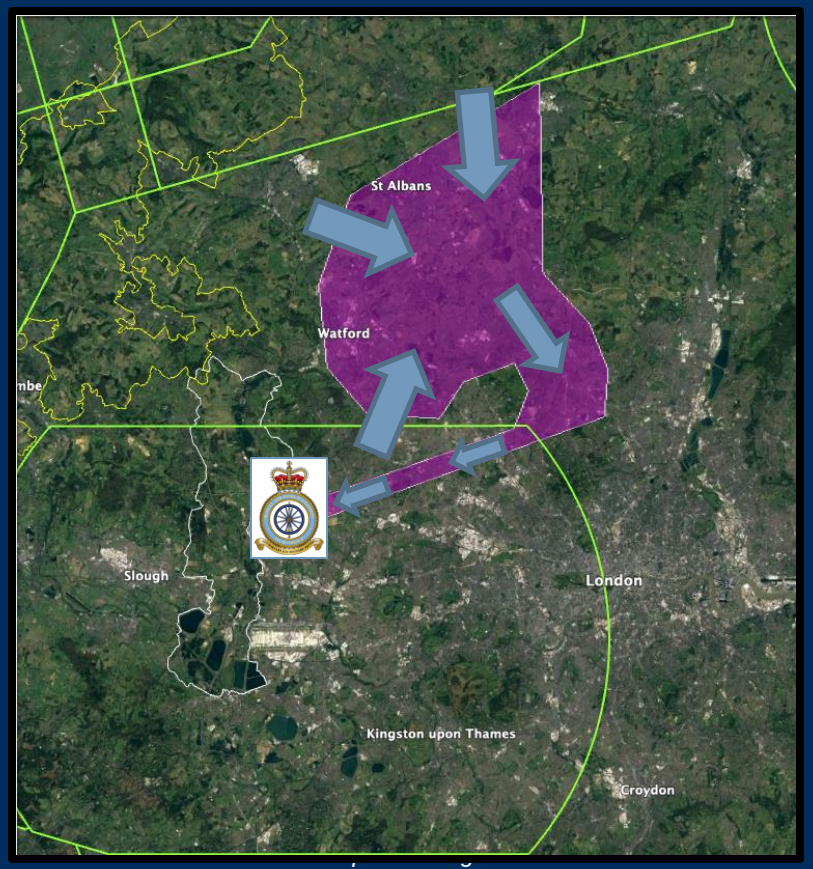


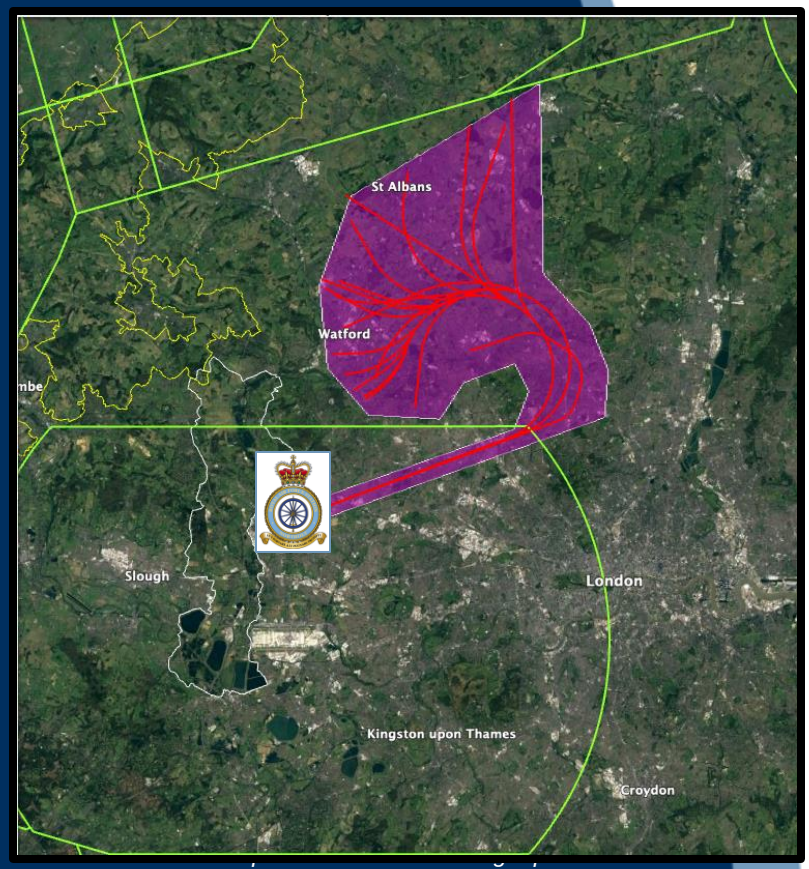
Option with general flows



Option with illustrative flight paths

Runway 25 (Westerly) Arrivals: OPTION 2 – Approach from the North, North West, South West



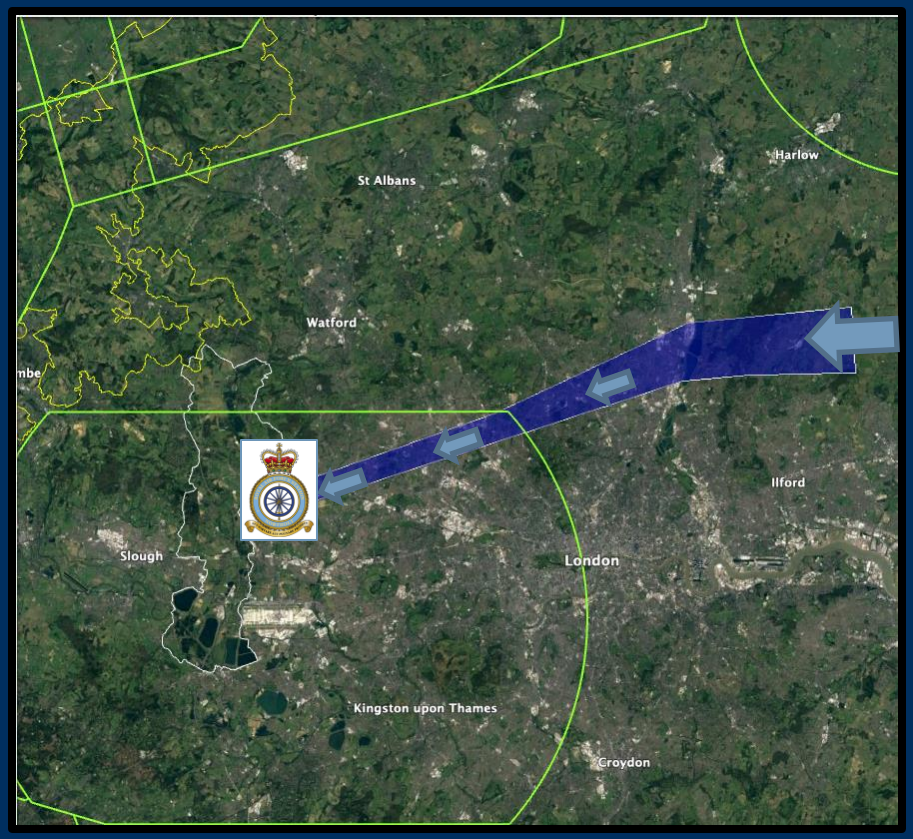


Runway 25 (Westerly) Arrivals: OPTION 3 – Approach from the South

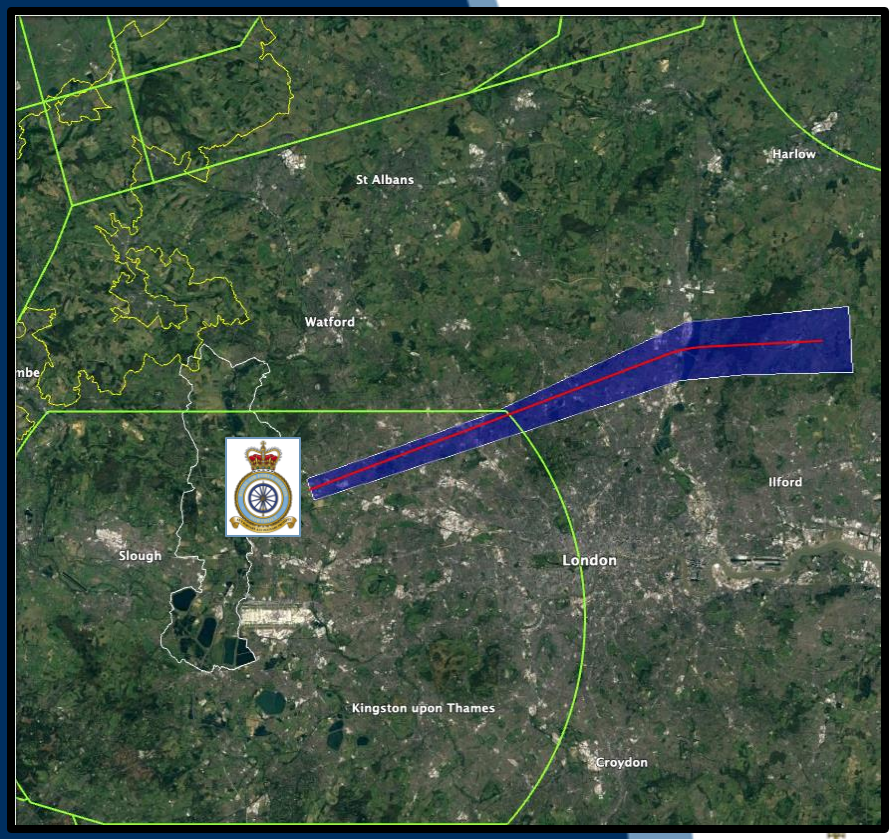
Option with general flows

Option with illustrative flight paths

Runway 25 (Westerly) Arrivals: OPTION 4 – Approach from the East



Option with general flows



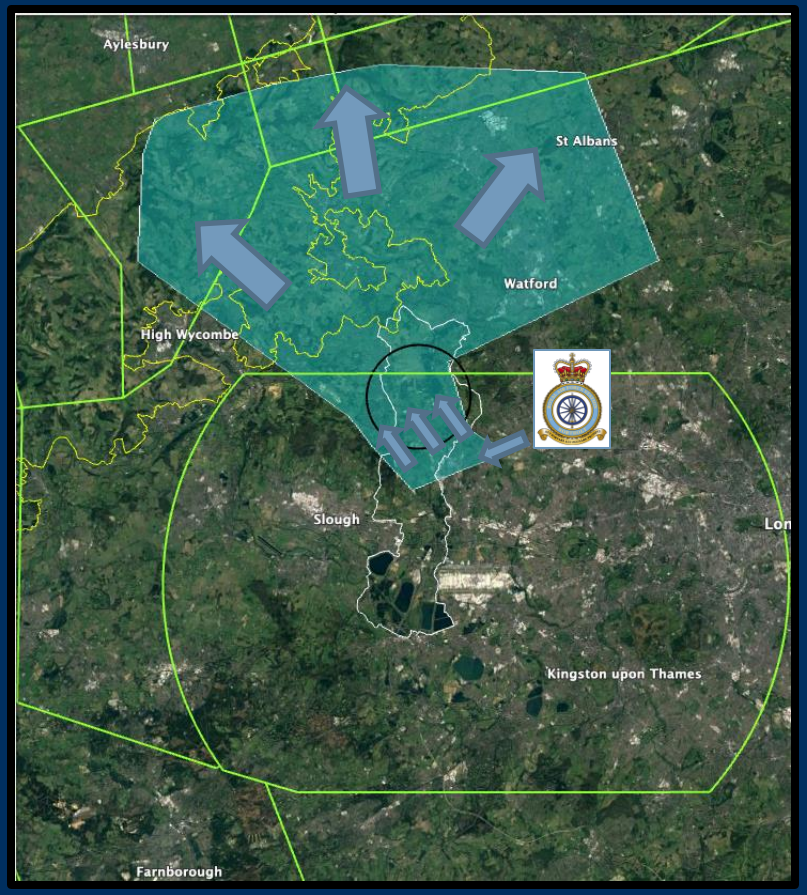
Option with illustrative flight paths

Runway 25 (Westerly) Departure Options

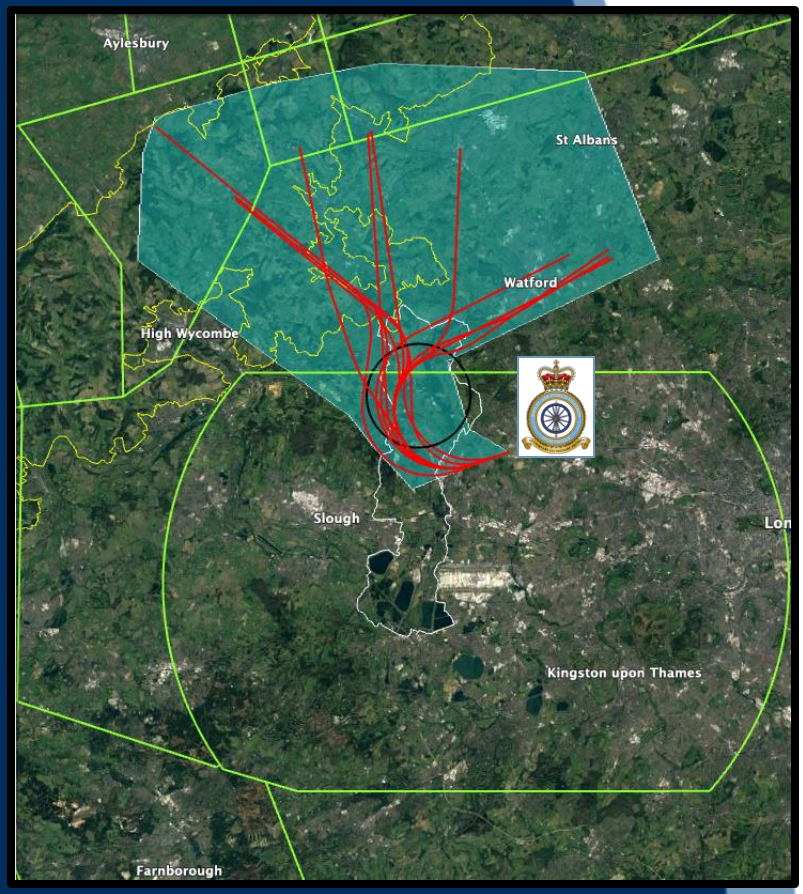
Westerly Operations 75% of the time

2016 RWY 25 Departures	Per Day	Per Hour (0800-2200)	Peak Hour
6174	17 (Avg 365 days)	1-2 (Avg 365 days)	6-8

Runway 25 (Westerly) Departures: OPTION 1 – Turn to the North as soon as possible



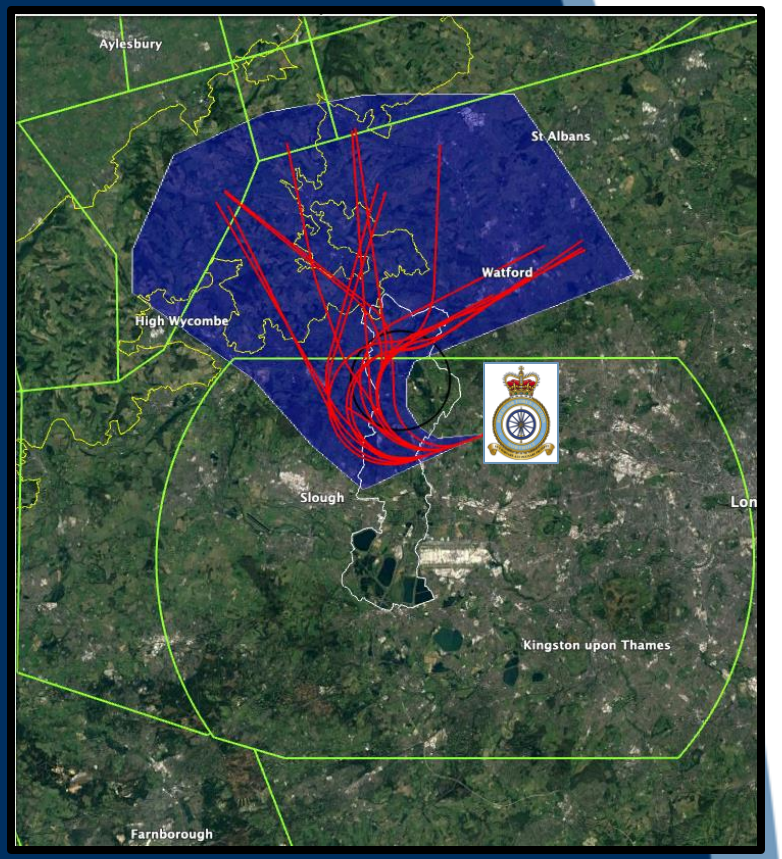
Option with general flows



Option with illustrative flight paths

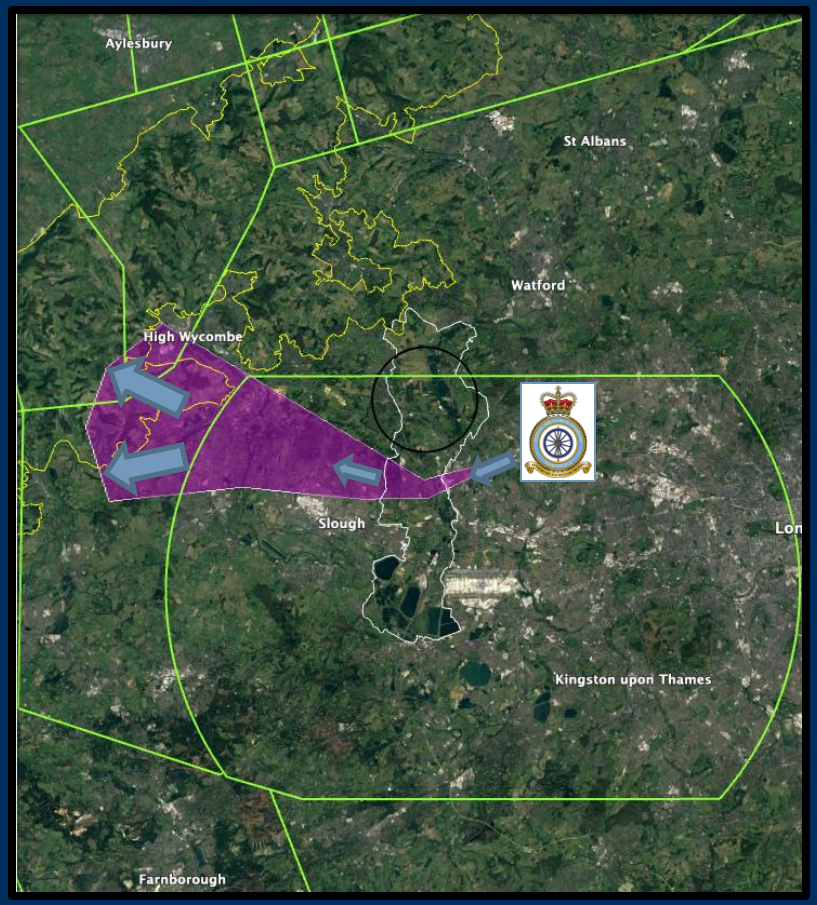
Runway 25 (Westerly) Departures: OPTION 2 – Turn to the North at a fixed point (later 1st turn than Option 1)

Option with general flows

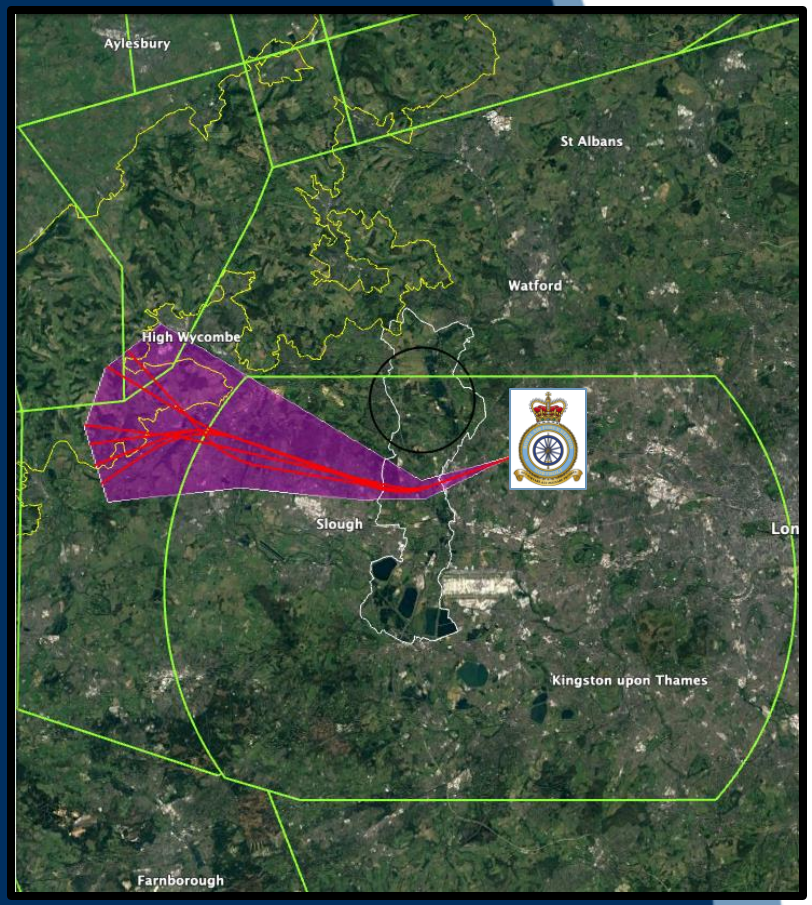


Option with illustrative flight paths

Runway 25 (Westerly) Departures: OPTION 3 – Depart to the West



Option with general flows



Option with illustrative flight paths

Runway 25 (Westerly) Departures: OPTION 4 – Depart to the South

Option with general flows

Option with illustrative flight paths

Questions for you

We are seeking your feedback on the following:

- Is the list of options comprehensive, and been generated with the Design Principles in mind?
- Are there any other considerations we should consider at this stage?

How to provide feedback

- A link to an online feedback form will be distributed to stakeholders
- Hard copies of feedback forms can be made available and a postal return address provided

How to provide feedback

- The QR code provided will take you to an online feedback form. This can also be found on the takeaway leaflet.

- Hard copies of feedback forms are available and a postal return address provided.

Next Steps

- We will use your feedback to refine our options and to develop new options, where appropriate.
- We will then carry out a Design Principle Evaluation on the Comprehensive List of Options, to narrow it down to a shorter list.
- During Stage 2B we will conduct an Initial Options Appraisal on the shortlist, which is a qualitative assessment to highlight relative impacts, both positive and negative.

Latest Timeline

- Stage 2 Gateway – November 2022
- Stage 3 Consultation – 2024-2025
- ACP Submission – 2026
- Implementation – 2027-2028

Any Questions?