

## 4. Comprehensive List of Options

## 4. COMPREHENSIVE LIST OF OPTIONS

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### Stakeholder Engagement

The following section gives an overview of our comprehensive list of options. Owing to the number of options, as part of this workshop we talked through a few examples to explain the information available to stakeholders at this stage. This presentation has been shared following the meeting to allow Stakeholder's time to review each option in detail.

It's important to note that at this stage we are not consulting on these options or seeking feedback on individual route options by examining the specific geographic positions.

**The purpose of this session is to explore and test our approach to developing the options and answer questions relating to our approach. We are able to refine or develop more options based on your feedback.**

The questions we are asking our Stakeholder are:

- **Are you satisfied that we have taken into account the Design Principles when developing our comprehensive list of route options?**
- **Are there any further considerations that relate to the Design Principles which we have not taken into account?**

## 4. COMPREHENSIVE LIST OF OPTIONS

### Stakeholder Engagement

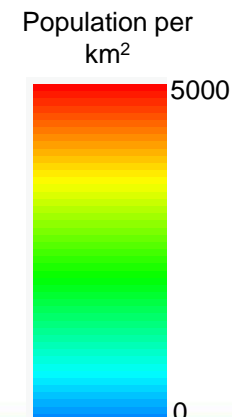
The following slides show examples from our comprehensive list of options. These have been broken down into Runway 05 arrivals and departures, and Runway 23 arrivals and departures. Information about each option is shown across three images:

- The first image shows the expected usage of the route and an indication of whether it is shorter or longer than current day; this gives a high-level overview in terms of fuel burn and carbon emissions,
- The second image shows the route overlaid with population and noise sensitive site information, and
- The third image adds in an example of 1 week of 2019 aircraft tracks to show how the option compares to current day.

**It is very important to note that detailed environmental analysis of these options takes place at a later stage of the process and therefore the information provided is *indicative* to help Stakeholders understand whether we have developed our Comprehensive List of options to meet the Design Principles and Statement of Need.**

### Key:

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data	Arrival Options and aircraft track data
0 – 1000	Red	Yellow
1000 – 2000	Dark Red	Light Green
2000 – 3000	Light Red	Light Yellow
3000 – 4000	Light Pink	Light Green
4000 – 5000	Light Brown	Light Green
5000 – 6000	Dark Brown	Dark Green
6000 - 7000	Dark Brown	Dark Green

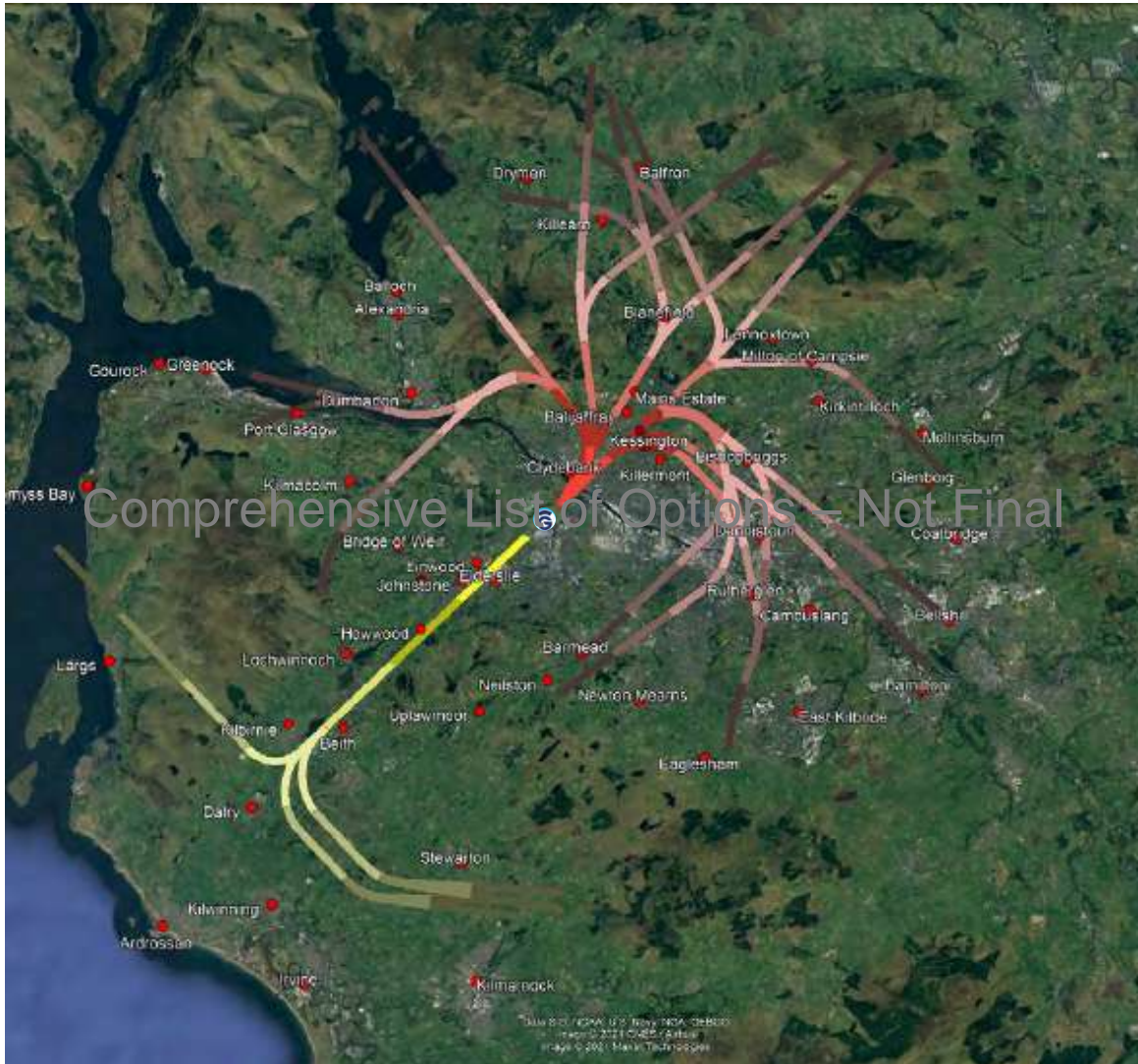


### Noise Sensitive Areas

- 
- National Parks
  - SSSIs
  - Designated quiet areas
  - Gardens and designated landscapes
  - National Scenic Areas
  - Special areas of conservation
  - Special protection areas

## 4. COMPREHENSIVE LIST OF OPTIONS

### All Runway 05 Options:

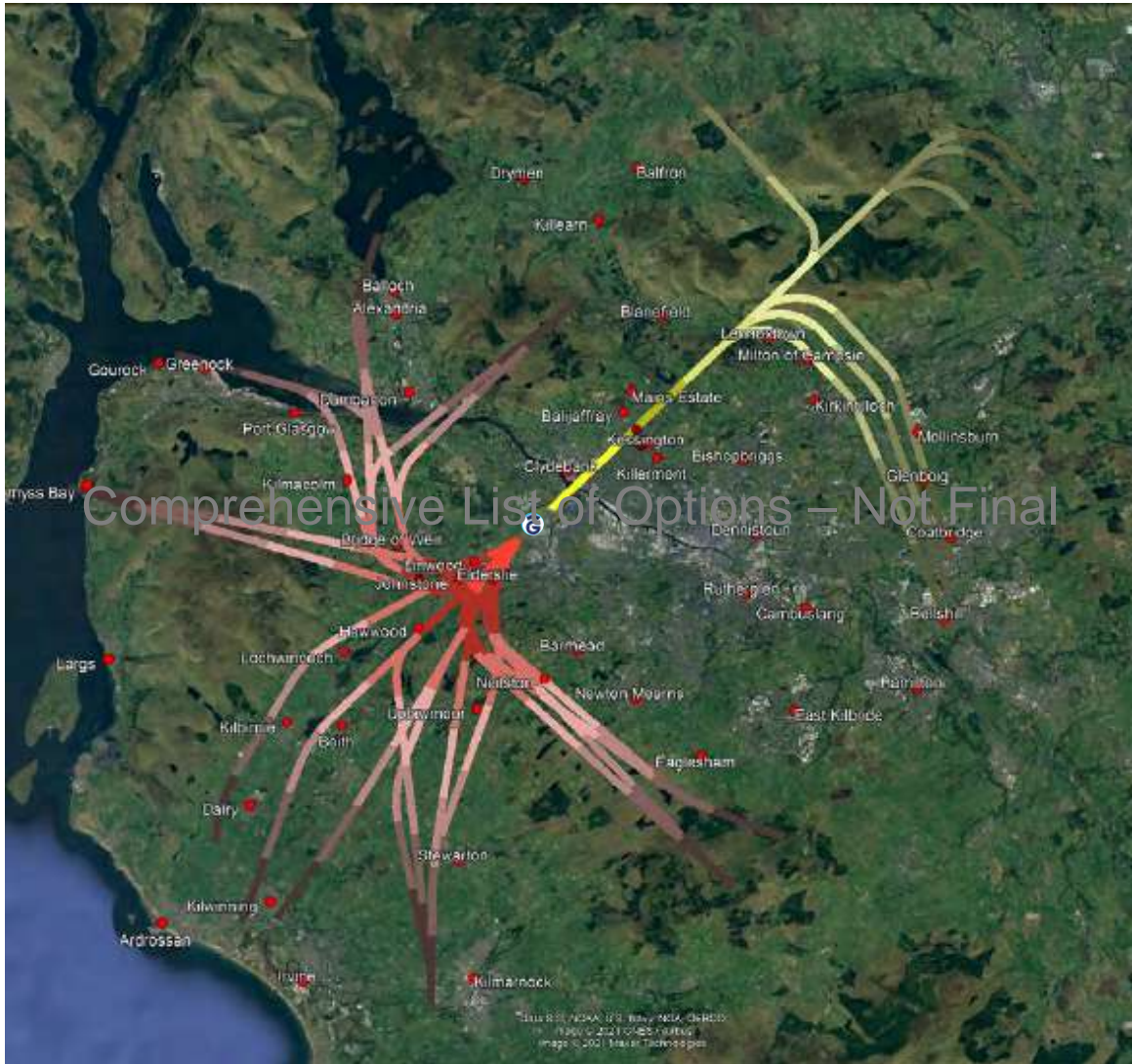


The comprehensive list of options is formed of 4 arrival options and 7 departure options for runway 05.

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data	Arrival Options and aircraft track data
0 – 1000		
1000 – 2000		
2000 – 3000		
3000 – 4000		
4000 – 5000		
5000 – 6000		
6000 - 7000		

## 4. COMPREHENSIVE LIST OF OPTIONS

### All Runway 23 Options:



The comprehensive list of options is formed of 6 arrival options and 5 departure options for runway 23.

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data	Arrival Options and aircraft track data
0 – 1000		
1000 – 2000		
2000 – 3000		
3000 – 4000		
4000 – 5000		
5000 – 6000		
6000 - 7000		

## 4. COMPREHENSIVE LIST OF OPTIONS

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### PBN Arrivals

Within the operational environment, there are different ways and means of ensuring aircraft are managed as efficiently as possible. Our options are based on Performance Based Navigation (PBN). PBN uses satellite based navigation technology to follow set routes.

On some occasions there may however be the requirement for aircraft to be tactically controlled by Air Traffic Controllers (ATC) where pilots are given instructions about which direction to fly and when to climb or descend. This means that aircraft do not follow a set route.

At this early stage in the development process, we are still considering all of the potential options for how aircraft could arrive at Glasgow Airport:

#### Full PBN Arrival

Aircraft would fly the full PBN route onto final approach. This would start above 7000ft all the way to the runway.

#### Partial PBN Arrival

Aircraft would be instructed by ATC until told to join the latter part of the PBN route. The PBN route may start from typically 4,000-6,000ft to the final approach.

#### Tactical ATC Controlling

Aircraft would be provided with instructions by ATC from above 7,000ft until joining final approach, very similar to today. PBN arrival routes would not be available.

#### PBN Arrival and ATC Mix

Some aircraft would fly the PBN transitions and others may be instructed by ATC depending on circumstances. For example, PBN transitions could be used at night or during periods of low frequency of arrival, and ATC instructions used during the busy periods.

PBN arrival routes could potentially be alternated to provide respite for communities although this is not possible once an arrival has joined the final approach. The following slides show the PBN arrival routes currently under consideration:

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# 4. COMPREHENSIVE LIST OF OPTIONS

## All Runway 05 Arrival Options:



Runway 05 Arrival Option A



Runway 05 Arrival Option B



Runway 05 Arrival Option C



Runway 05 Arrival Option D

Indicative (Conservative) Altitude (ft)	Arrival Options and aircraft track data
0 - 1000	
1000 - 2000	
2000 - 3000	
3000 - 4000	
4000 - 5000	
5000 - 6000	
6000 - 7000	

# 4. COMPREHENSIVE LIST OF OPTIONS

## All Runway 23 Arrival Options:



Runway 23 Arrival Option A



Runway 23 Arrival Option B



Runway 23 Arrival Option C



Runway 23 Arrival Option D



Runway 23 Arrival Option E



Runway 23 Arrival Option F

Indicative (Conservative) Altitude (ft)	Arrival Options and aircraft track data
0 - 1000	
1000 - 2000	
2000 - 3000	
3000 - 4000	
4000 - 5000	
5000 - 6000	
6000 - 7000	



## 4. COMPREHENSIVE LIST OF OPTIONS

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### **PBN Departures**

Our Departure Options are based on PBN flight paths where an aircraft would fly the full PBN flight path from take off to at least above 4,000ft through to 7000ft where they would join the upper airspace network.

PBN improves the accuracy of where aircraft fly and therefore this would result in traffic being more concentrated than today at the lower levels and potentially up to 7000ft. There may however still be some variations around the centerlines and there may be occasions where ATC have to tactically manage departures. We estimate that this will be less frequent than today, especially at lower altitudes.

The following slides show the PBN departure options currently under consideration:

# 4. COMPREHENSIVE LIST OF OPTIONS

## All Runway 05 Departure Options:



Runway 05 Departure Option A



Runway 05 Departure Option B



Runway 05 Departure Option C



Runway 05 Departure Option D



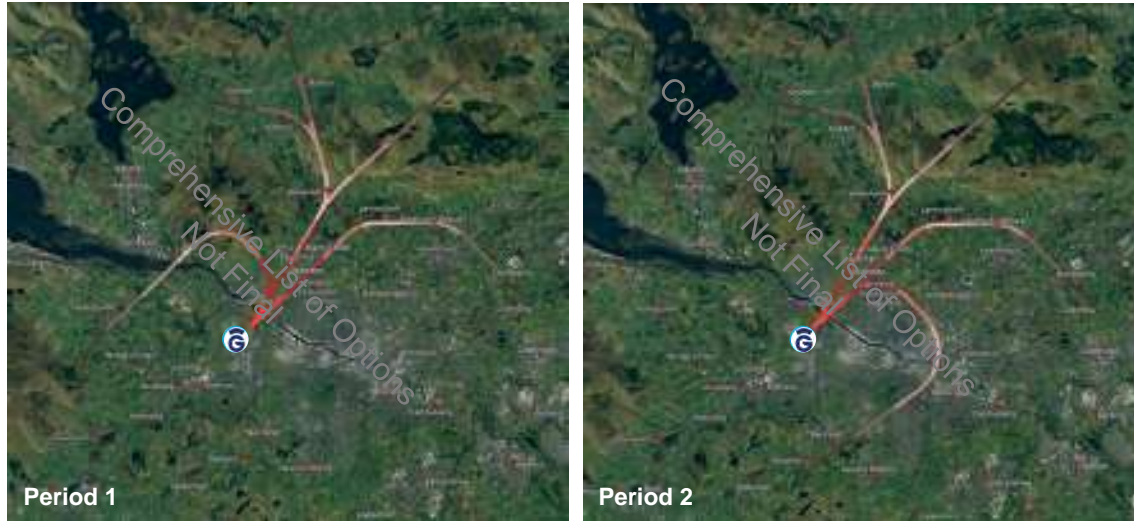
Runway 05 Departure Option E

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 - 1000	
1000 - 2000	
2000 - 3000	
3000 - 4000	
4000 - 5000	
5000 - 6000	
6000 - 7000	

Continued on next slide

# 4. COMPREHENSIVE LIST OF OPTIONS

## All Runway 05 Departure Options:



Runway 05 Departure Option F



Runway 05 Departure Option G

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 – 1000	
1000 – 2000	
2000 – 3000	
3000 – 4000	
4000 – 5000	
5000 – 6000	
6000 - 7000	

# Full Comprehensive List of Options (Detail)

Arrivals

# Runway 05 PBN Arrival Option A

PBN arrivals from the north and south both joining final approach at approximately 11nm from the runway

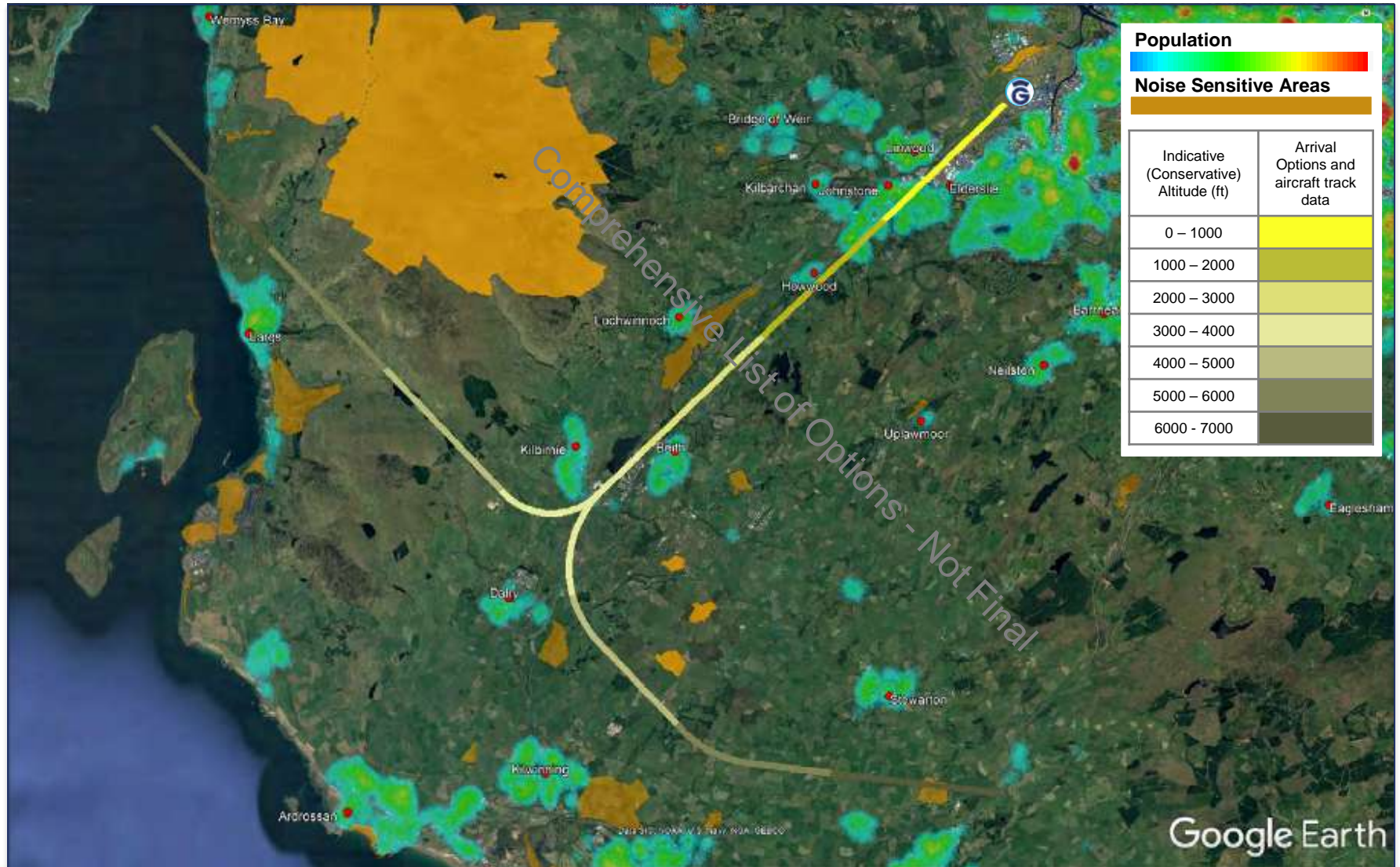
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

### Runway 05 PBN Arrival Option A



## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

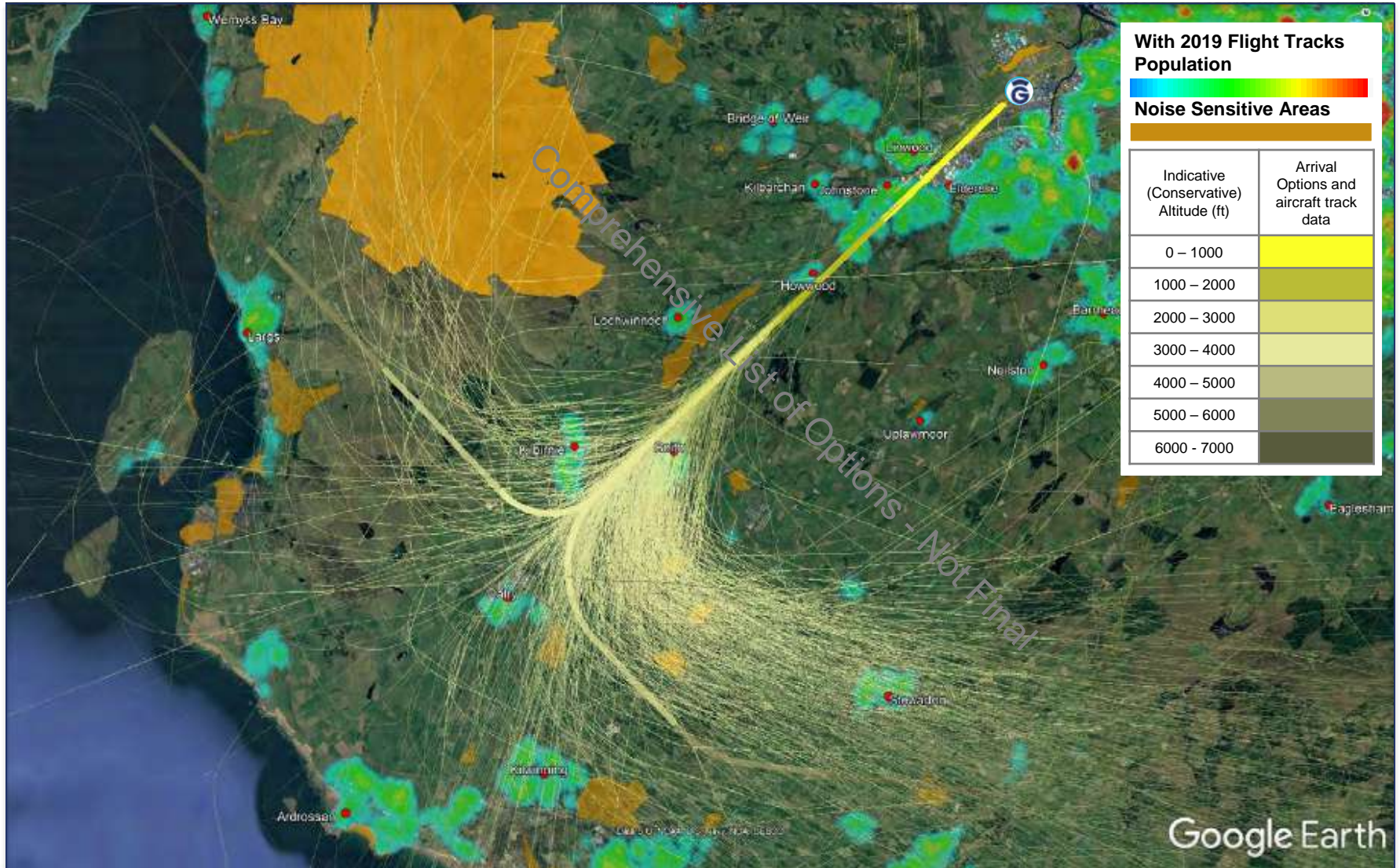
### Runway 05 PBN Arrival Option A





# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option A



# Runway 05 PBN Arrival Option B

PBN arrivals from the north joining final approach at approximately 11nm from the runway and from the south at approximately 10nm.

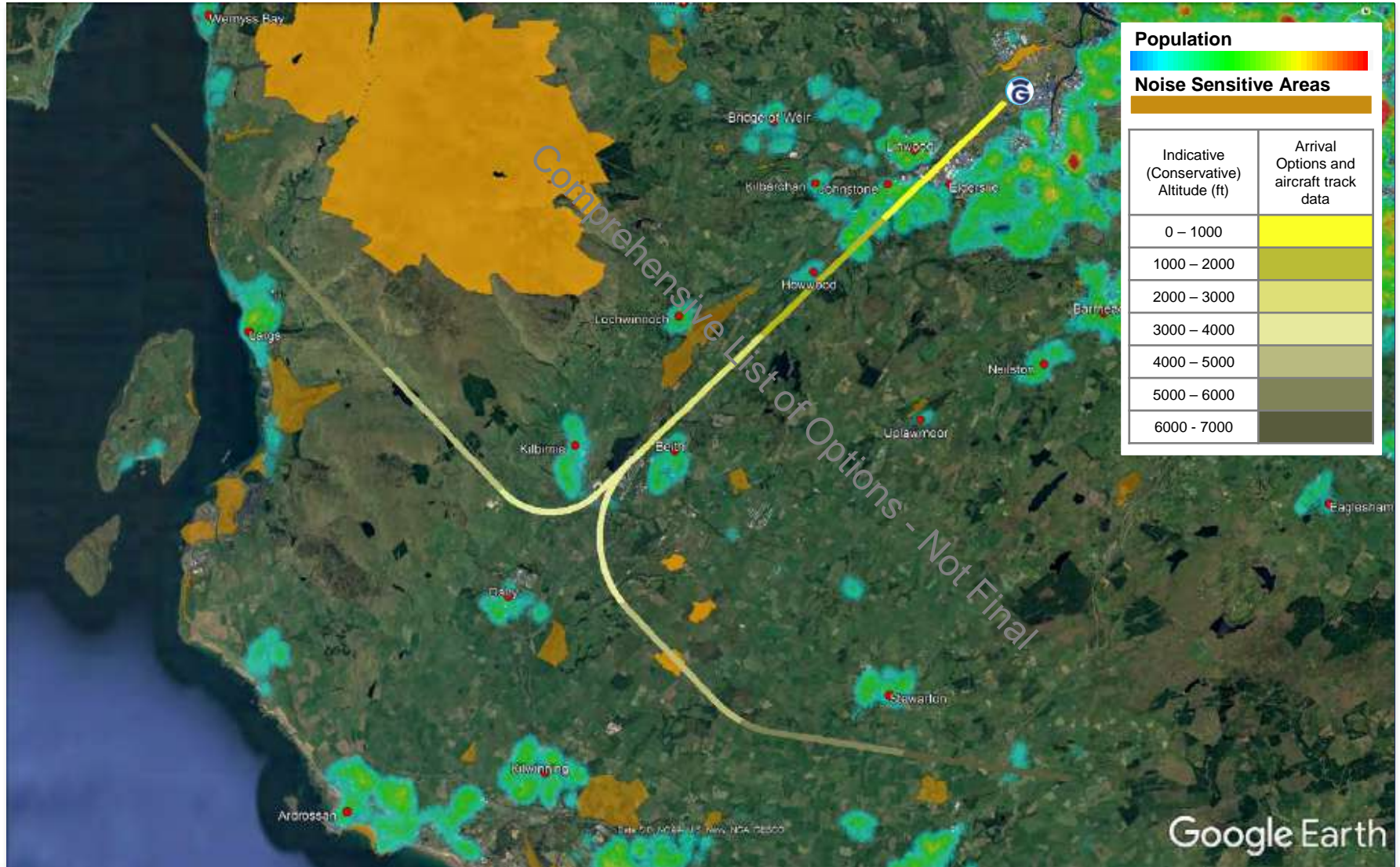
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

### Runway 05 PBN Arrival Option B



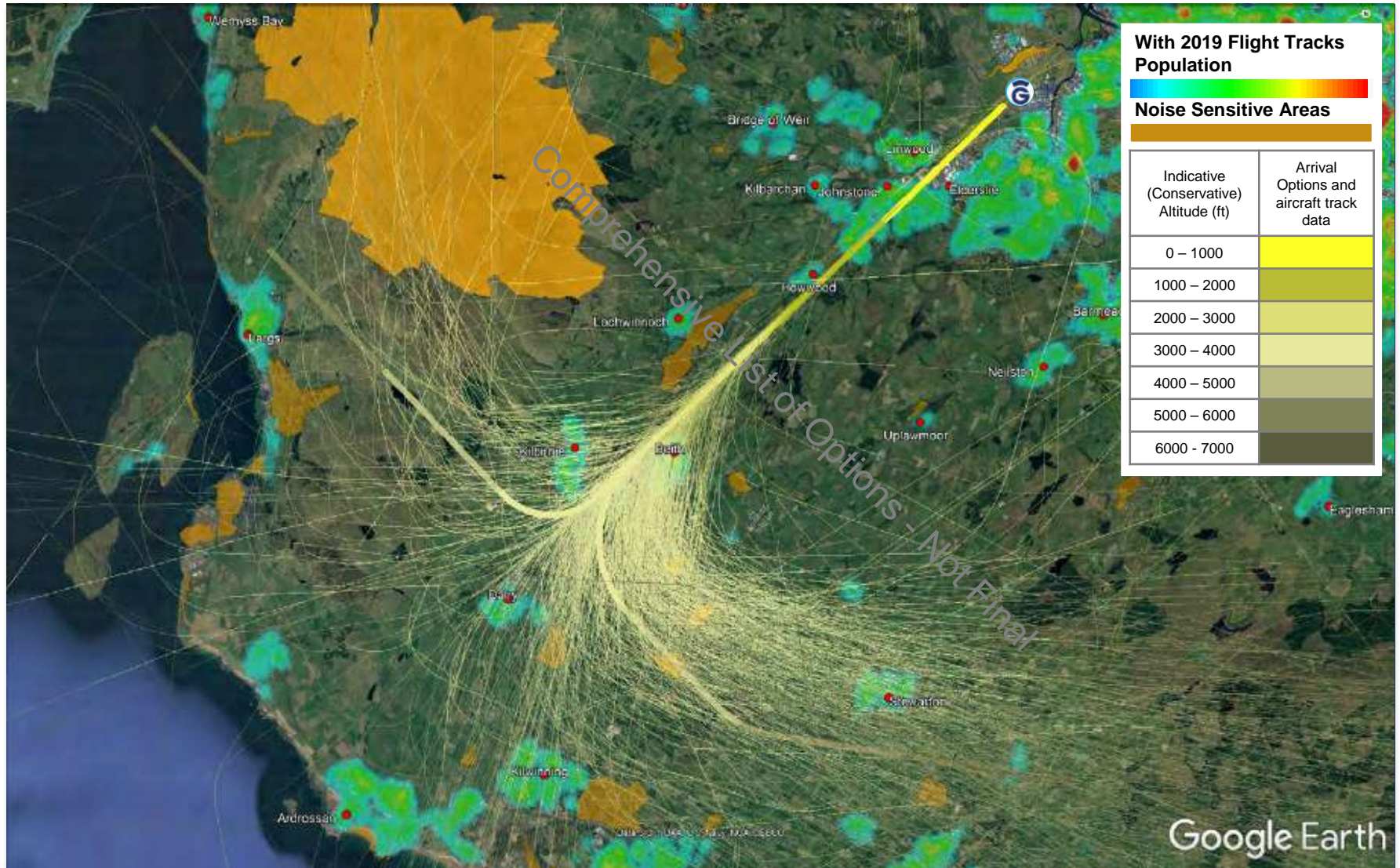
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option B



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option B

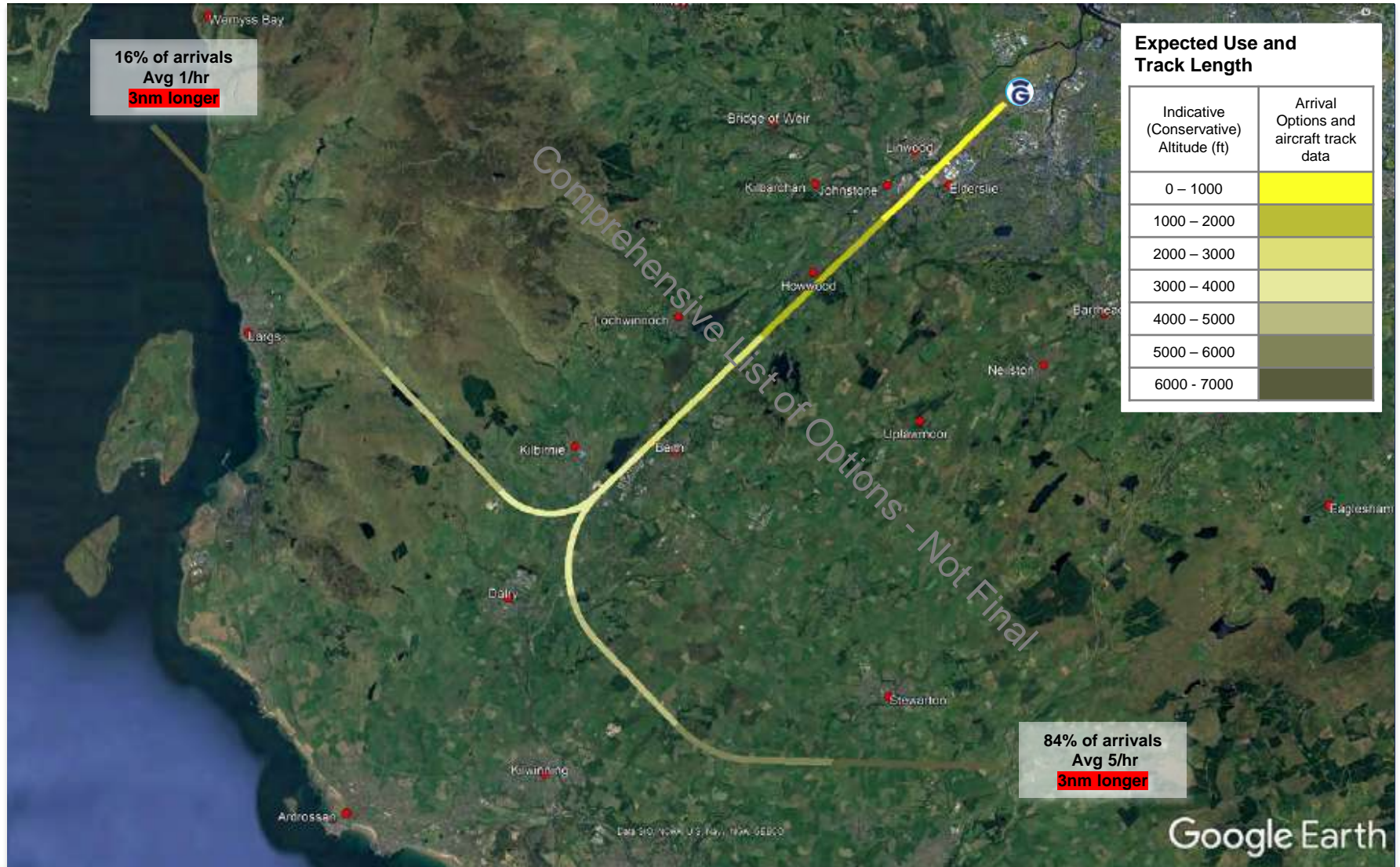


# Runway 05 PBN Arrival Option C

PBN arrivals from the north and south both joining final approach at approximately 11nm from the runway. Slightly different track to Option A above 5000ft.

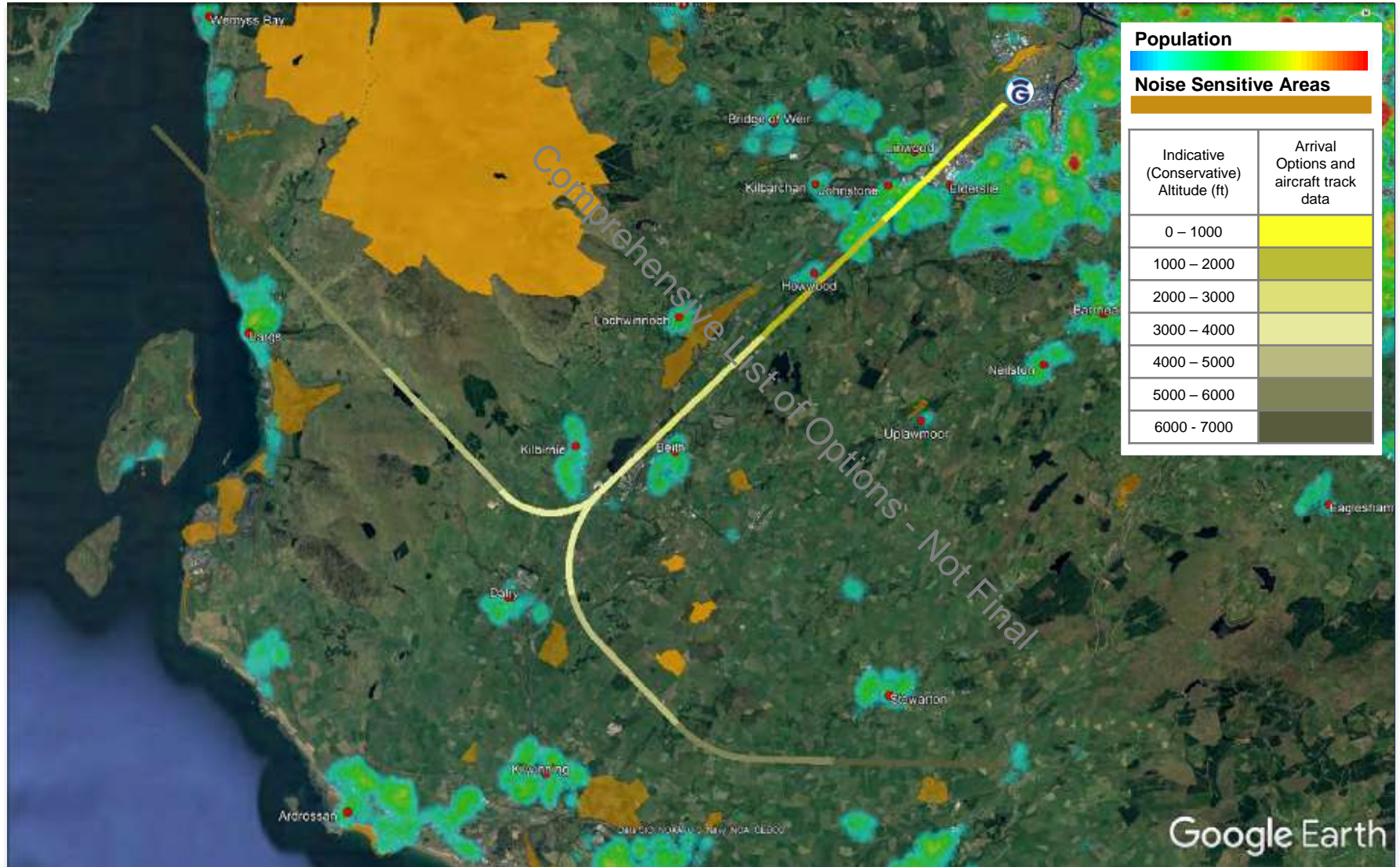
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

### Runway 05 PBN Arrival Option C



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

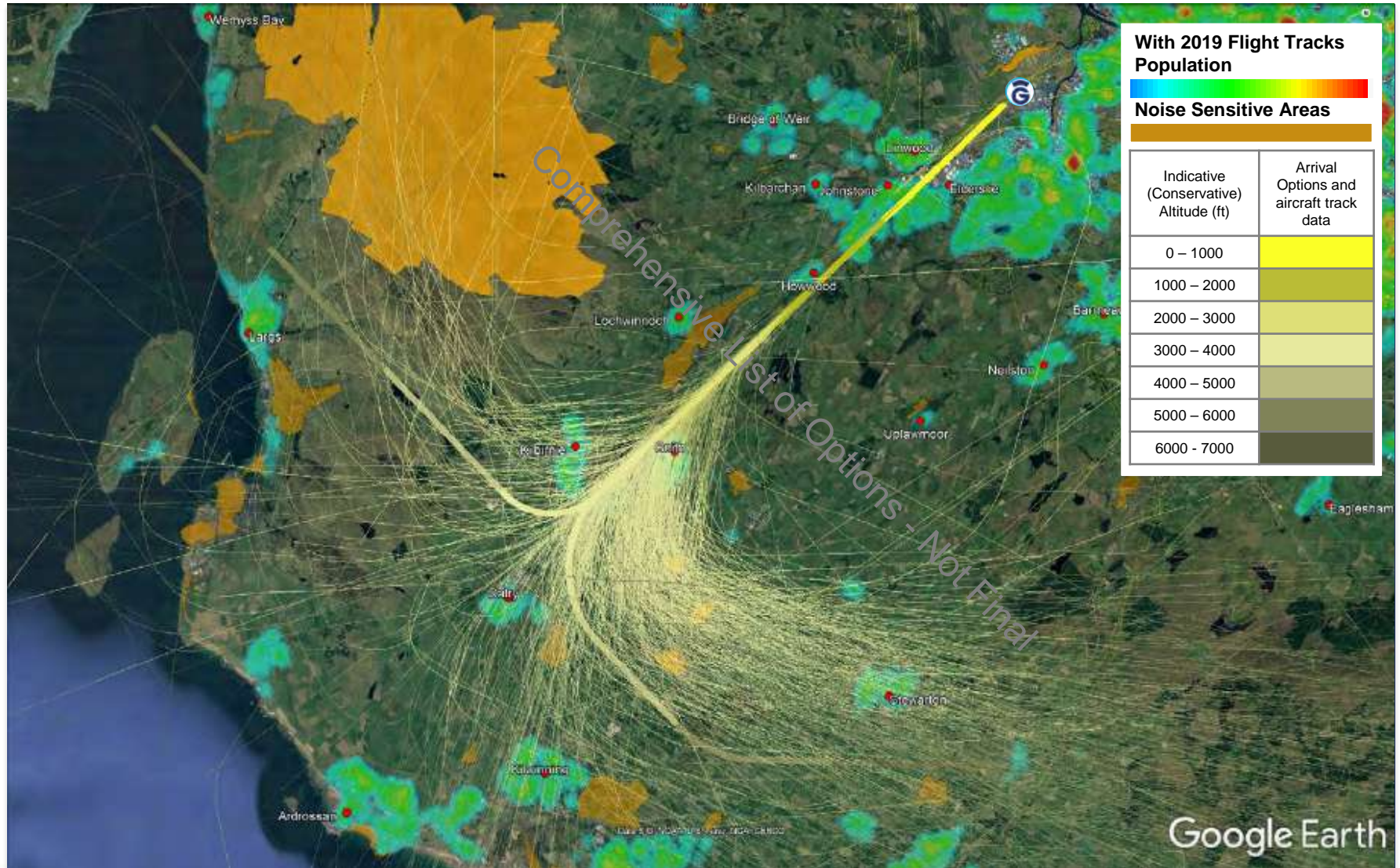
## Runway 05 PBN Arrival Option C





# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option C



# Runway 05 PBN Arrival Option D

PBN arrivals from the north joining final approach at approximately 11nm from the runway and from the south at approximately 10nm. Slightly different track to Option B above 5000ft

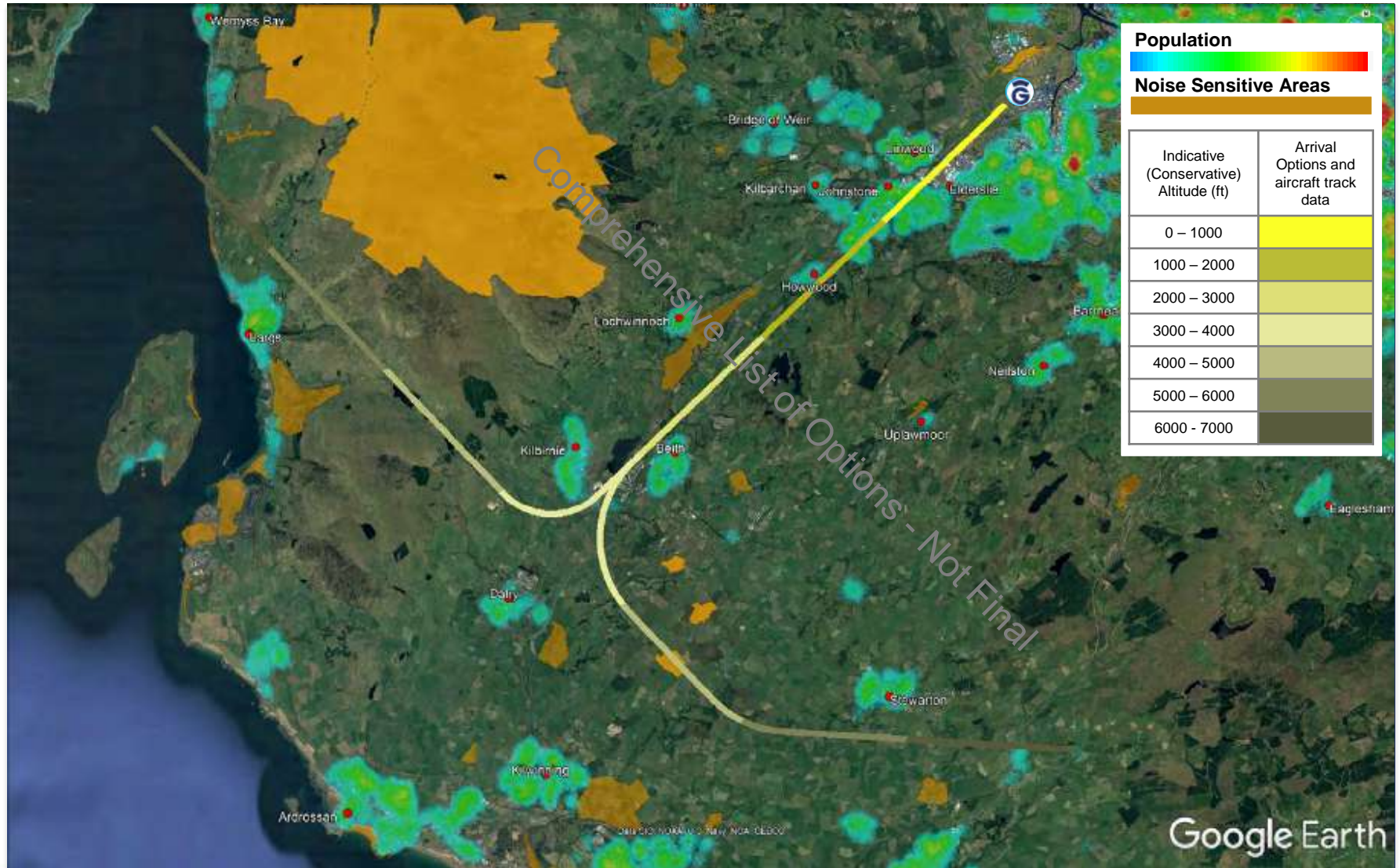
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

### Runway 05 PBN Arrival Option D



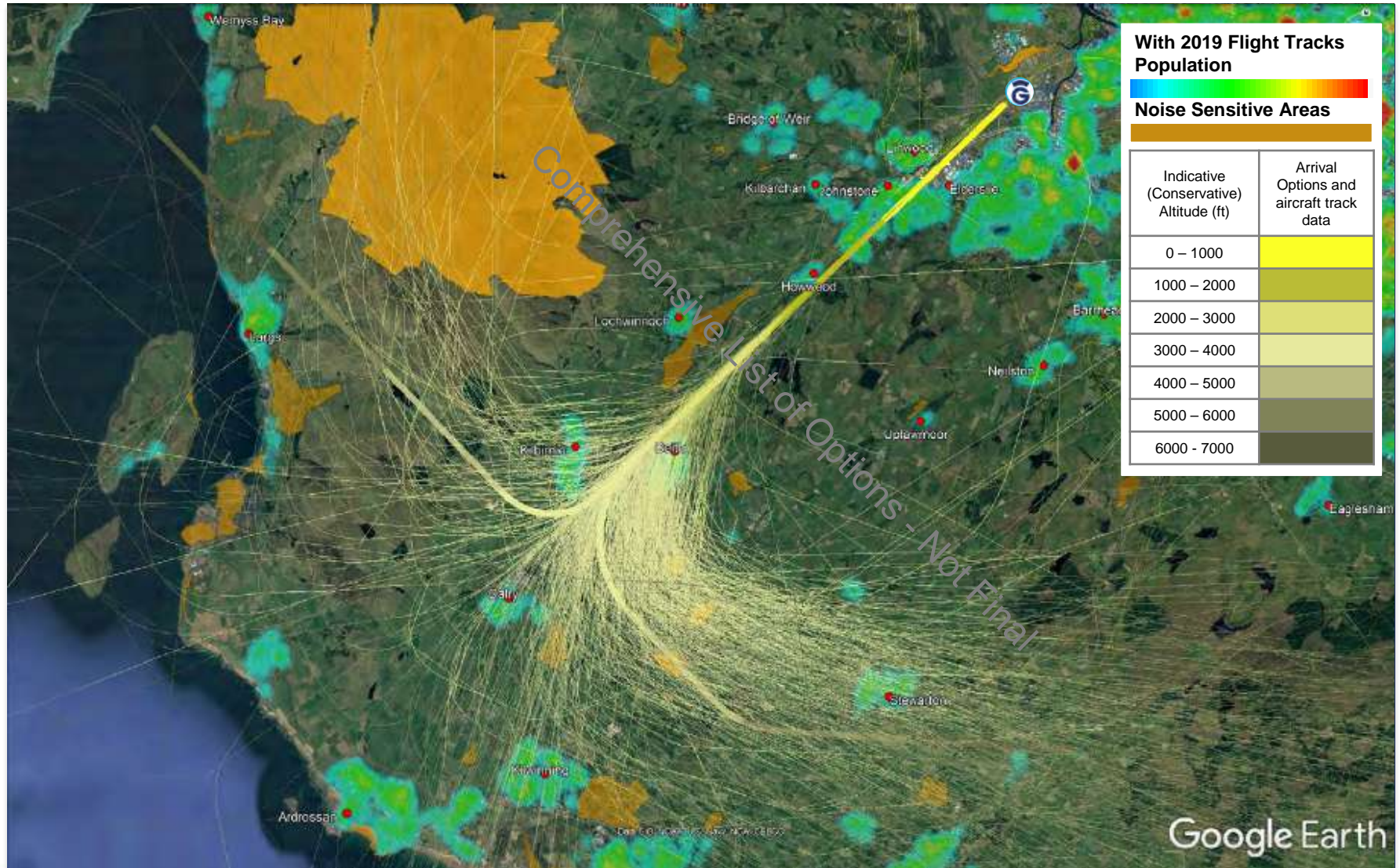
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option D



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 ARRIVALS

## Runway 05 PBN Arrival Option D



# Runway 23 PBN Arrival Option A

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 17nm.

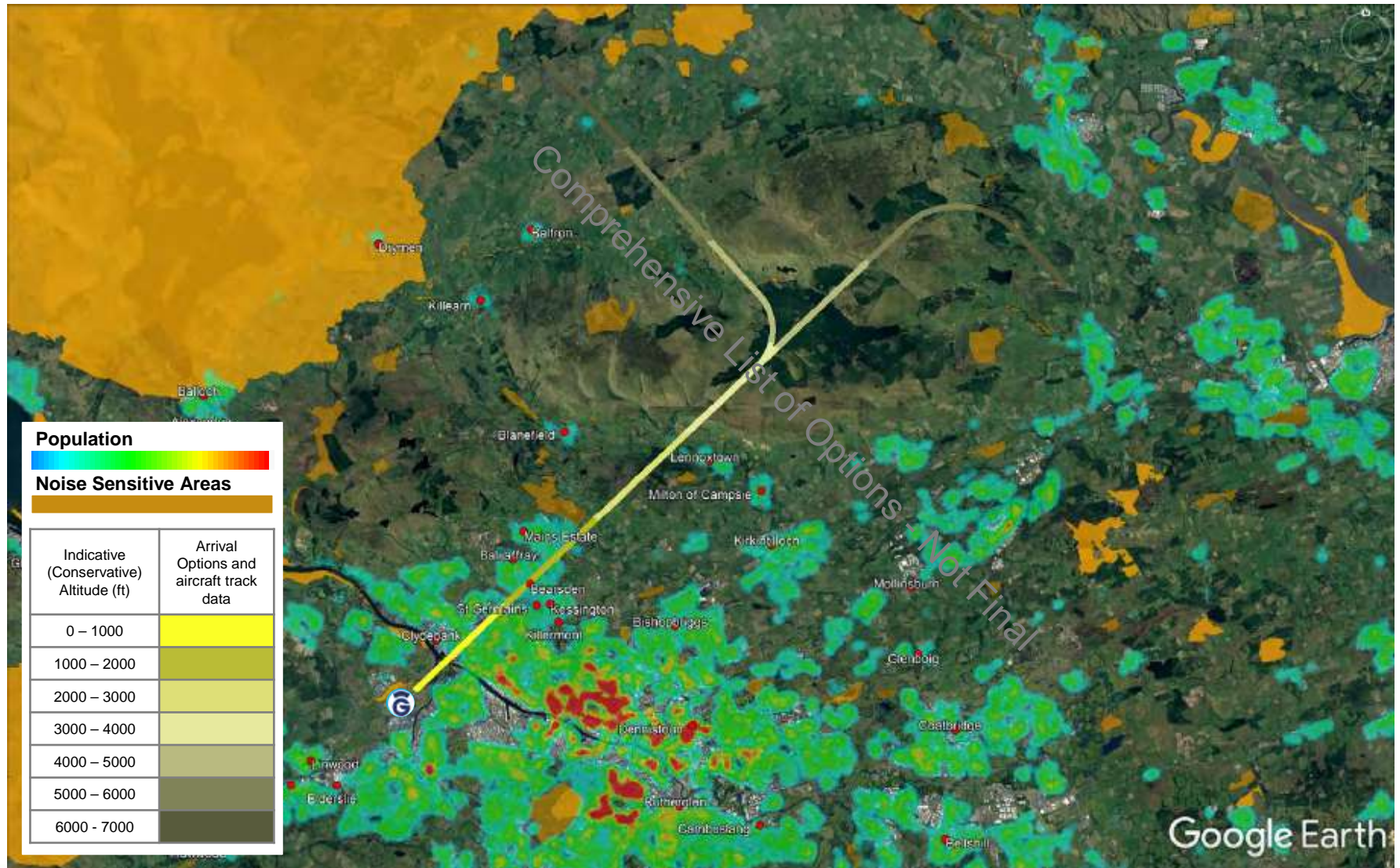
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option A



## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

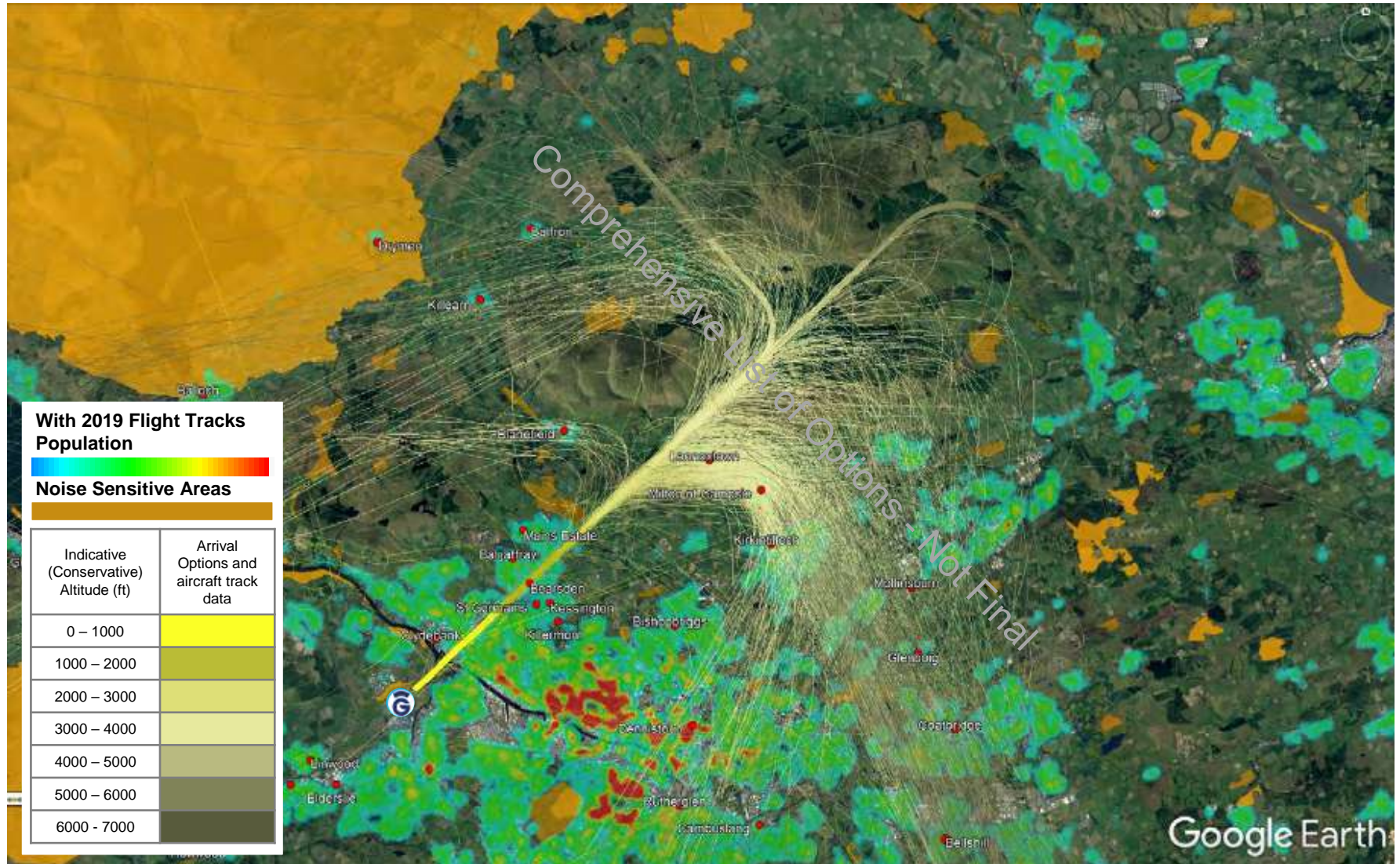
### Runway 23 PBN Arrival Option A





## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

### Runway 23 PBN Arrival Option A



# Runway 23 PBN Arrival Option B

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 18nm.

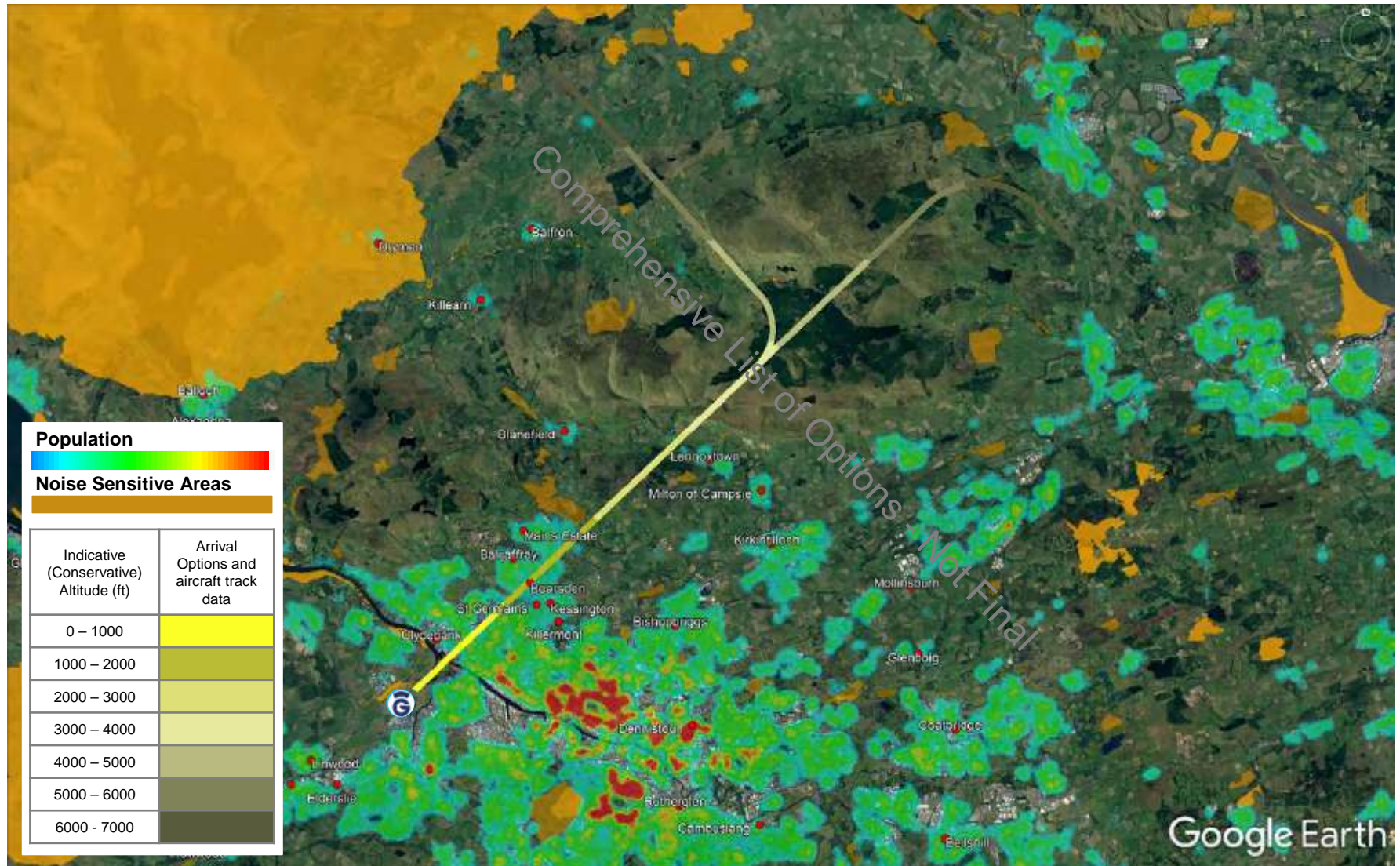
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option B



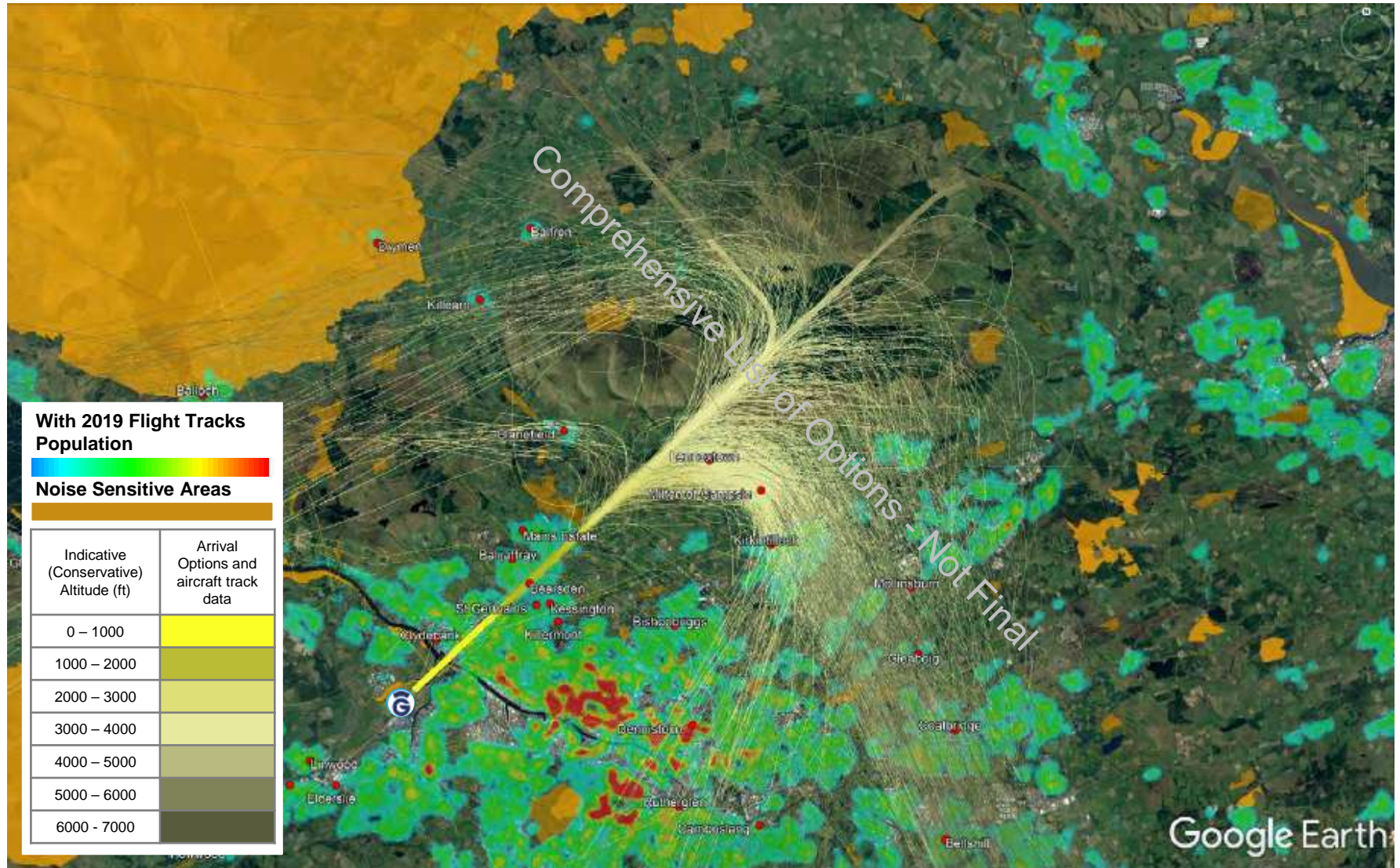
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

### Runway 23 PBN Arrival Option B



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option B

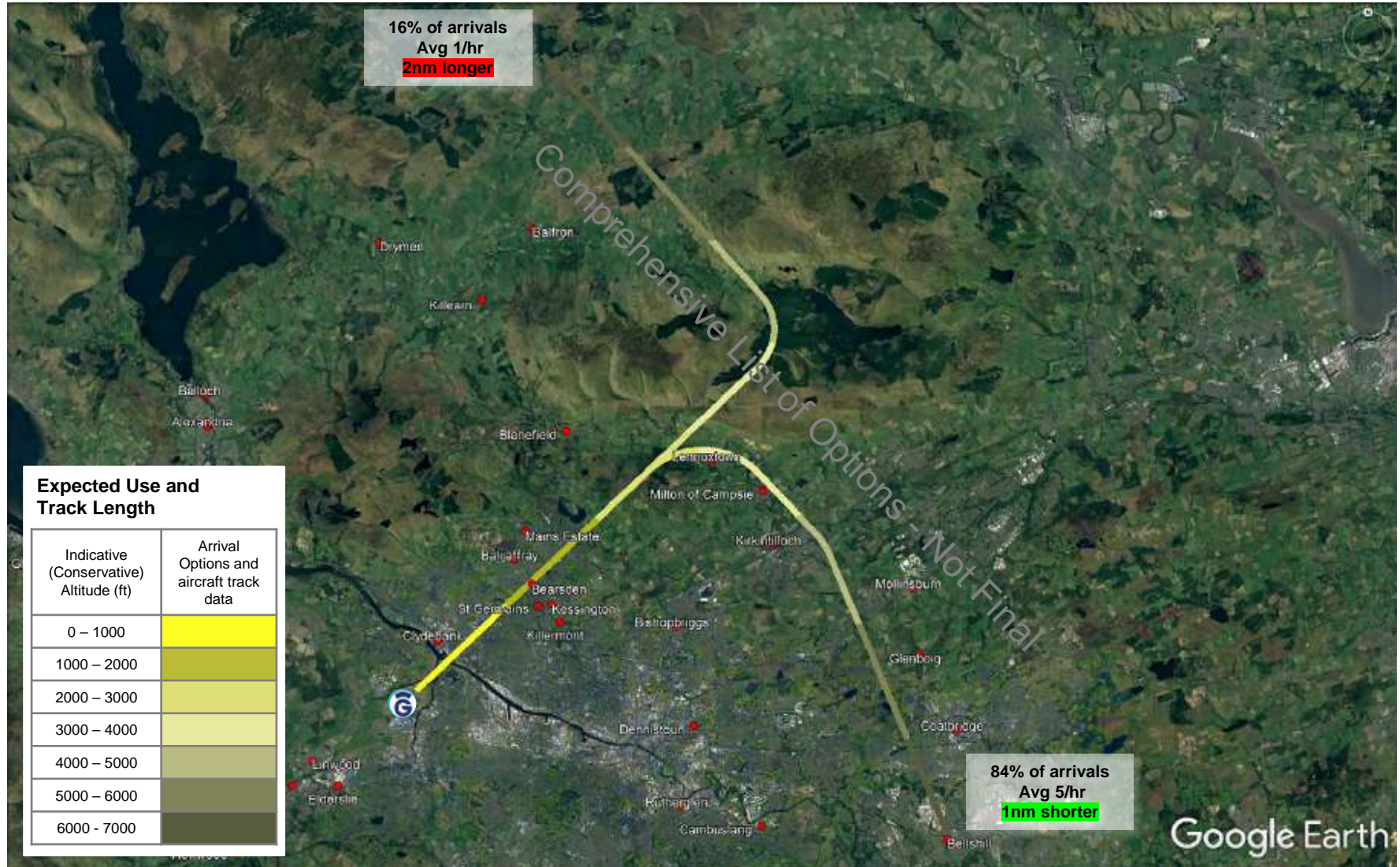


# Runway 23 PBN Arrival Option C

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 8nm.

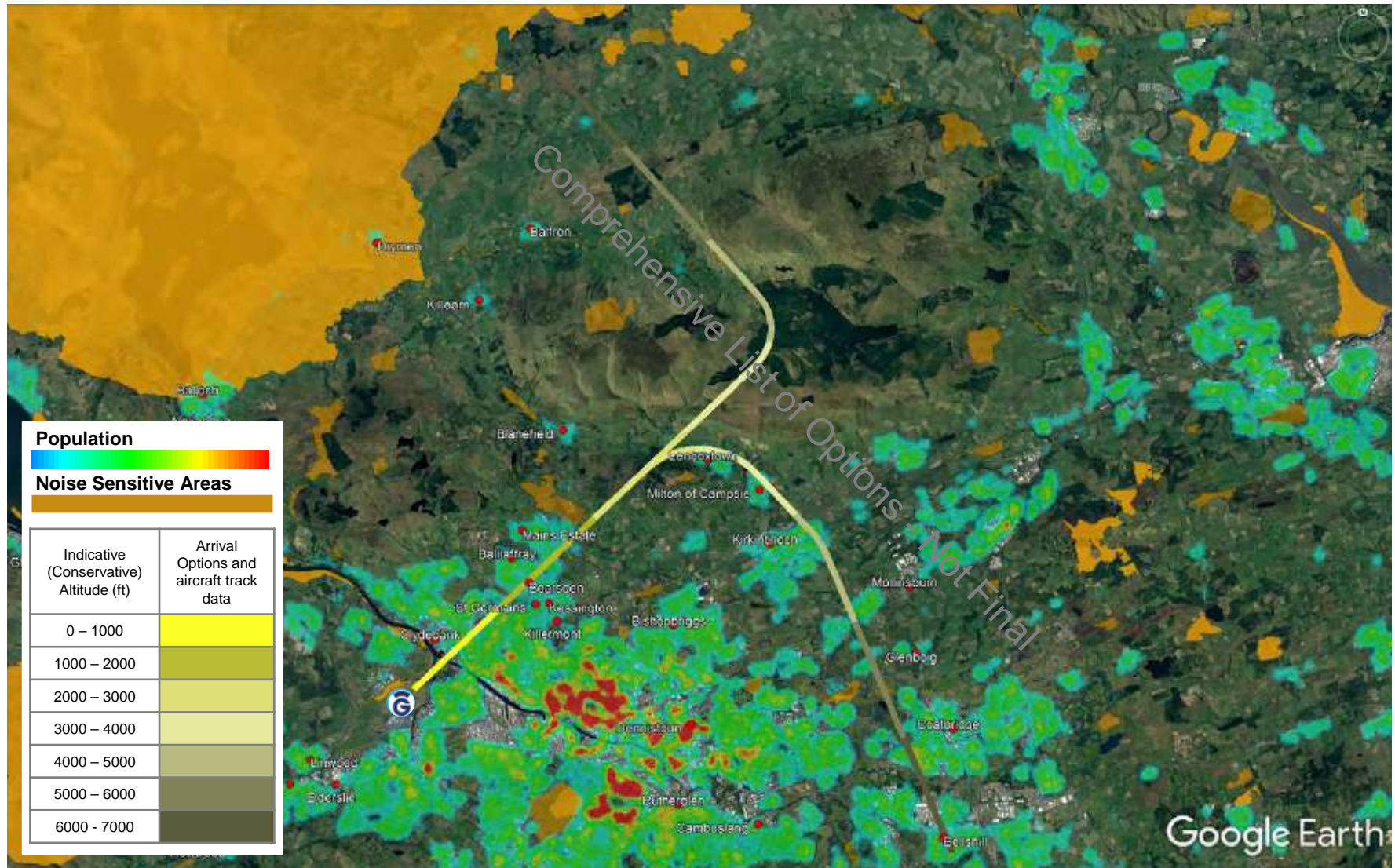
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option C



## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

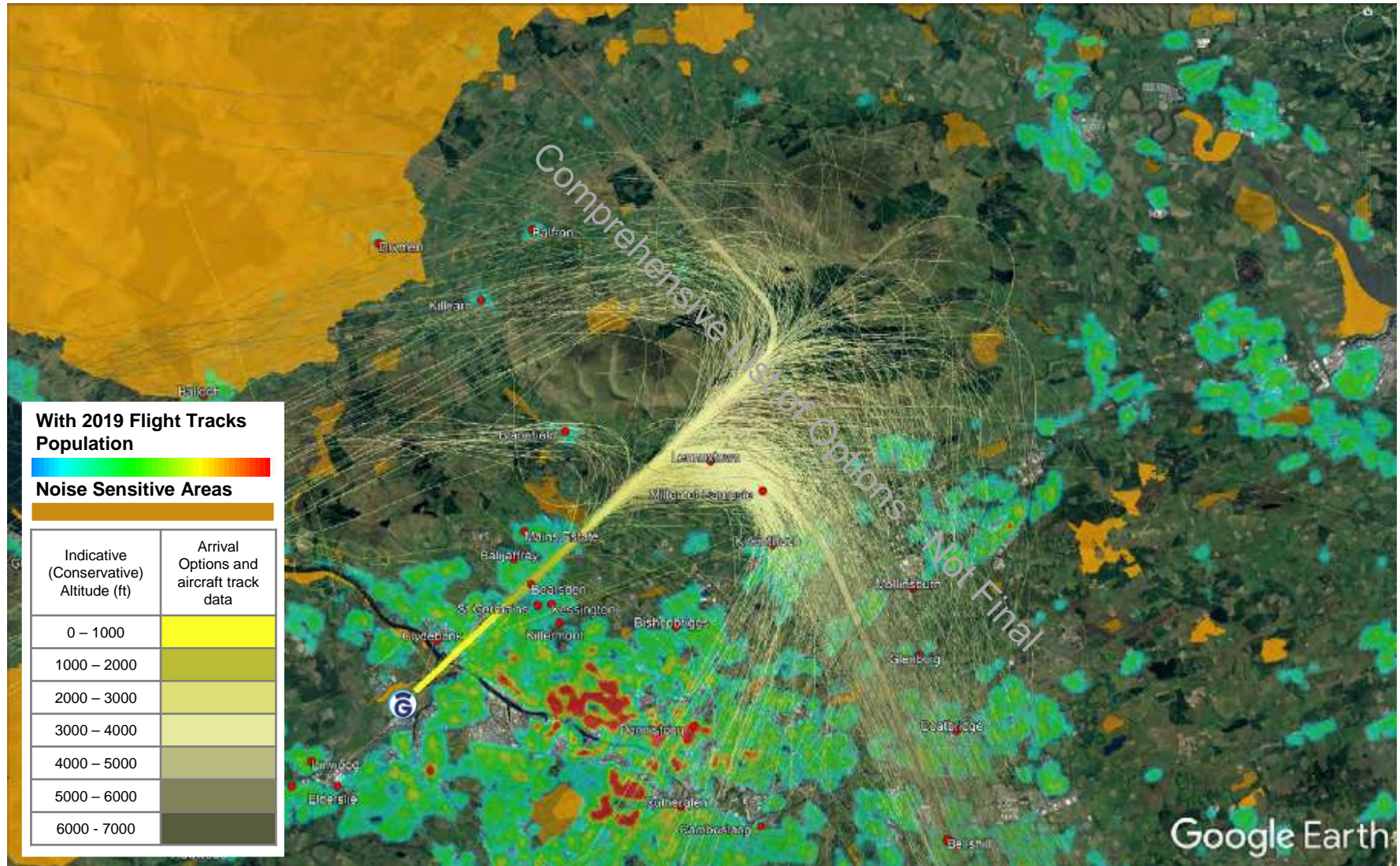
### Runway 23 PBN Arrival Option C





# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option C



# Runway 23 PBN Arrival Option D

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 9nm.

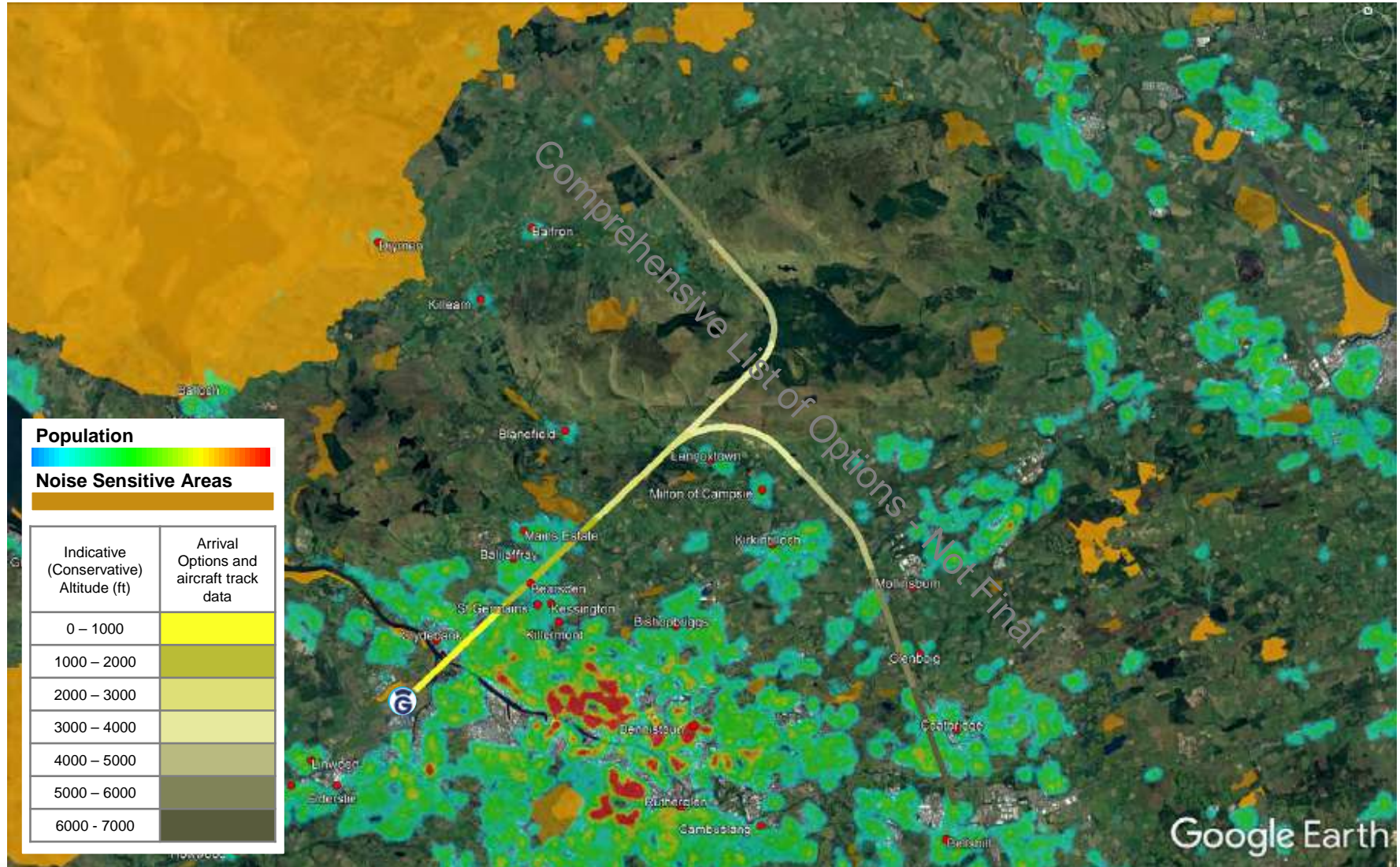
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option D



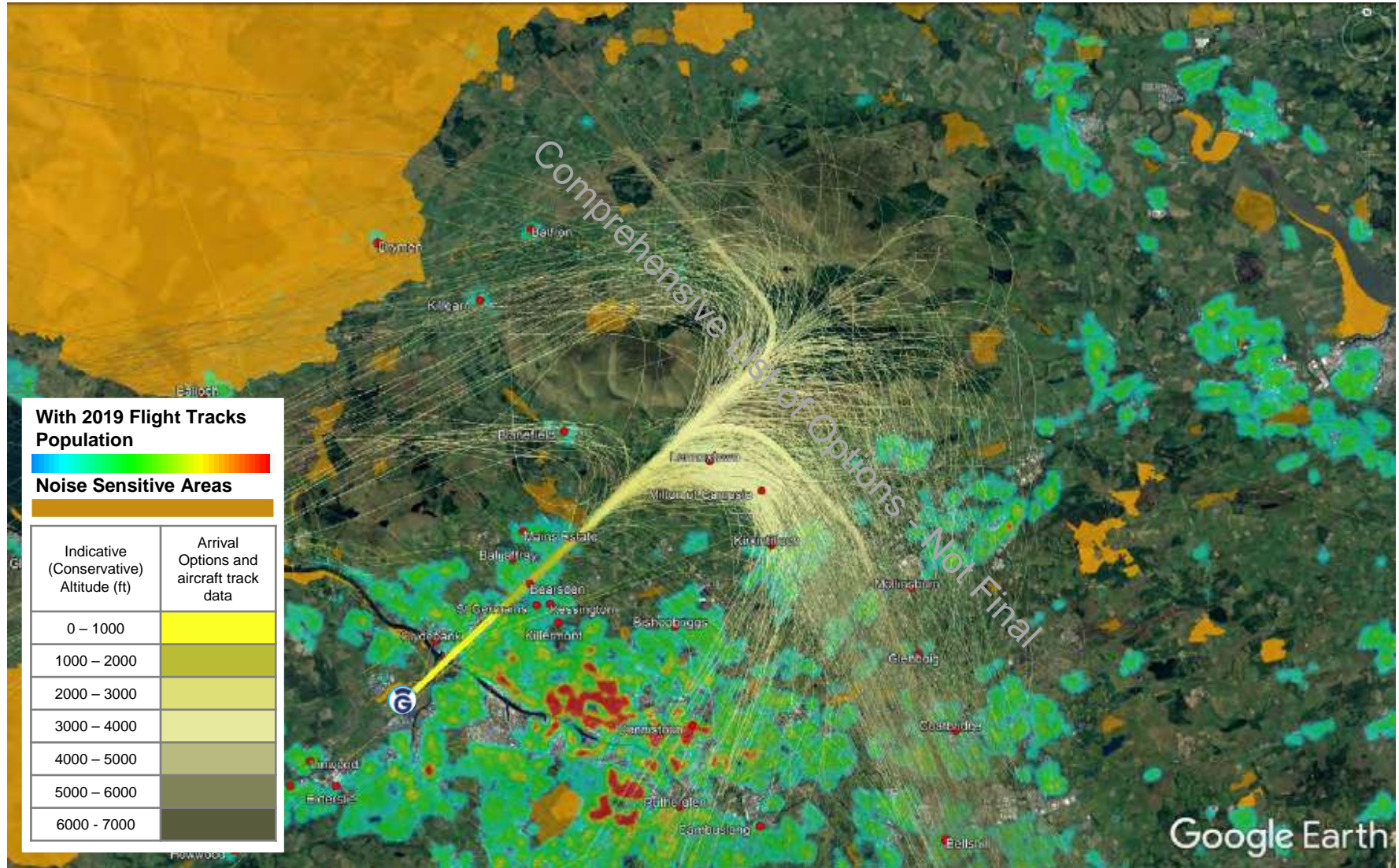
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option D



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option D



# Runway 23 PBN Arrival Option E

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 10nm.

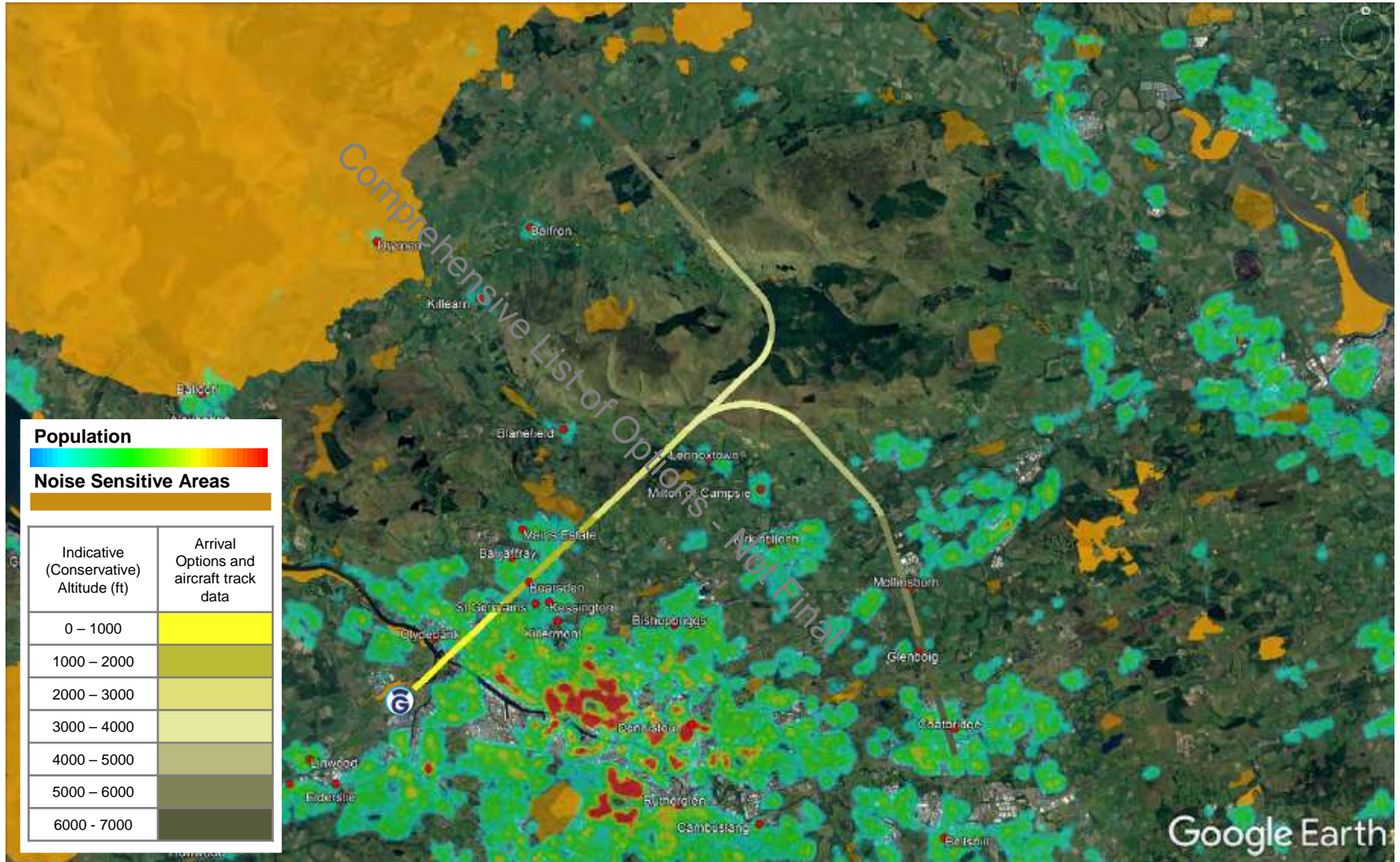
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option E



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

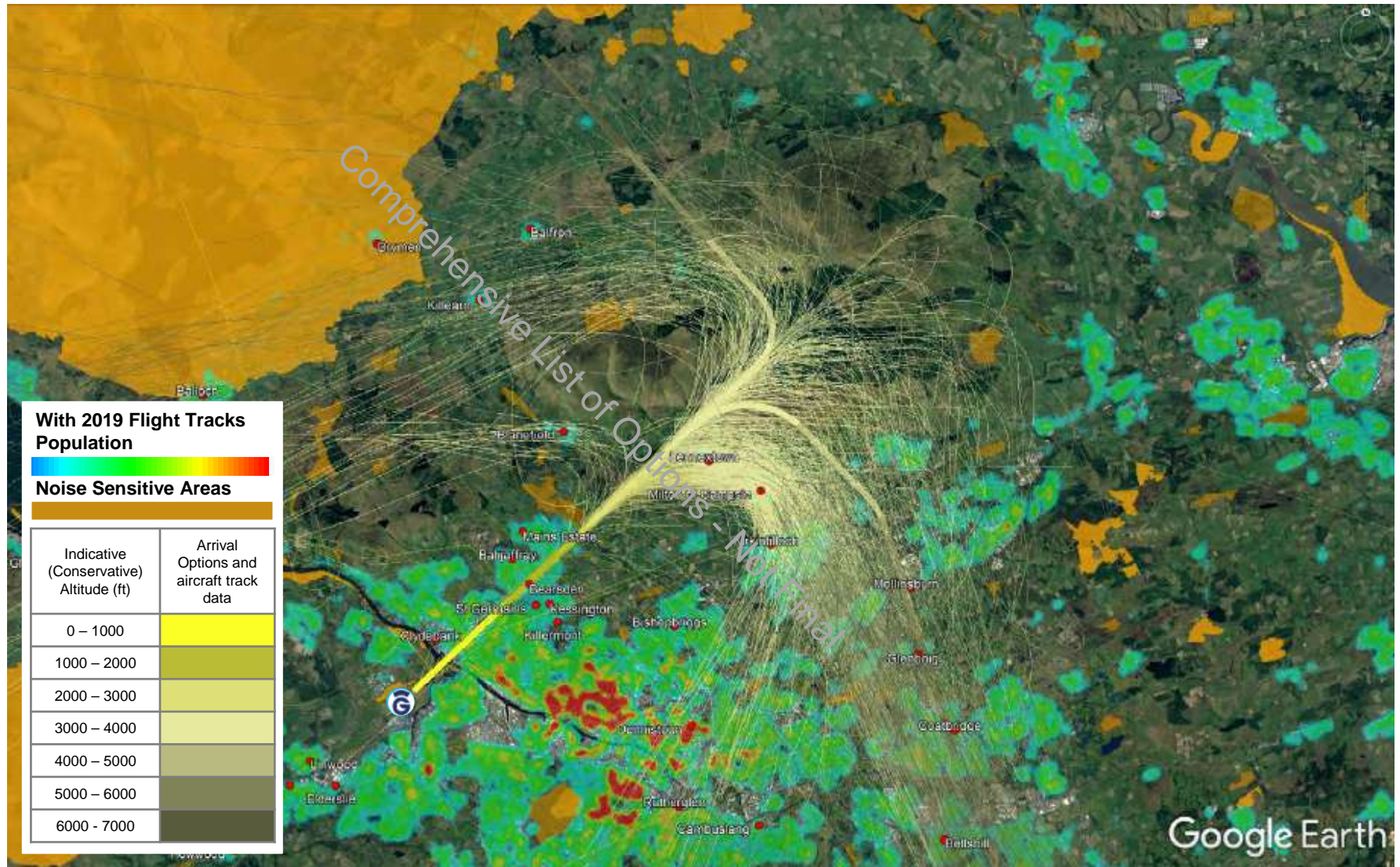
## Runway 23 PBN Arrival Option E





# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option E



# Runway 23 PBN Arrival Option F

PBN arrivals from the north joining final approach at approximately 12nm from the runway and from the south at approximately 15nm.

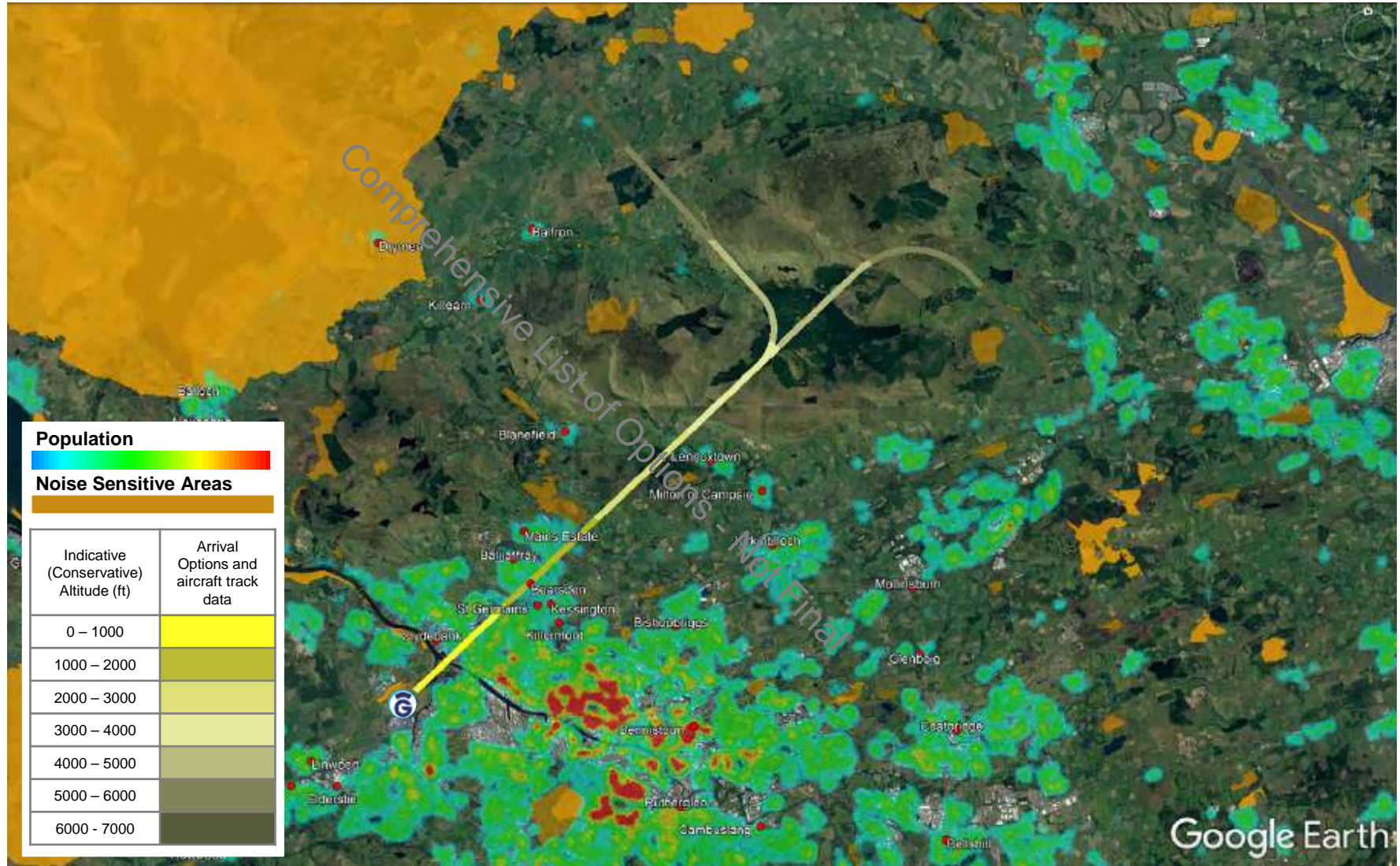
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option F



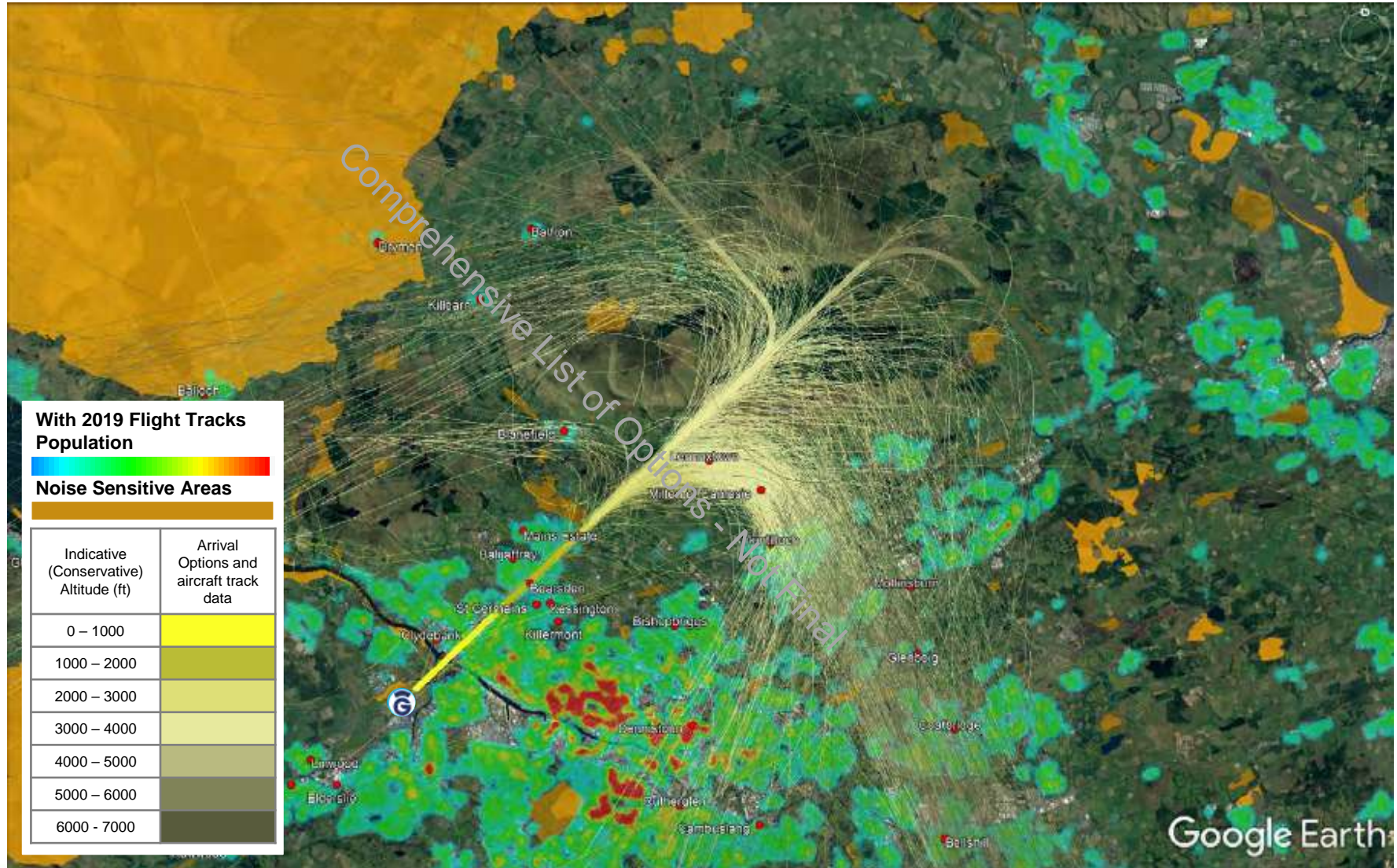
## 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

### Runway 23 PBN Arrival Option F



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 ARRIVALS

## Runway 23 PBN Arrival Option F



Departures

# Runway 05 Departure Option A

Offset left departures with turns at 1nm and 6nm from the runway.

Straight ahead departures with turns at 3nm from the runway.

NORBO is offset left with turn at 1nm

# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

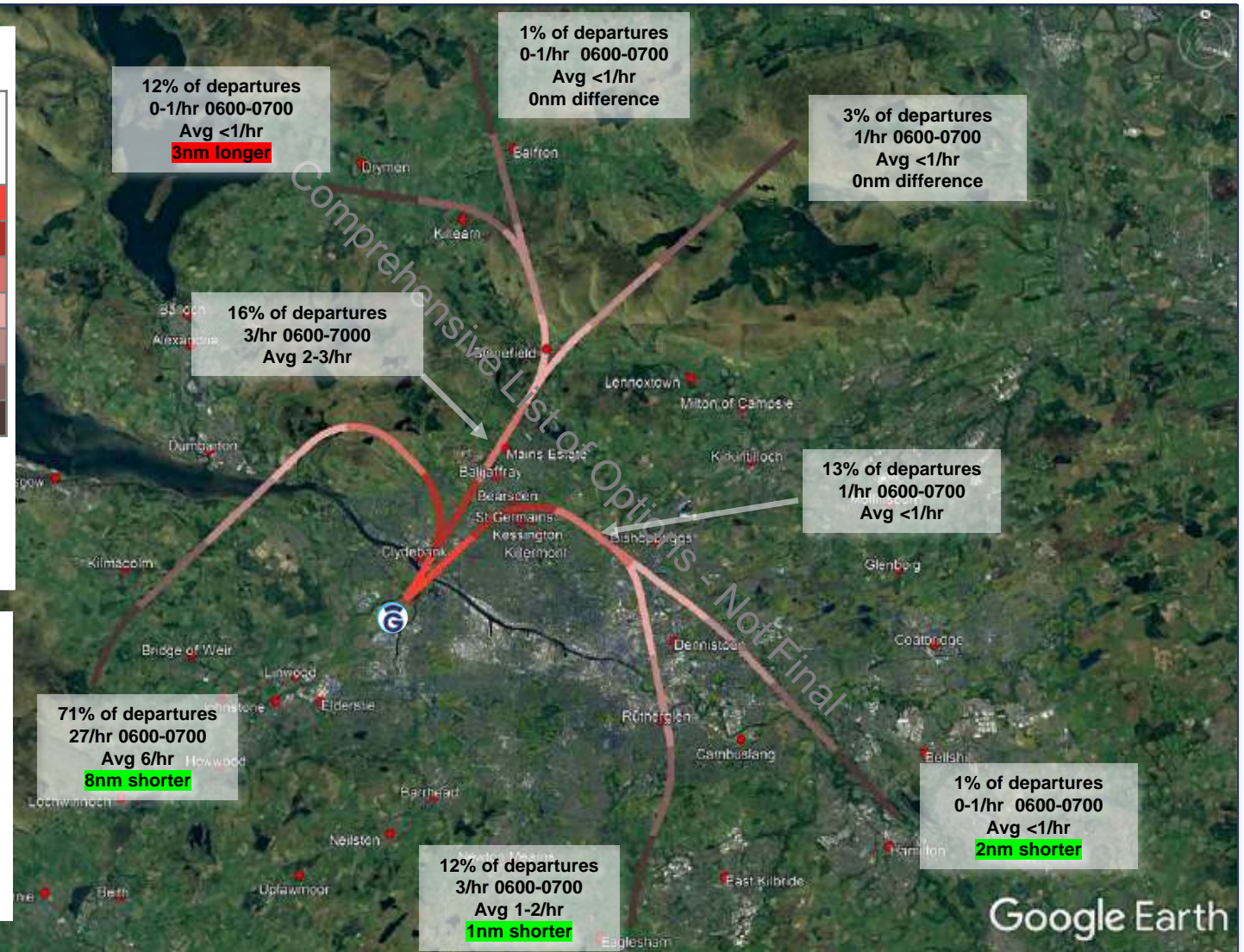
## Runway 05 Departure Option A

### Expected Use and Track Length

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 – 1000	
1000 – 2000	
2000 – 3000	
3000 – 4000	
4000 – 5000	
5000 – 6000	
6000 – 7000	

% of all departures  
 Num of departures 0600-0700  
 Avg departures rest of the day  
 Indicative difference in track length compared to current day

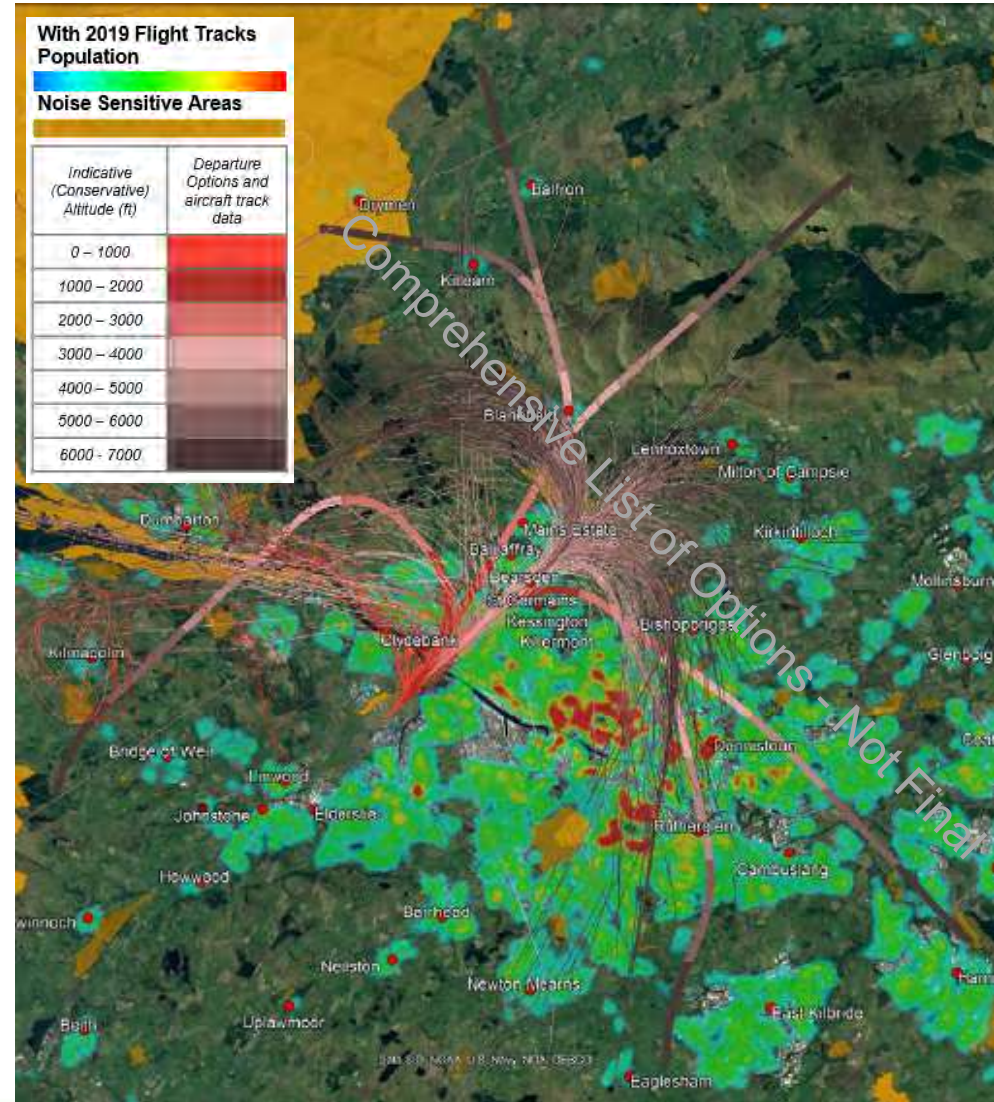
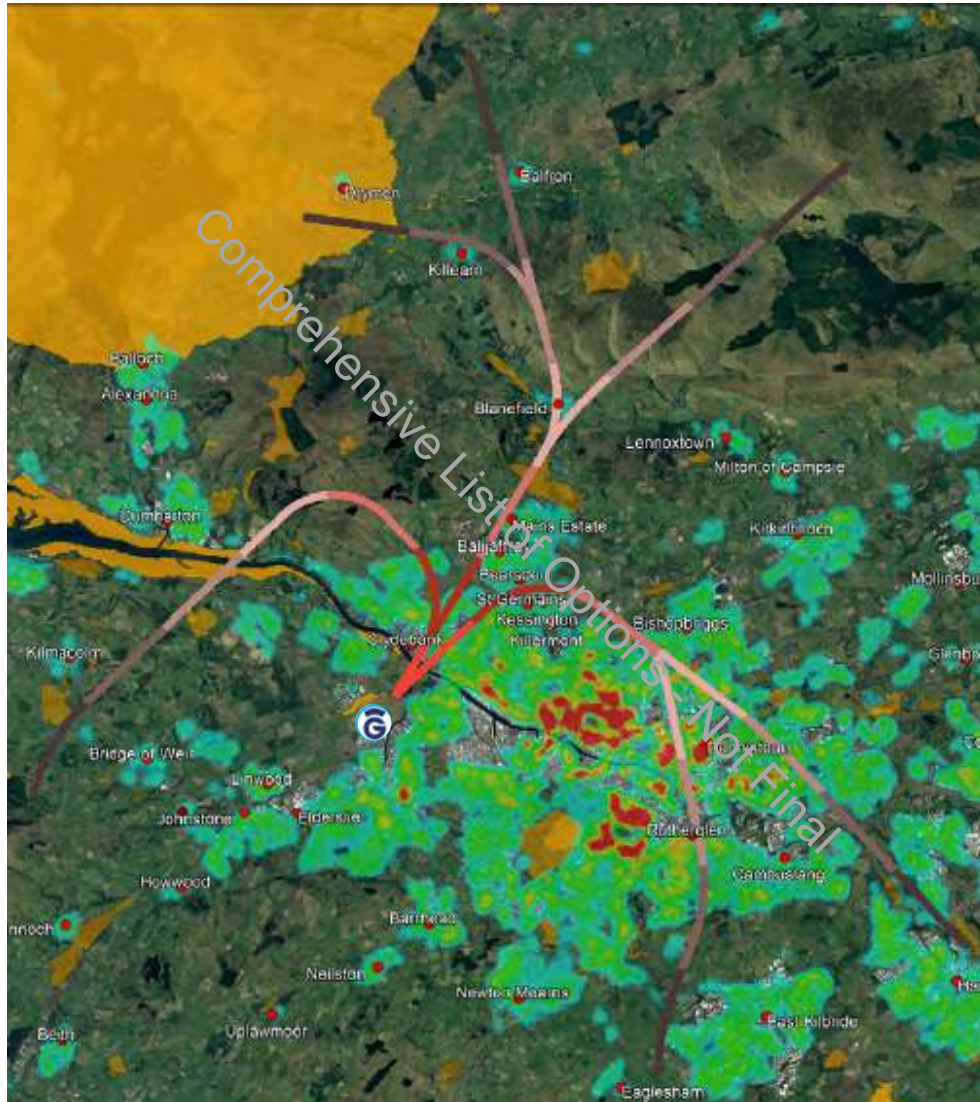
This option forms part of our comprehensive list of options; it will be evaluated, appraised, and refined through the airspace change process. **This is not the proposed final Airspace Change Option.**





# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option A



# Runway 05 Departure Option B

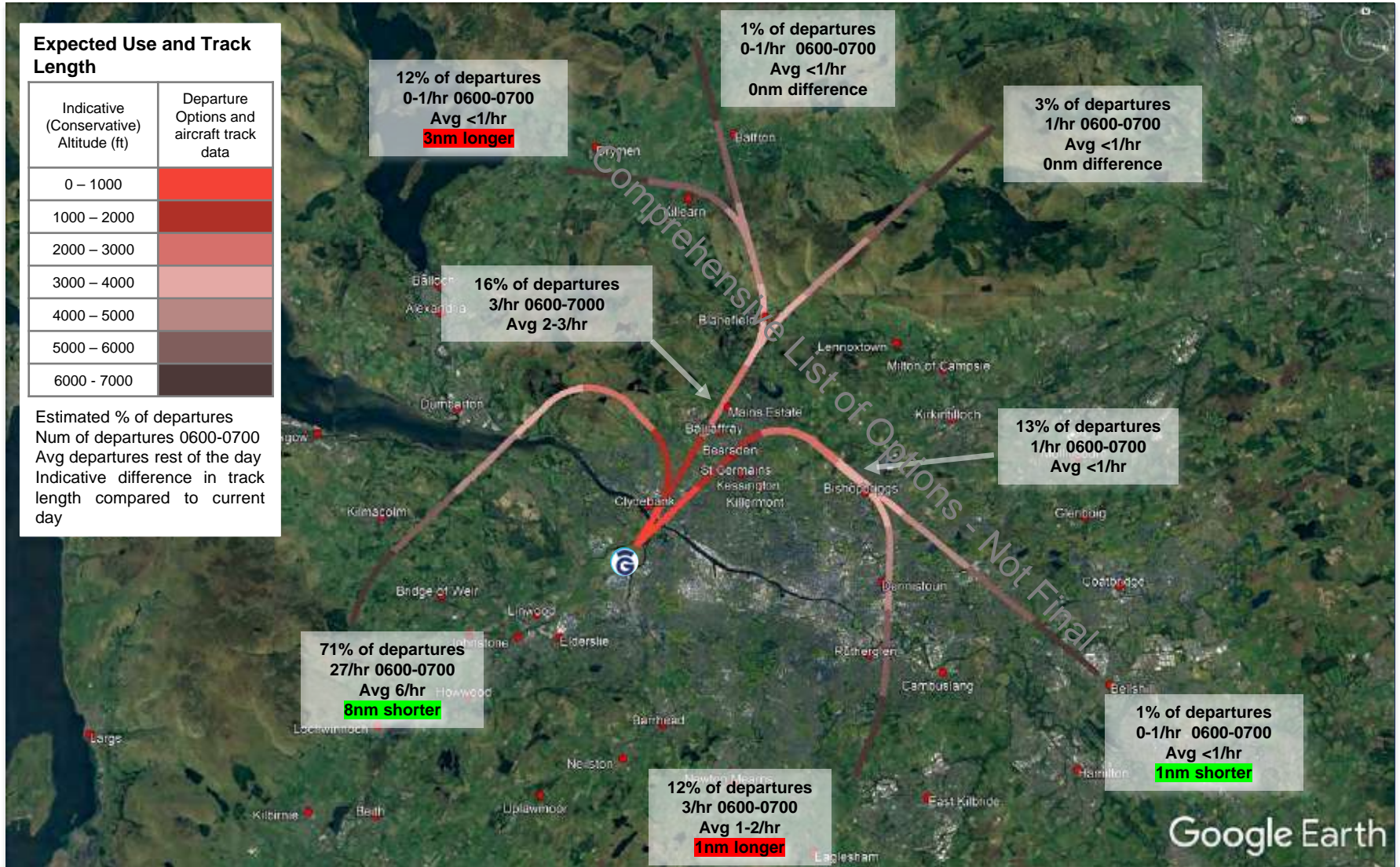
Offset left departures with turns at 1nm and 6nm from the runway.

Straight ahead departures with turns at 4nm from the runway.

NORBO is offset left with turn at 1nm

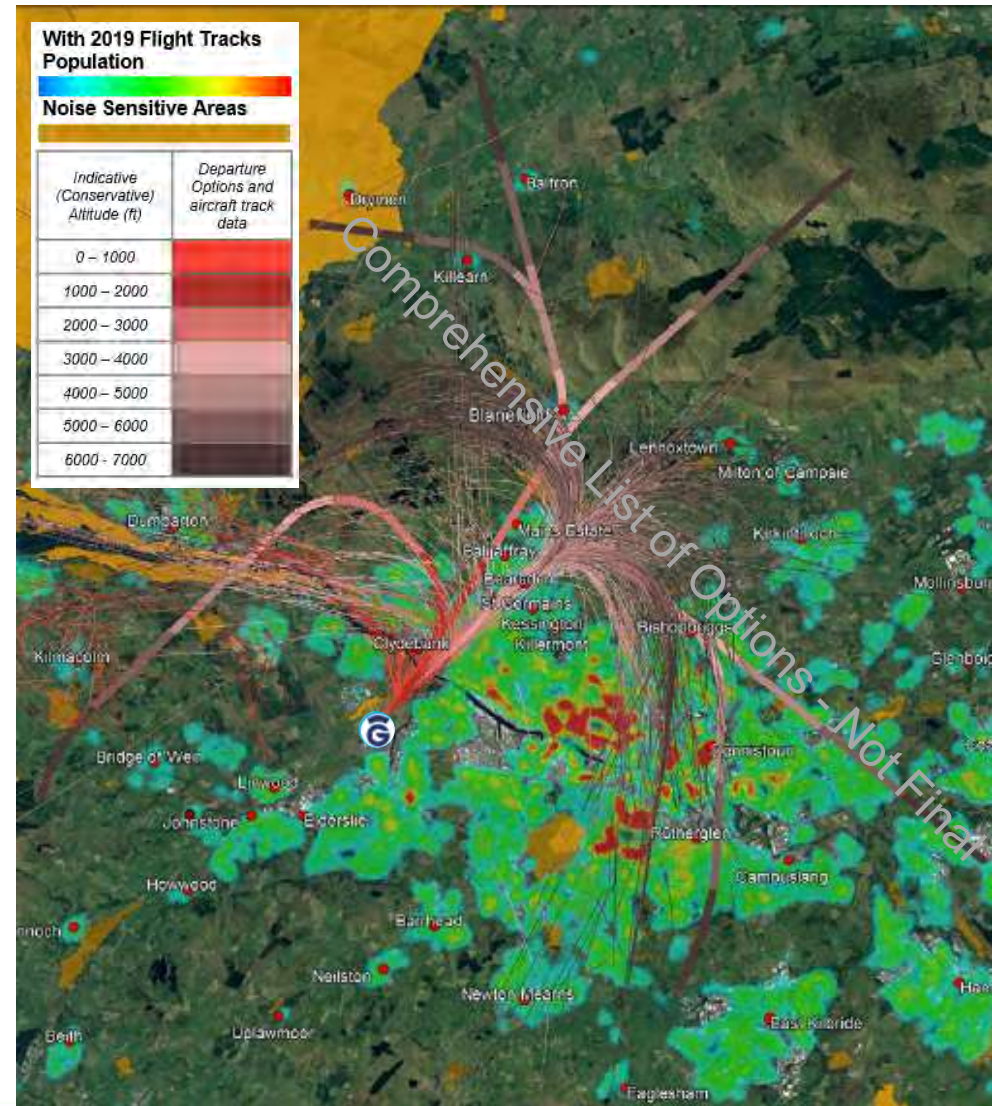
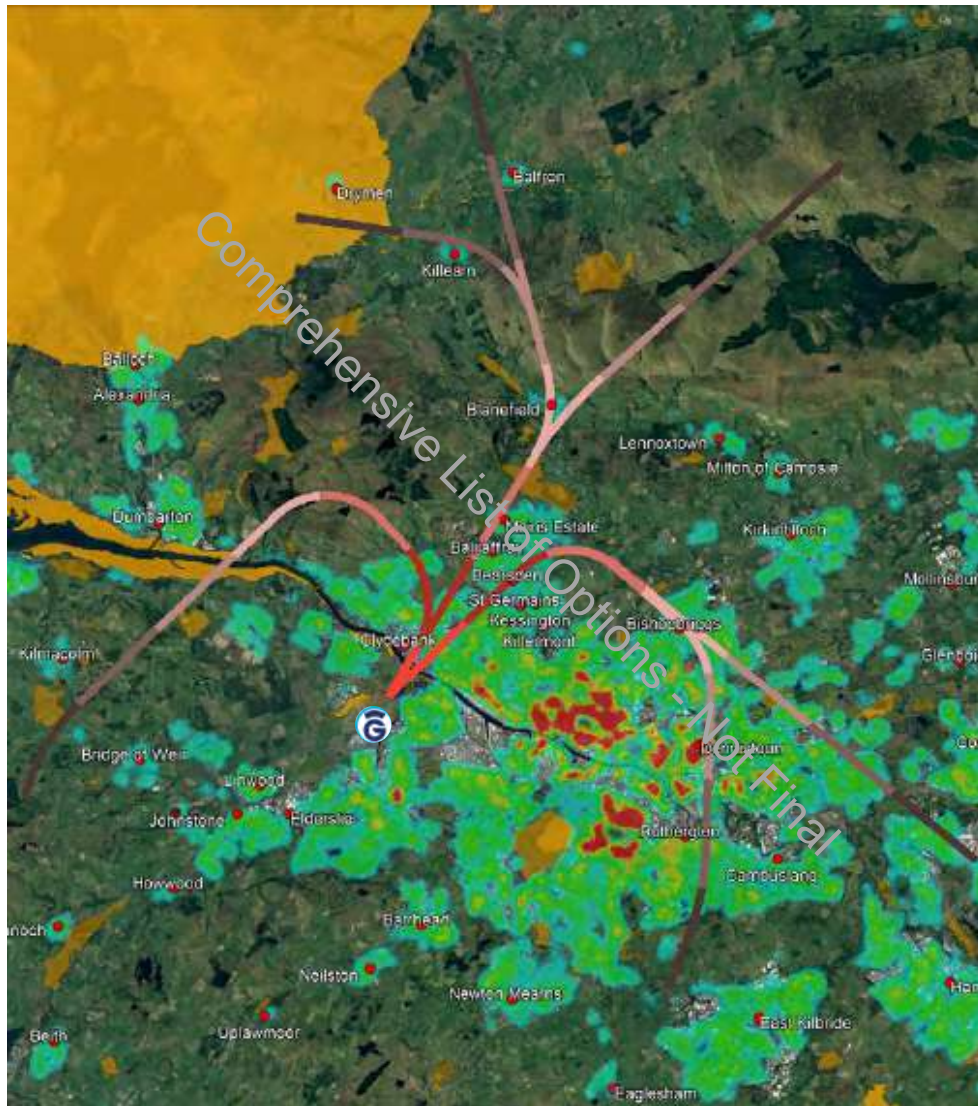
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option B



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option B



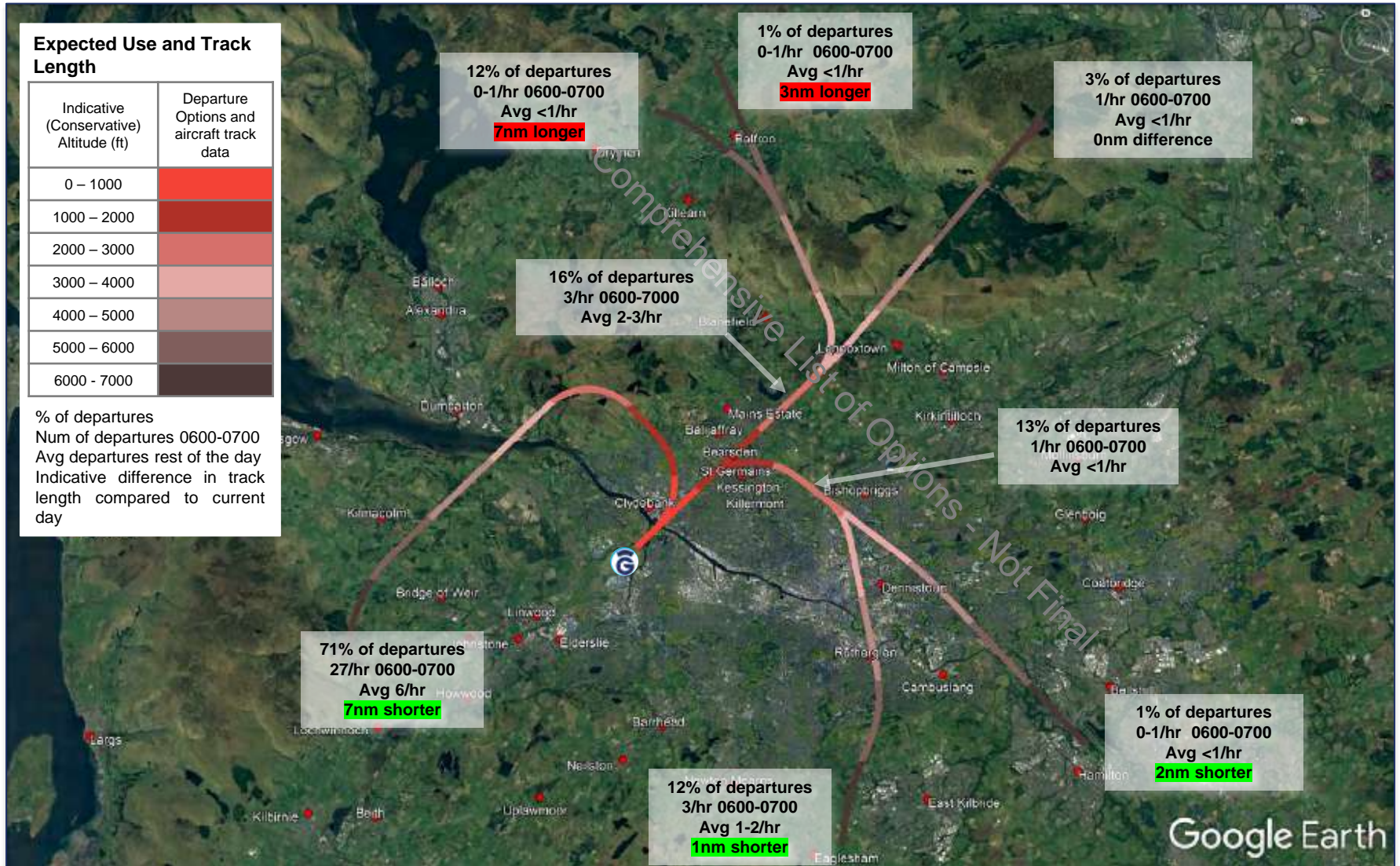
# Runway 05 Departure Option C

Straight ahead departures only (no offsets) with turns at 1nm, 3nm and 6nm from the runway.

NORBO is offset left with turn at 1nm

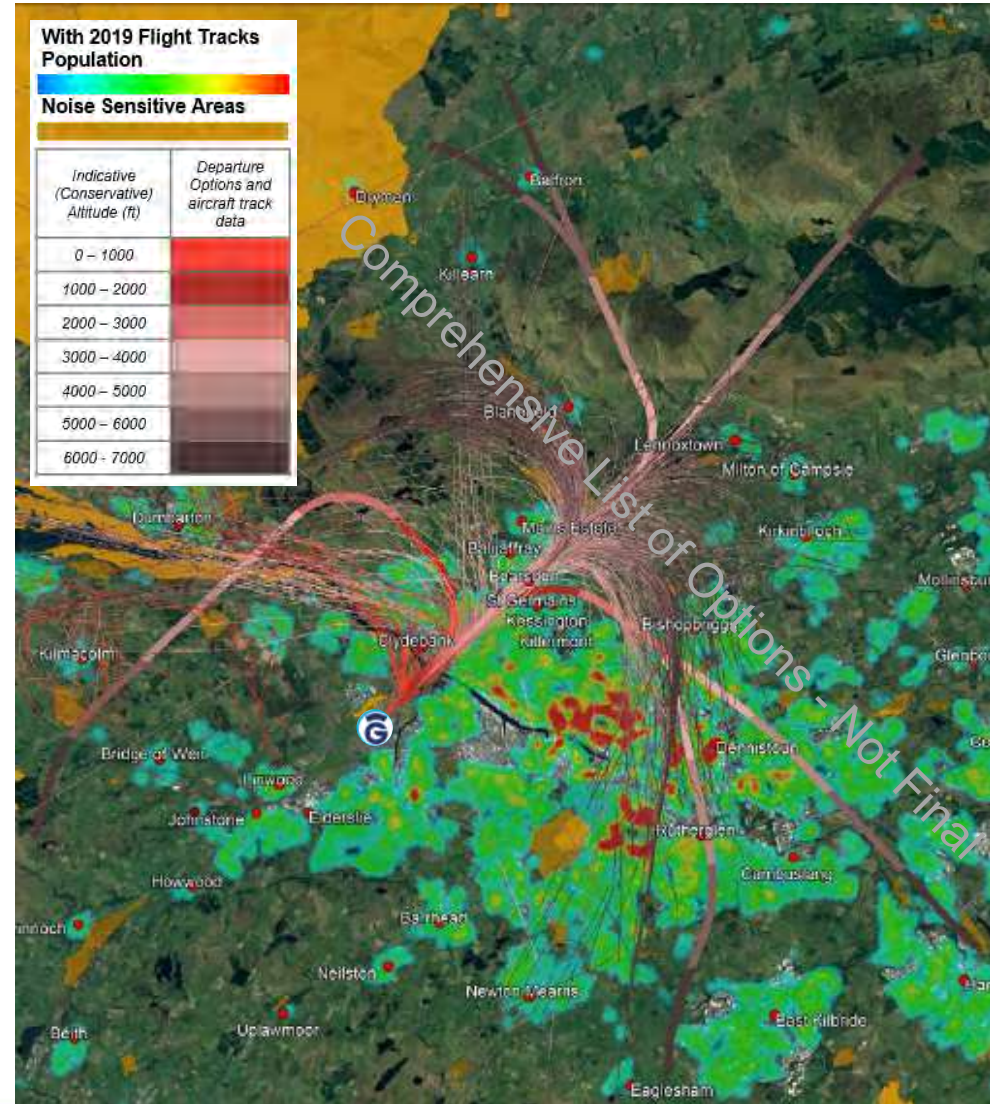
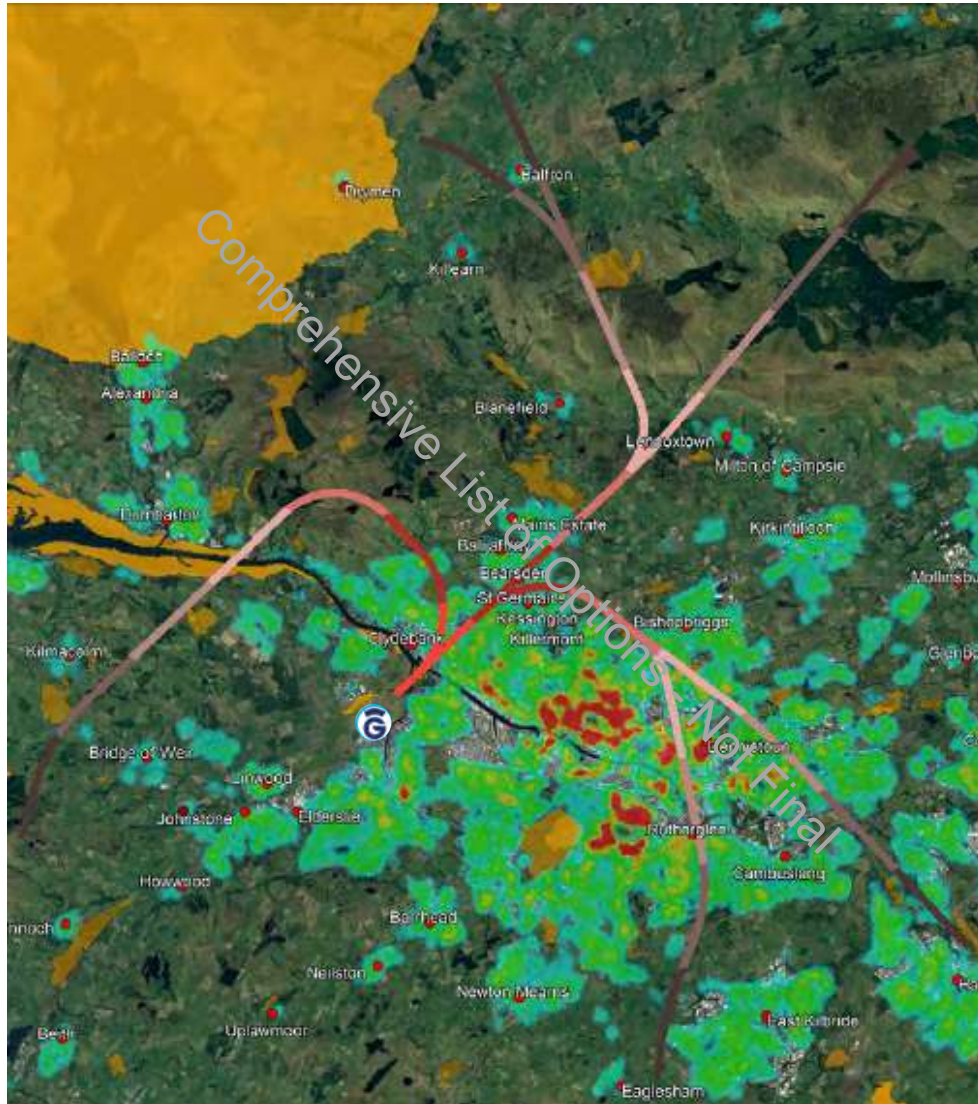
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option C



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option C



# Runway 05 Departure Option D

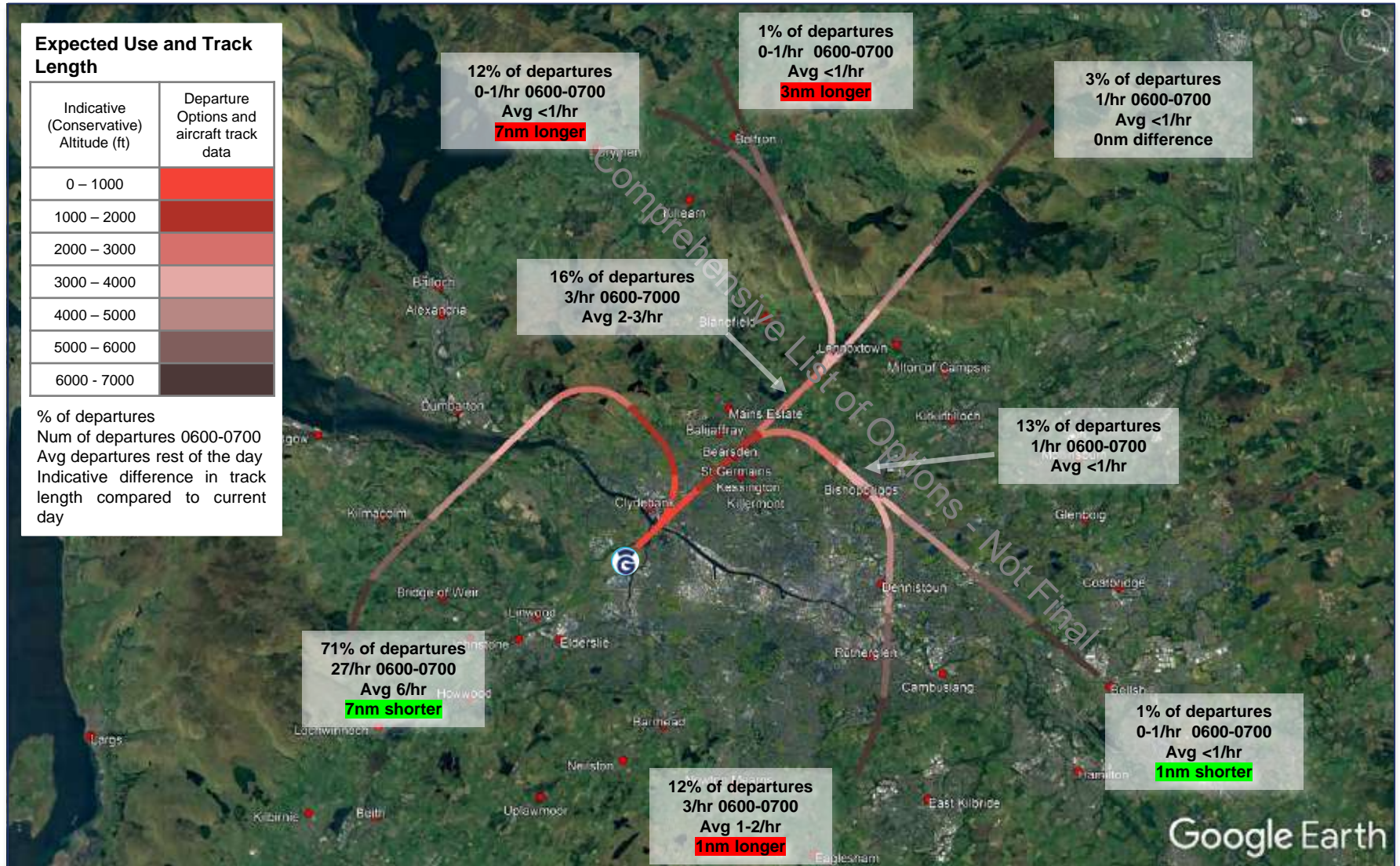
Straight ahead departures only (no offsets) with turns at 1nm, 4nm and 6nm from the runway

NORBO is offset left with turn at 1nm



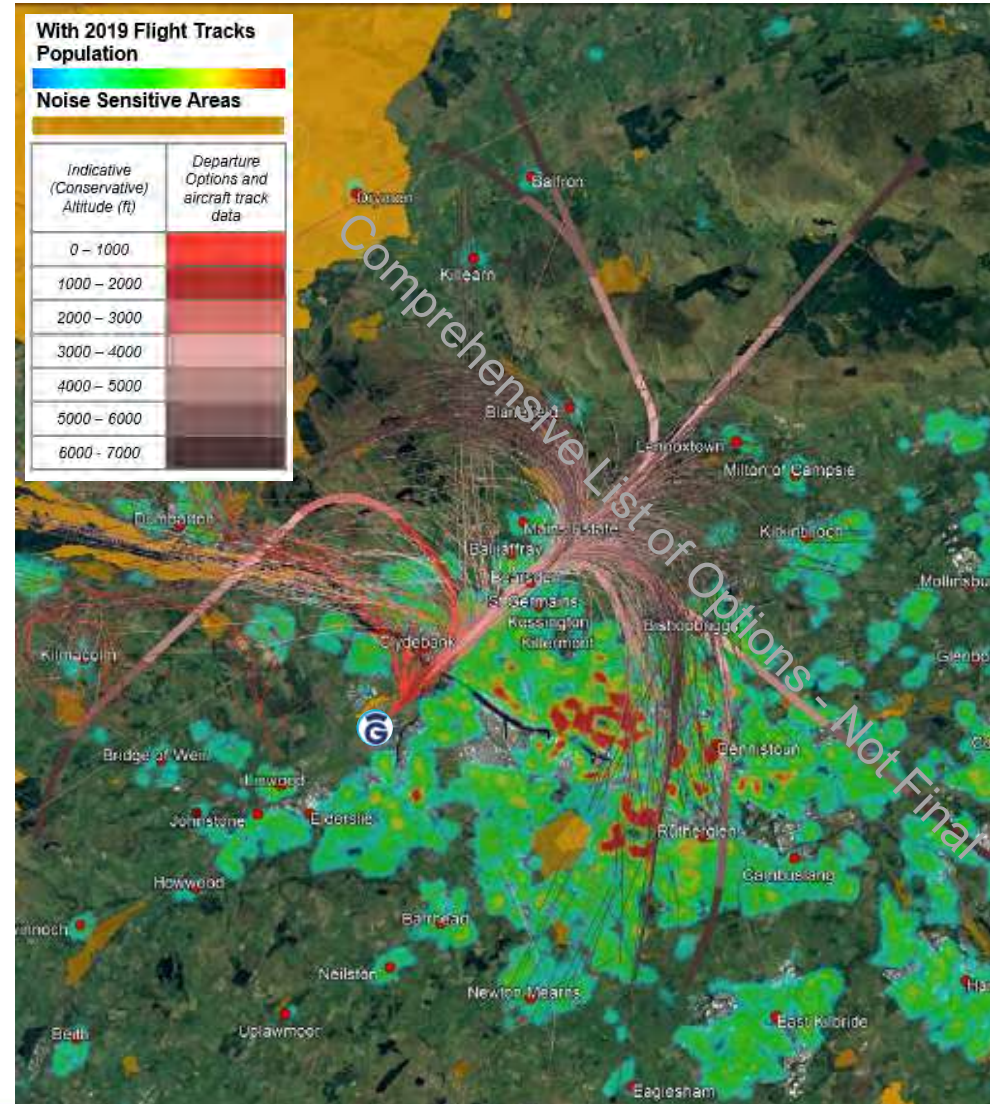
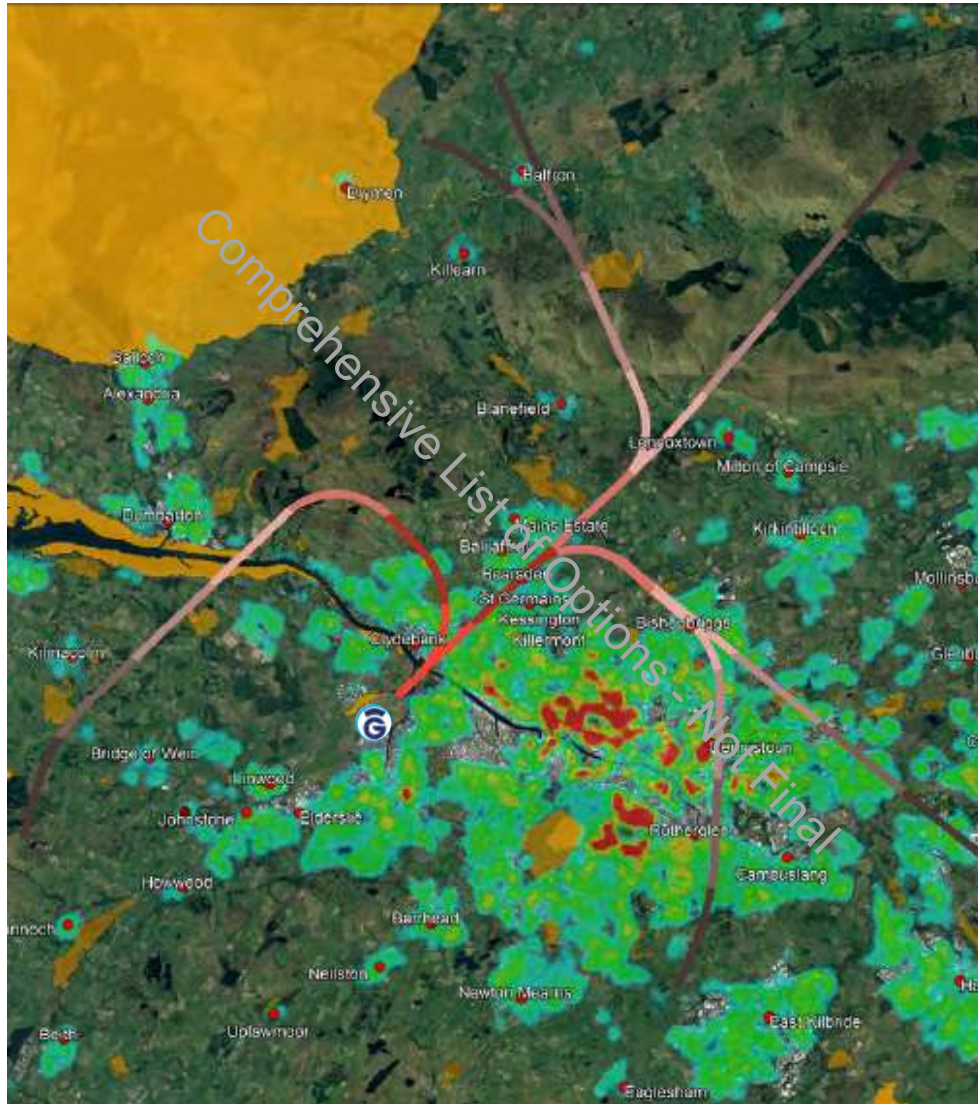
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option D



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option D



# Runway 05 Departure Option E

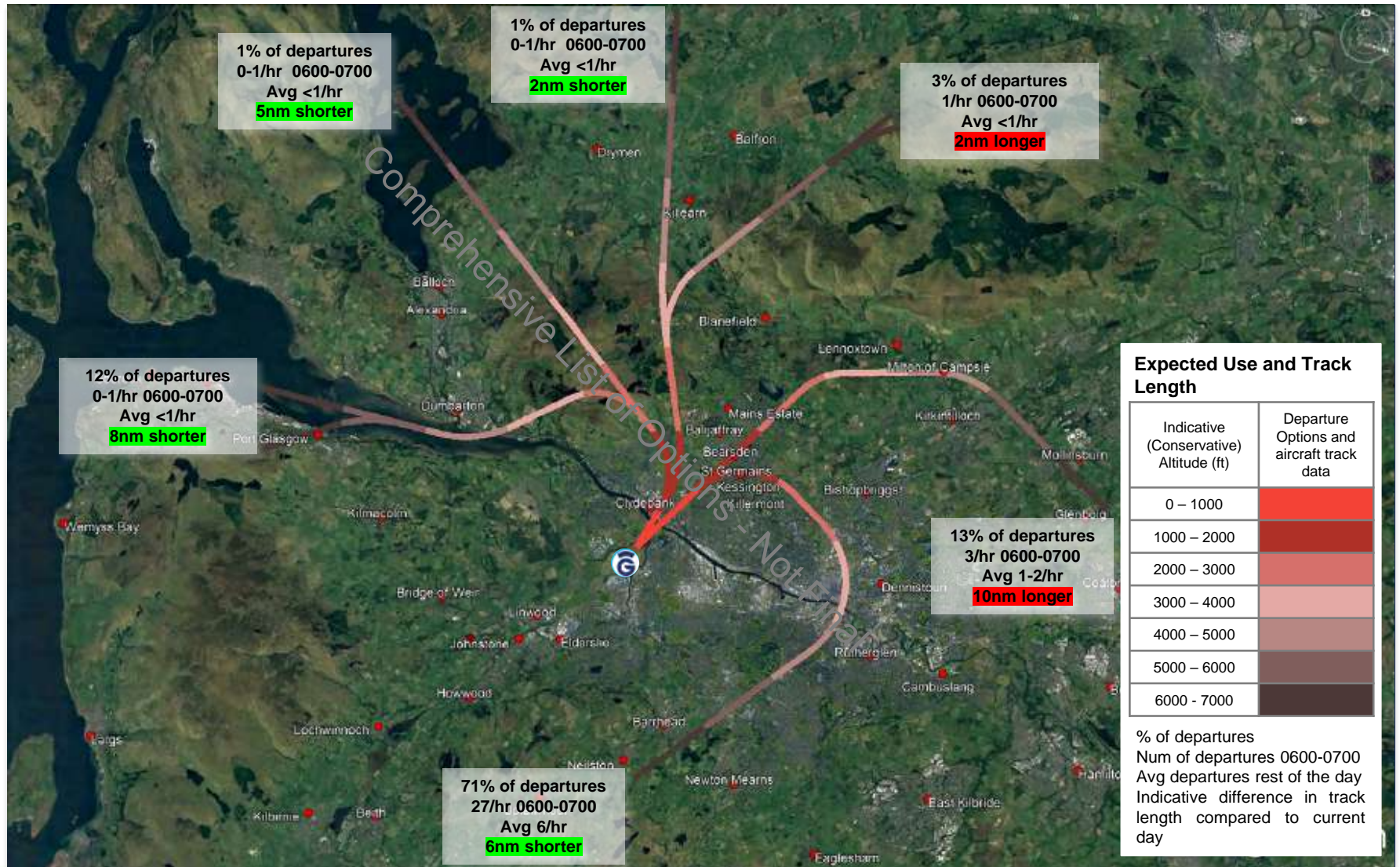
Offset left departures with turns at 1nm from the runway.

Straight ahead departures with turns at 2nm and 6.5nm from the runway.

NORBO is straight ahead to 2nm with a right turn.

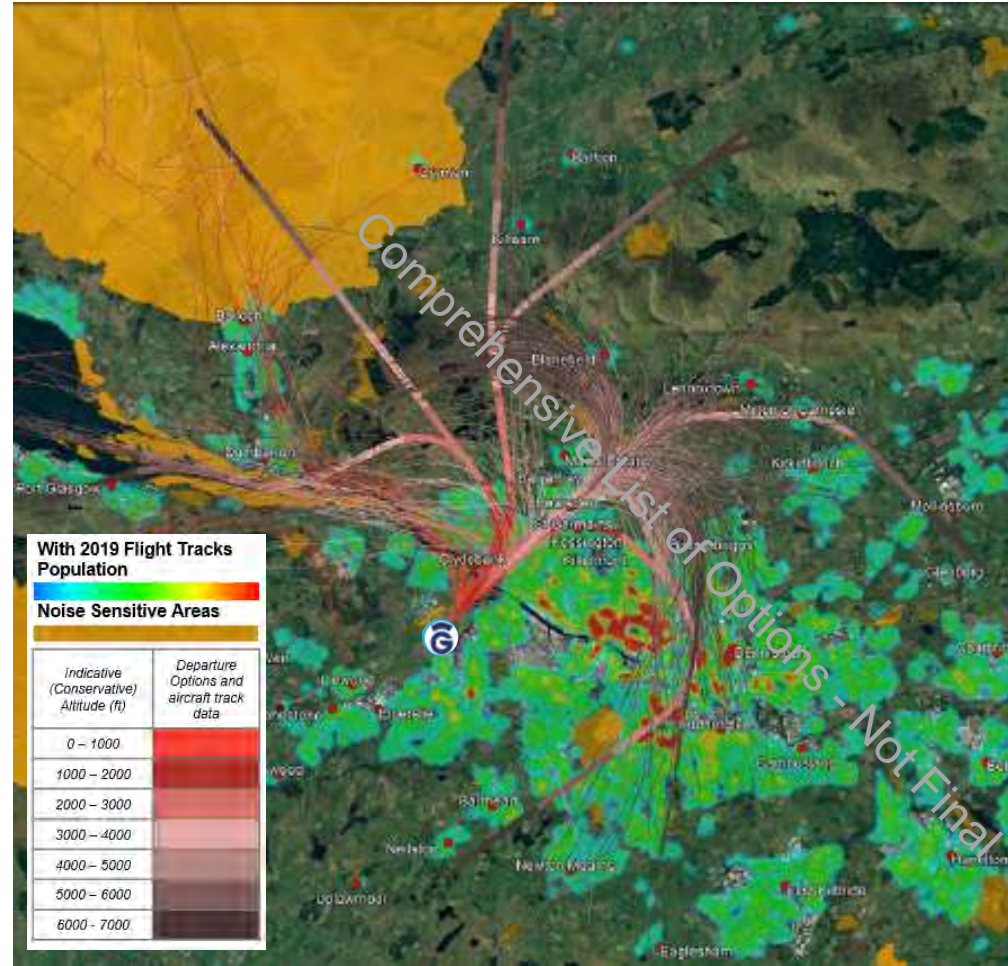
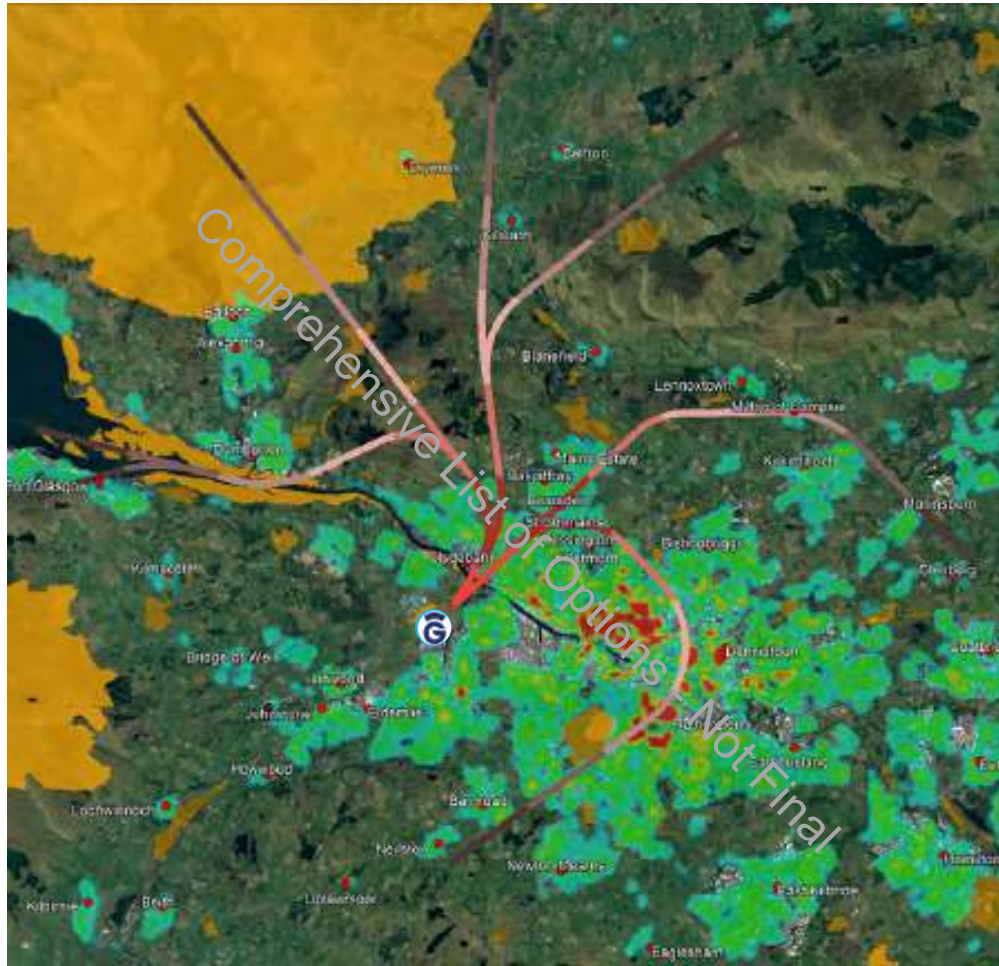
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option E



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option E



# Runway 05 Departure Option F (Split Left and Right)

This option shares NORBO traffic between a left and right turn with only one of those routes in use at a time. The rest of the routes remain in the same configuration.

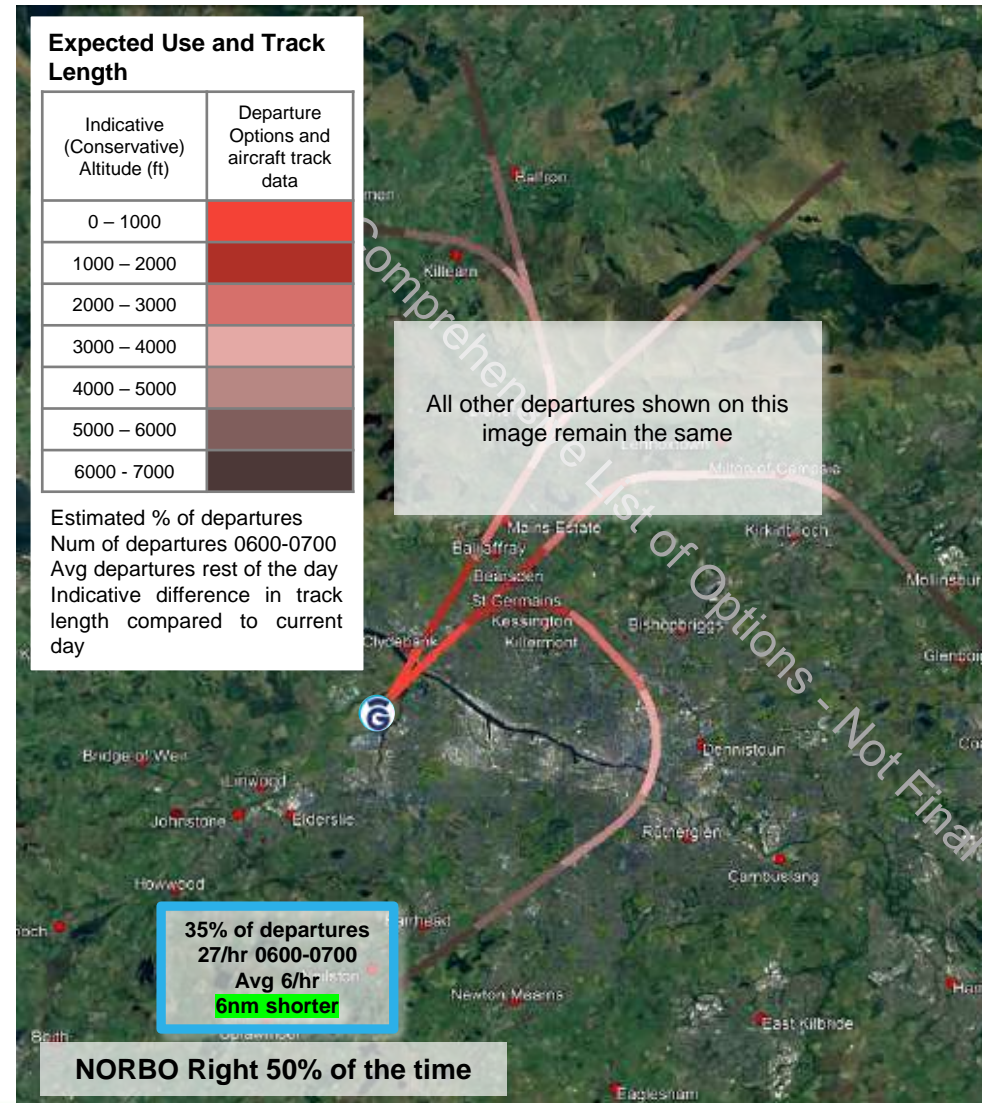
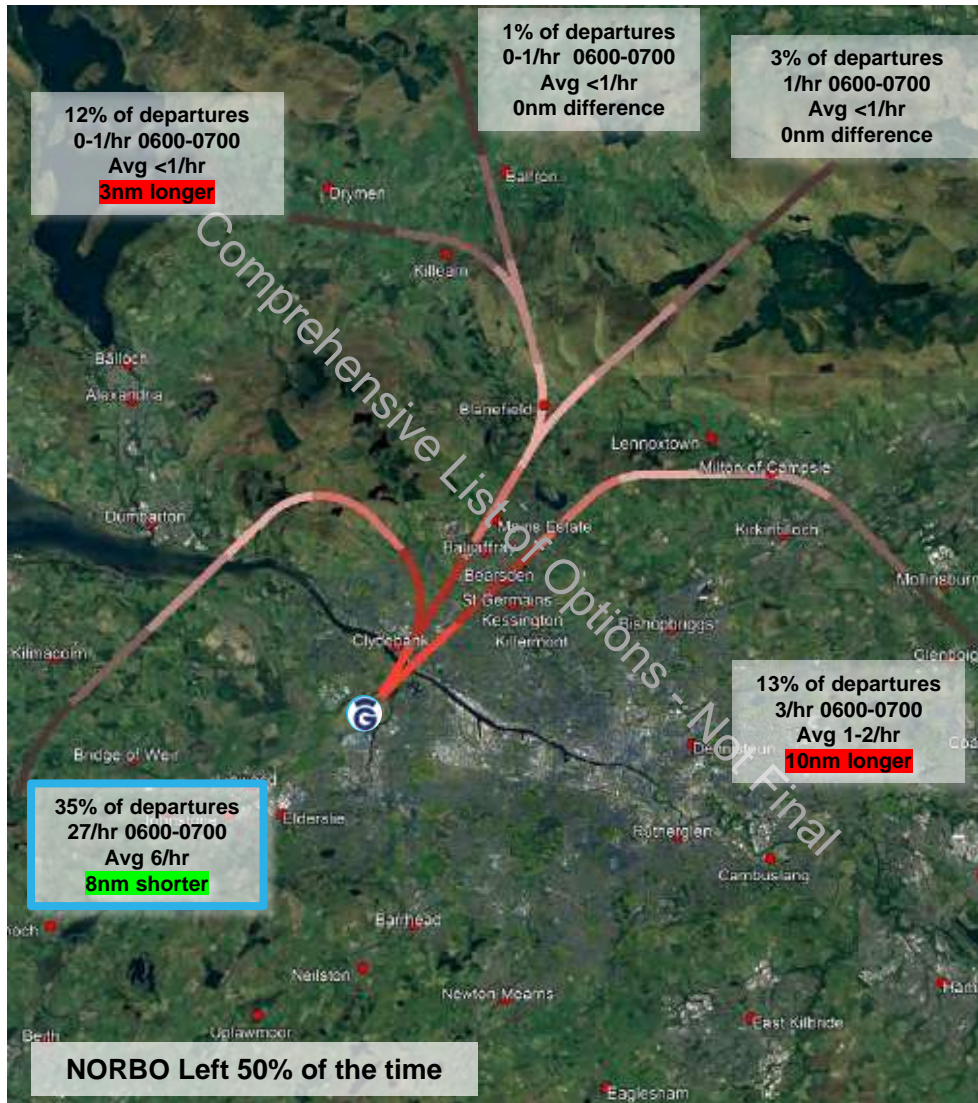
When turning left, the NORBO would offset left then turn further left at 1nm

When turning right, the NORBO would go straight ahead to 2nm then a right turn

Assumes the NORBO route switches at a point each day/night to enable a 50/50 route utilisation.

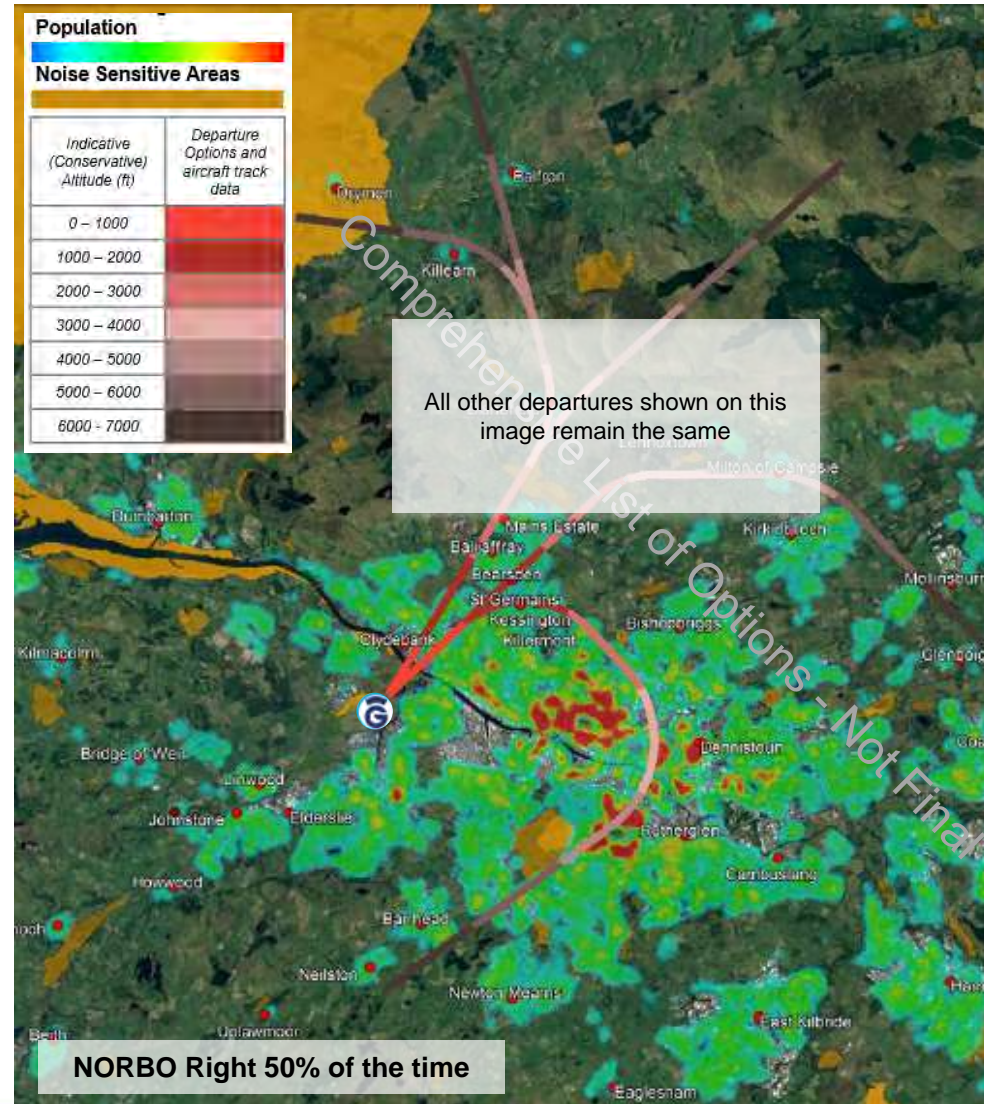
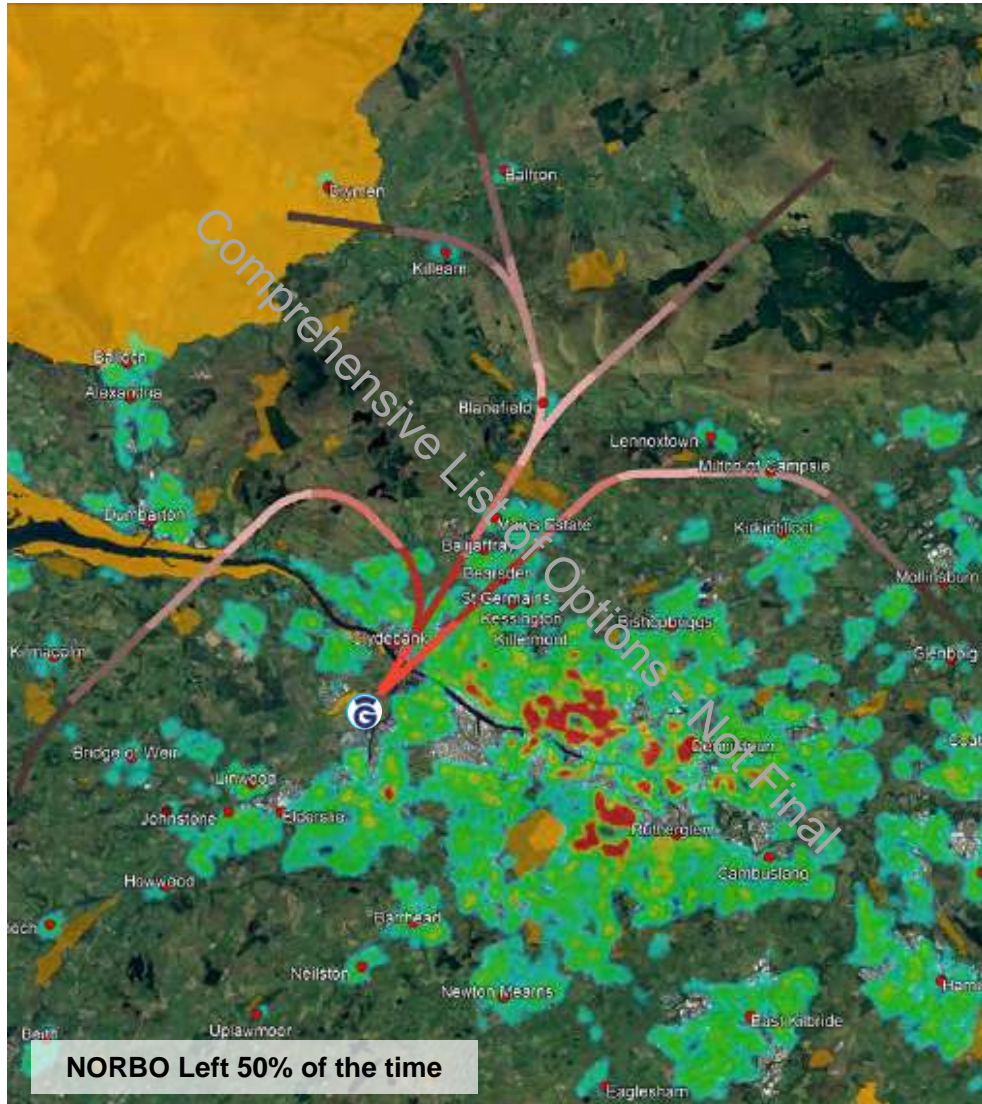
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option F (Departures to the south split to go left or right)



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option F

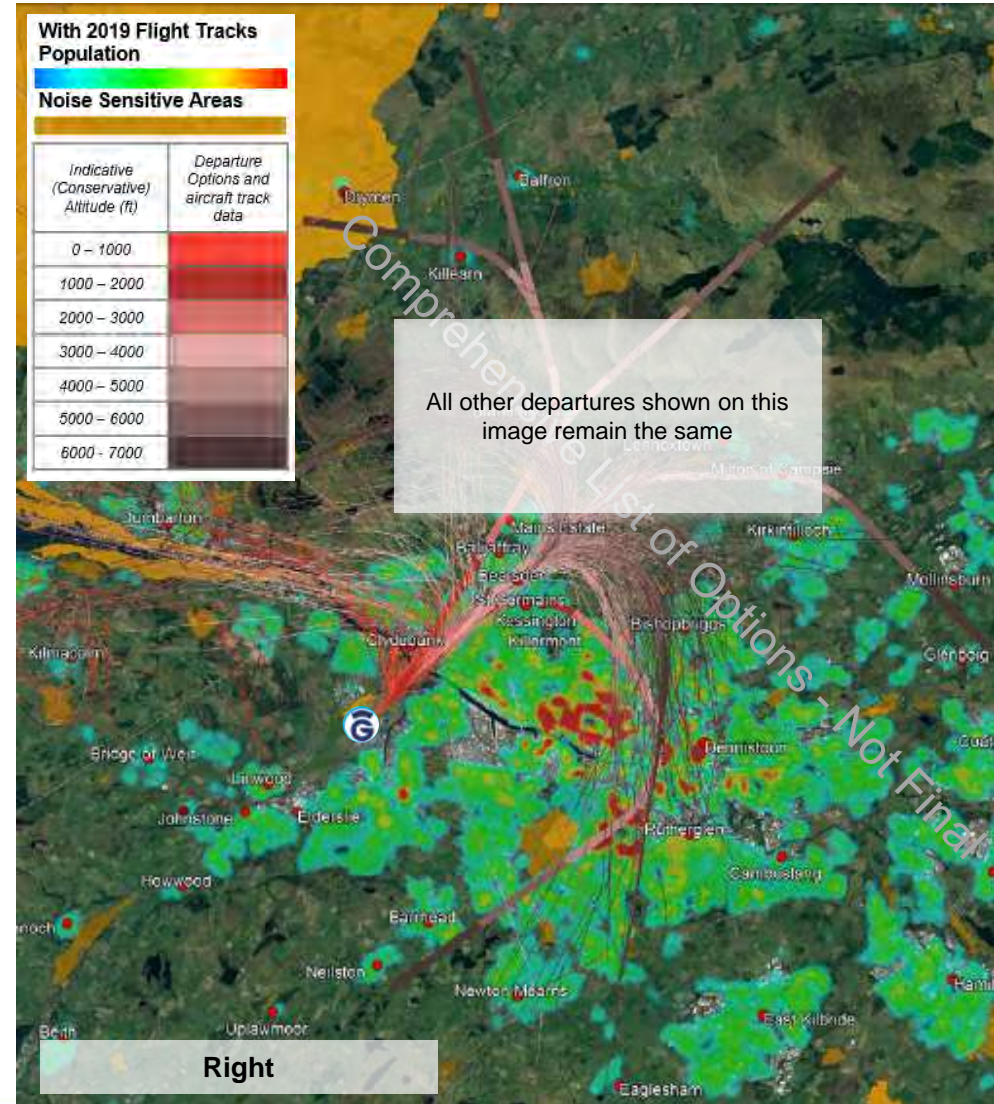
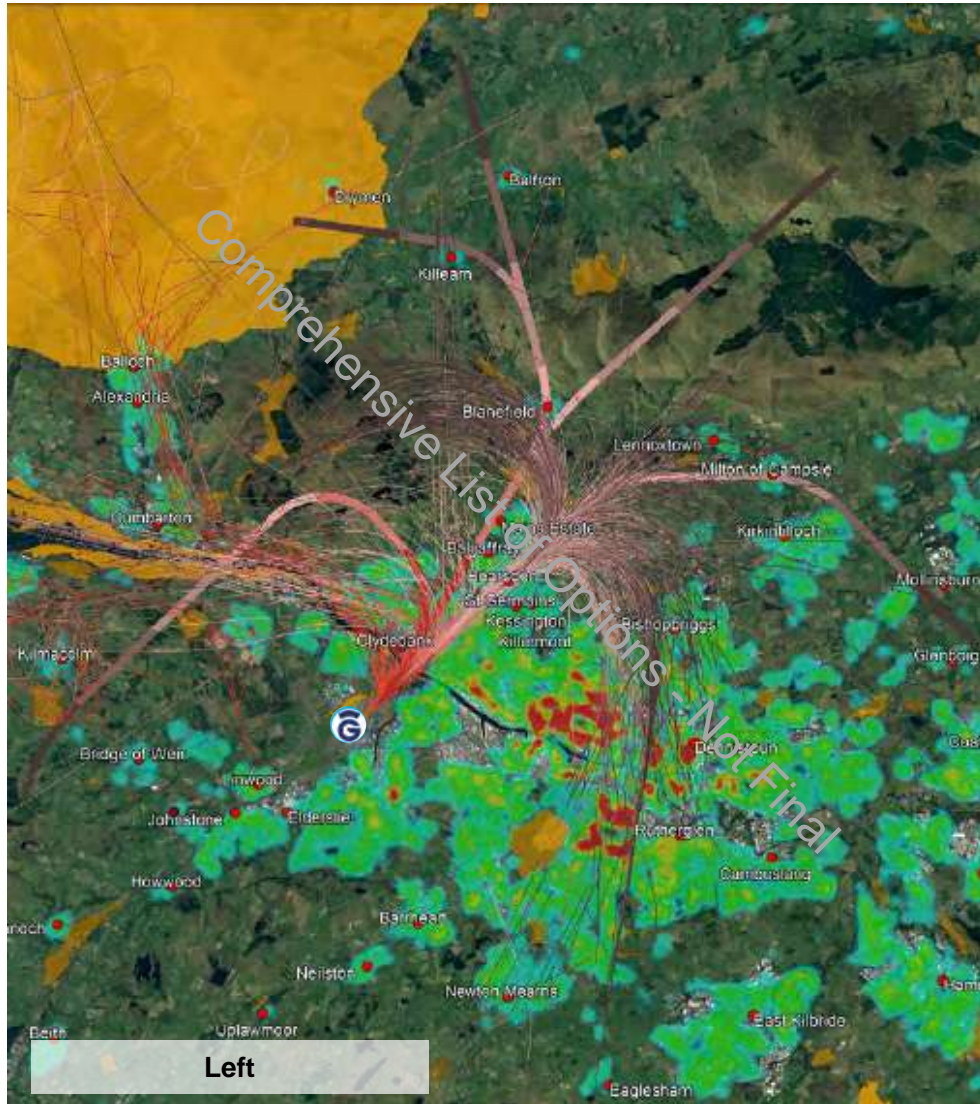


All other departures shown on this image remain the same



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES

## Runway 05 Departure Option F:



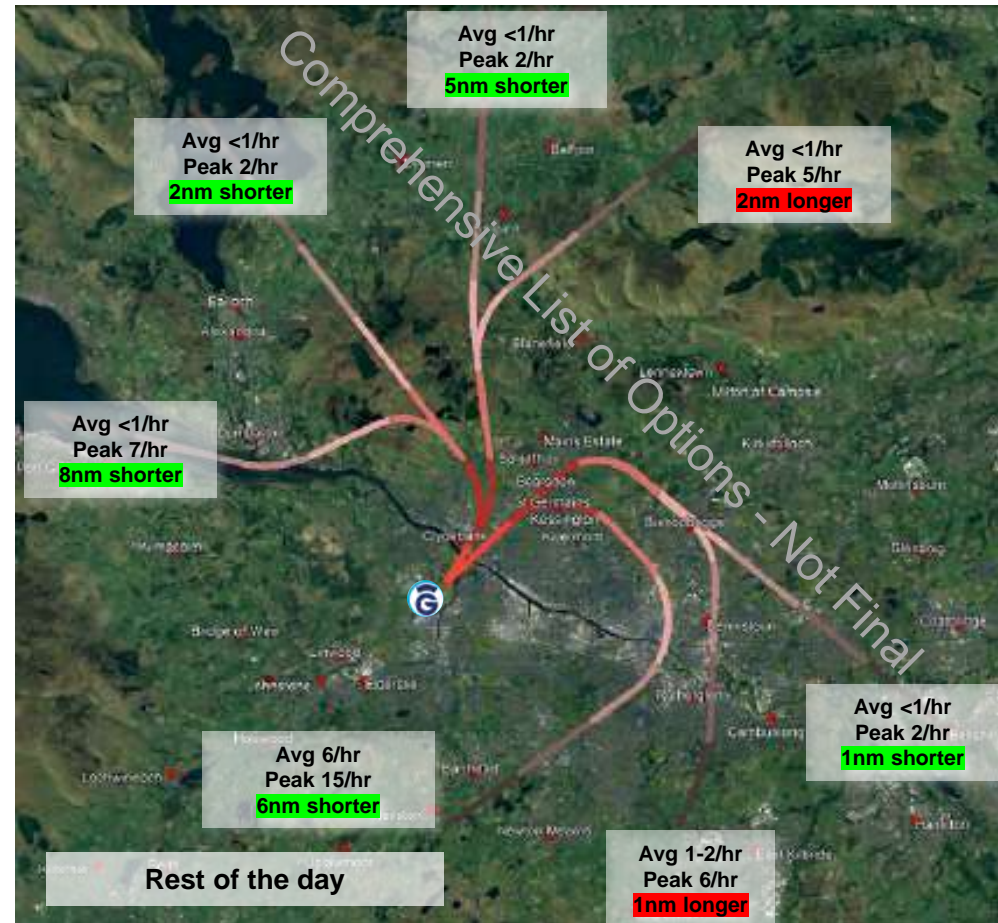
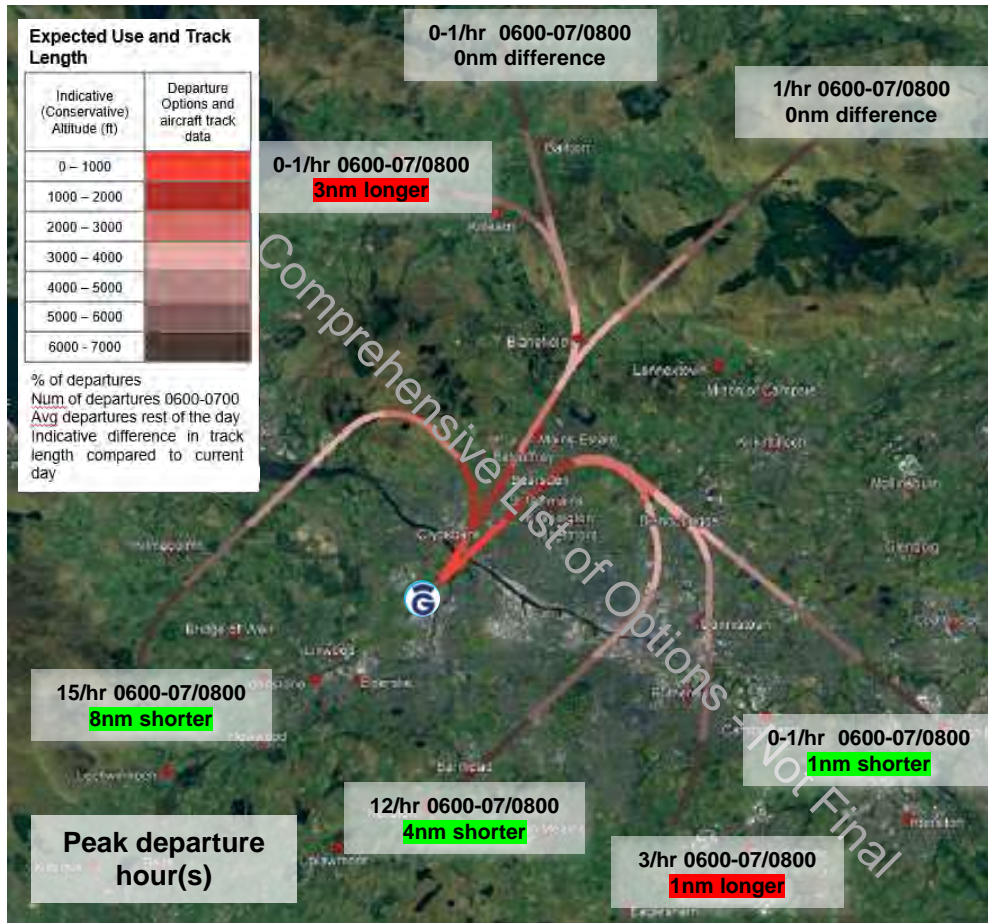
# Runway 05 Departure Option G (Period 1 and Period 2)

This option has two, quite different route configurations and assumes one configuration would be used for the peak departure period each morning. The configuration would then switch for the rest of the day.

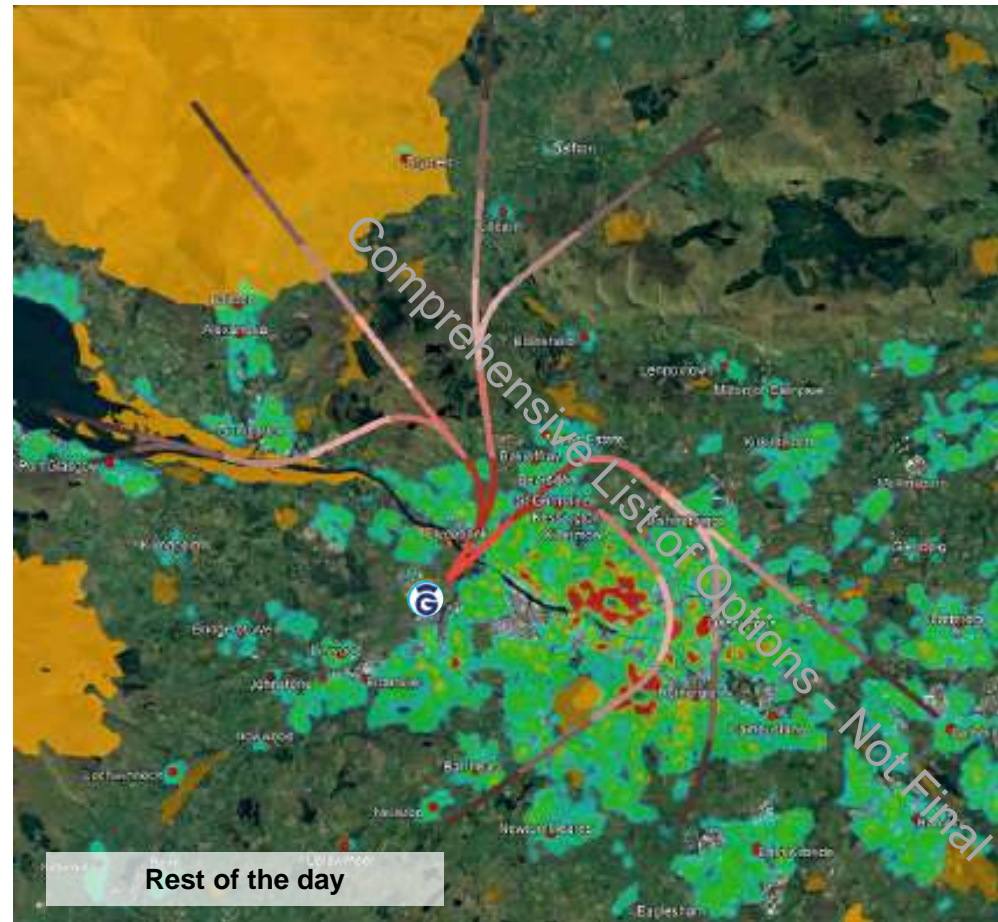
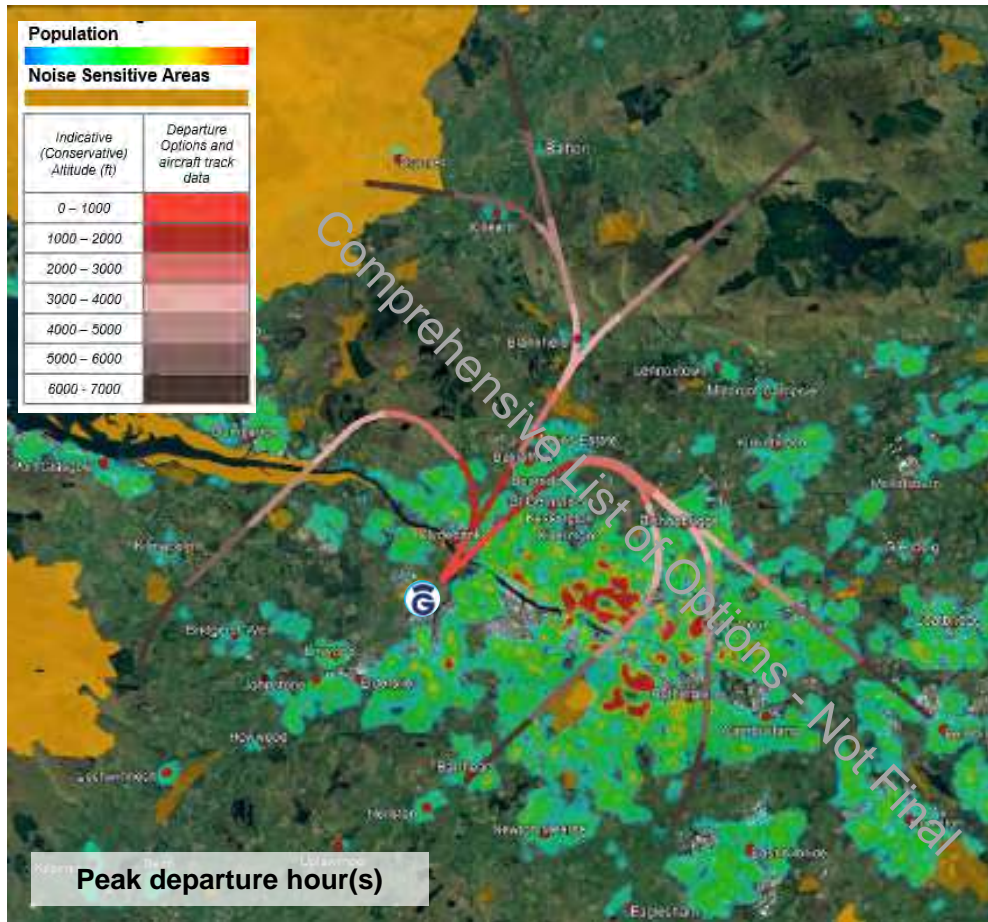
In the morning, the NORBO traffic is shared between a left turn departure and a right turn departure with both routes available at the same time.

For the rest of the day, all the NORBO traffic would then use a single flight path turning right, but that path could be different to the one used for the morning.

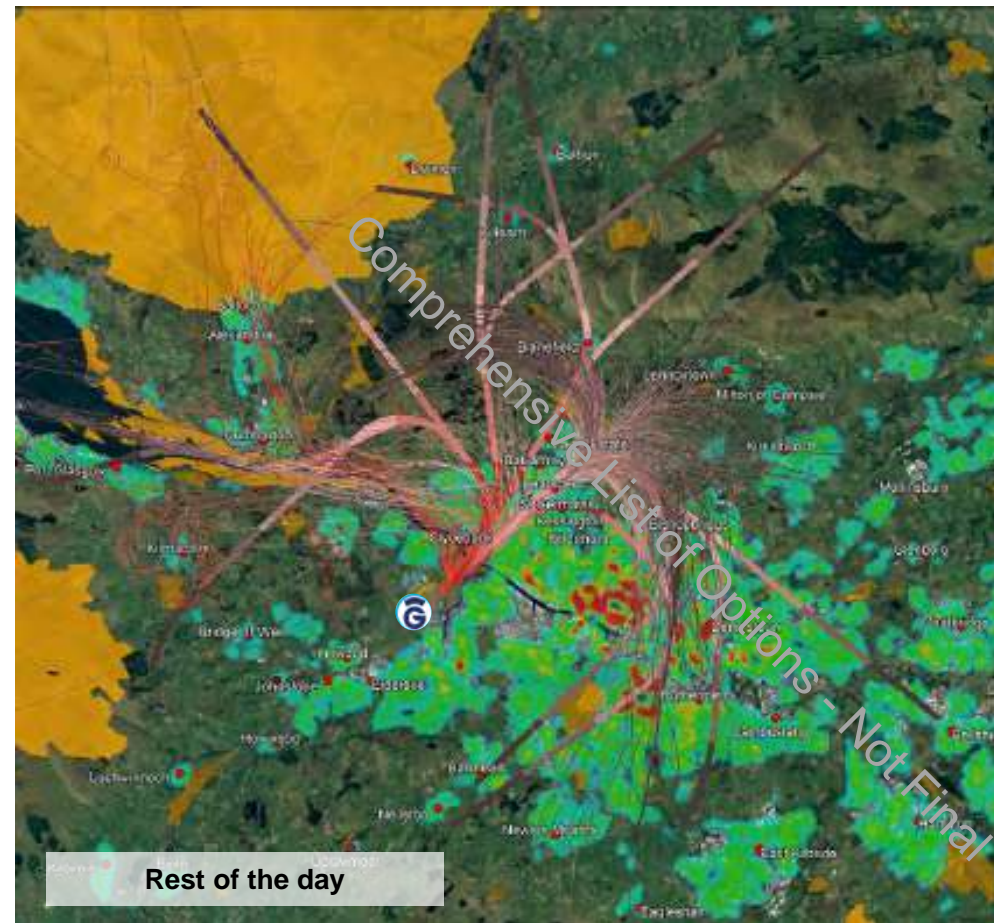
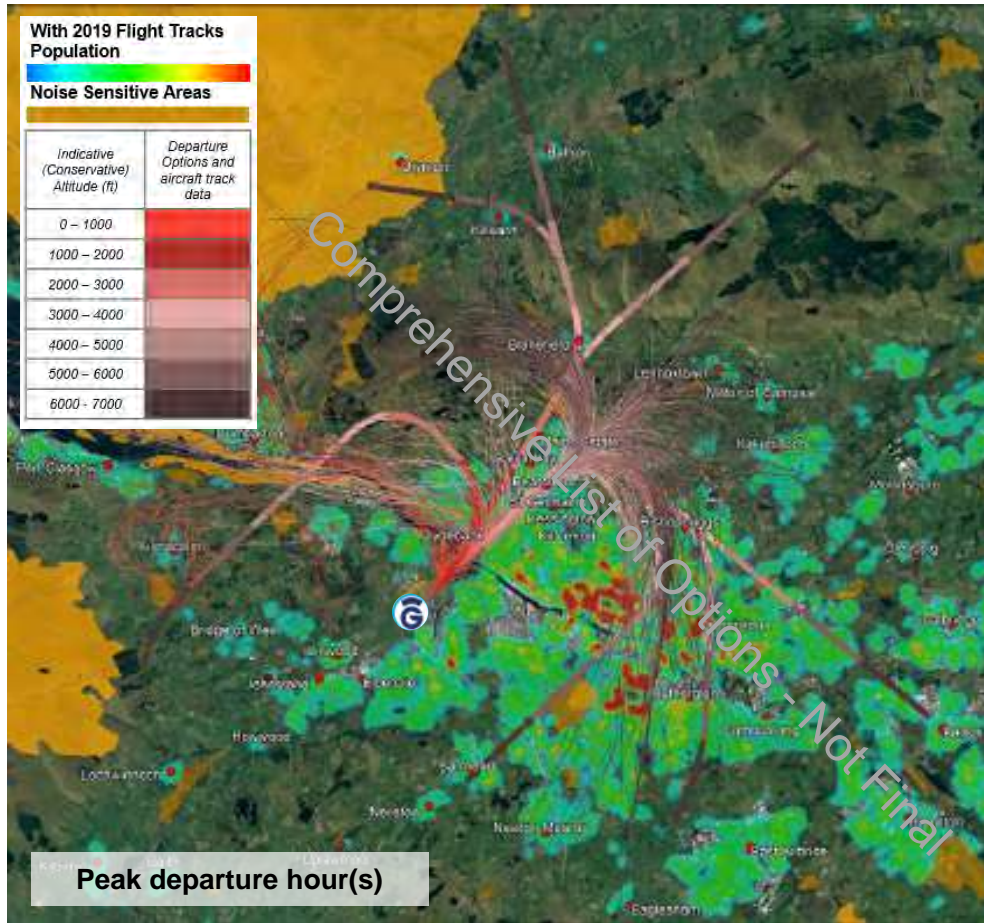
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 05 DEPARTURES



# Runway 23 Departure Option A

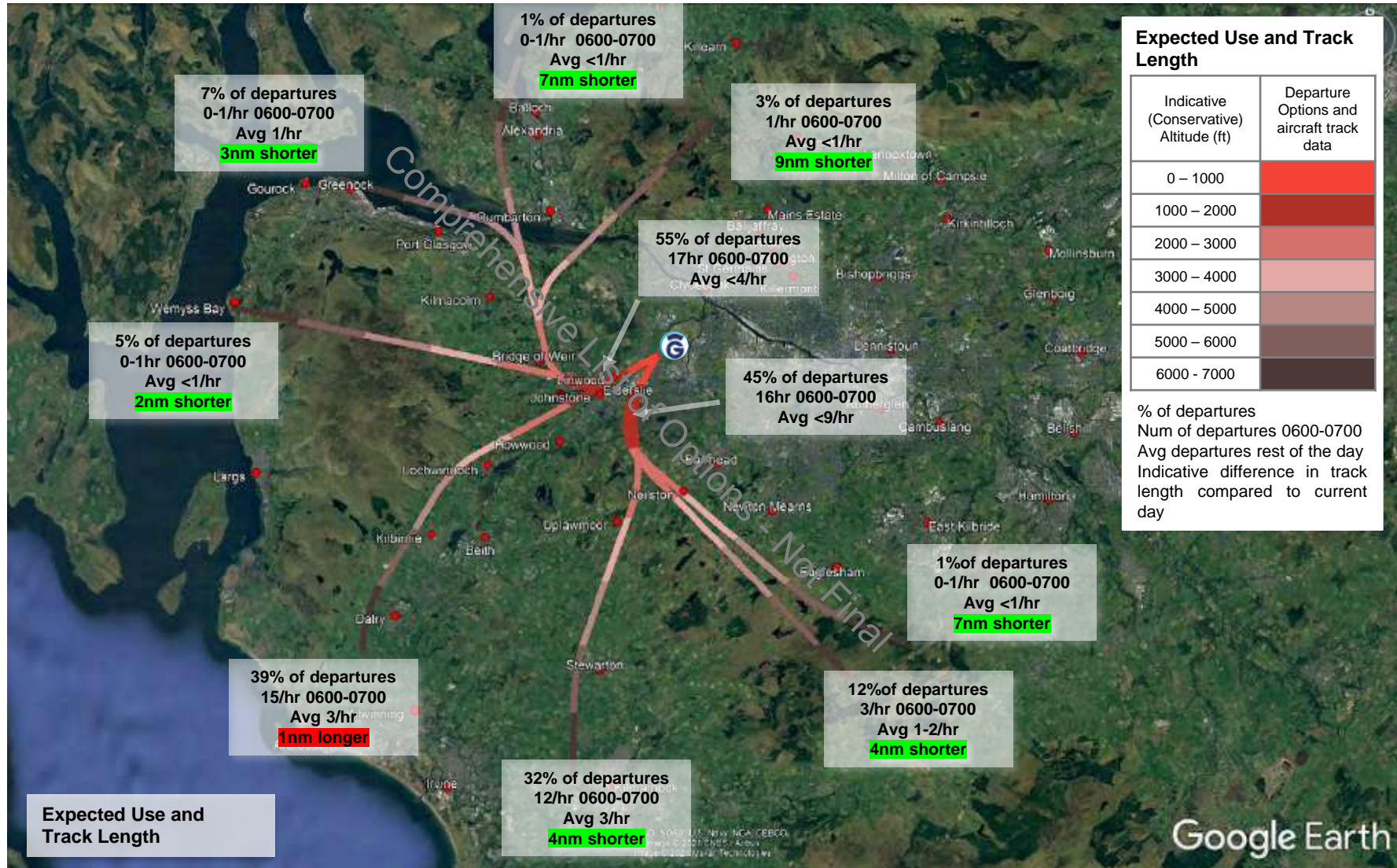
Offset right departures with turns at 2nm and 7nm from the runway.

Offset left departures with turns at 1nm from the runway.

NORBO traffic is shared between a left turn departure route and the departure route that offsets right and then turns left at 7nm with both routes available at the same time.

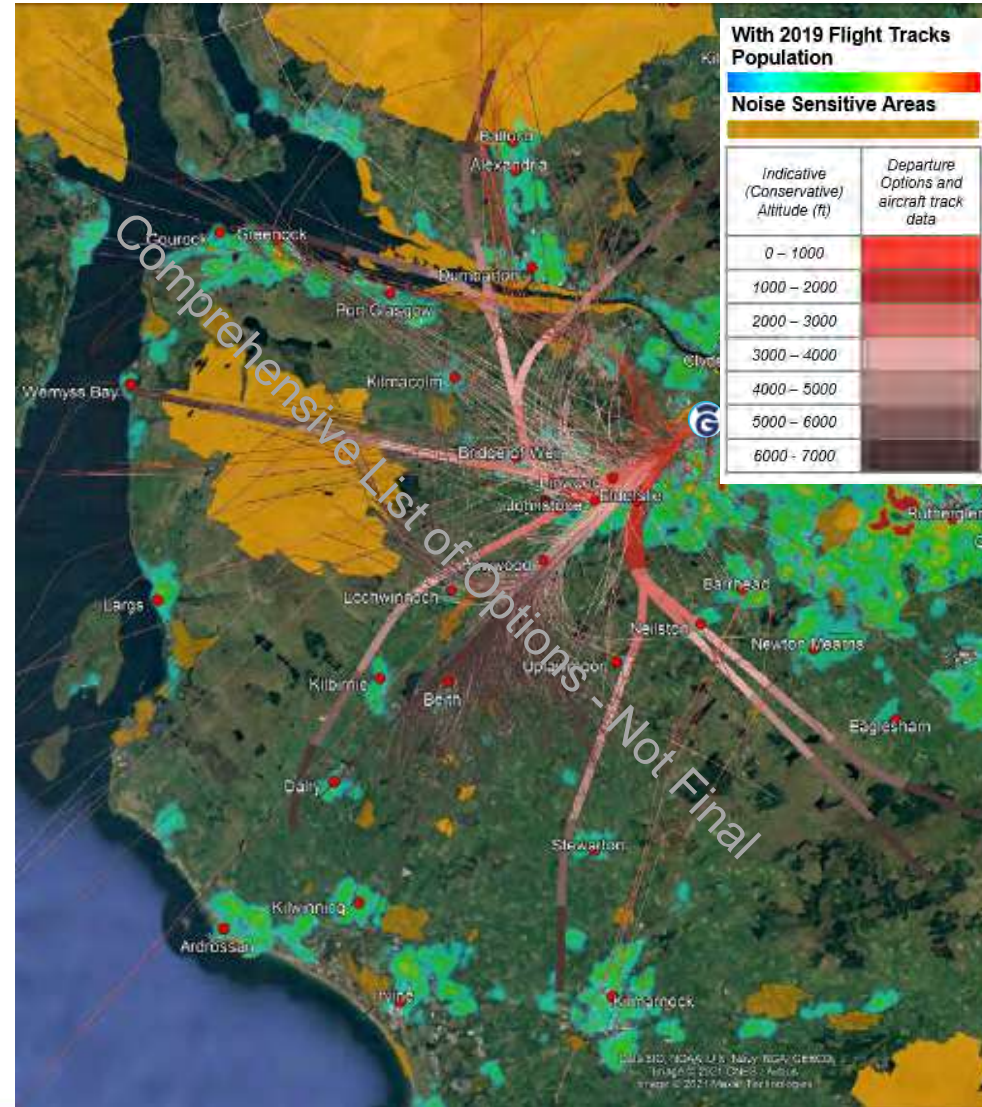
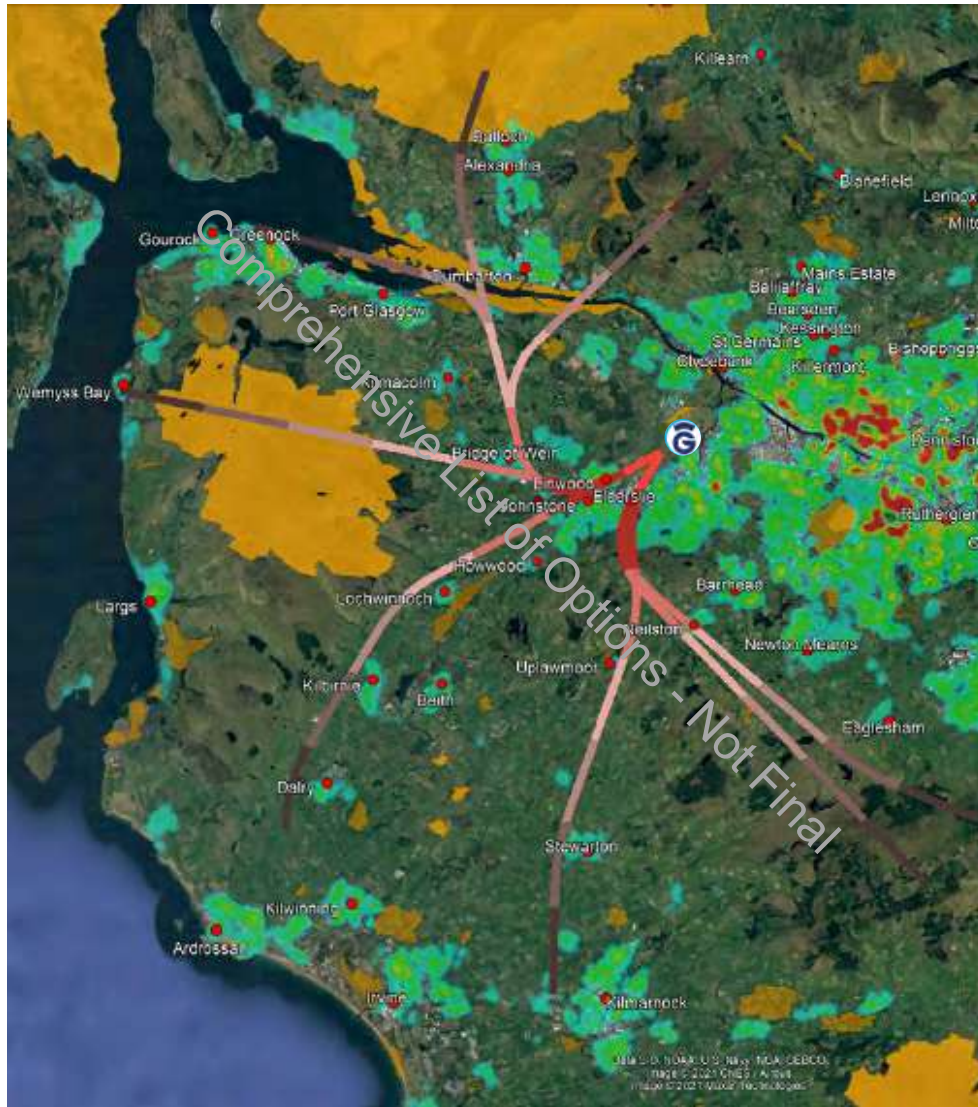
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option A



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option A





# Runway 23 Departure Option B

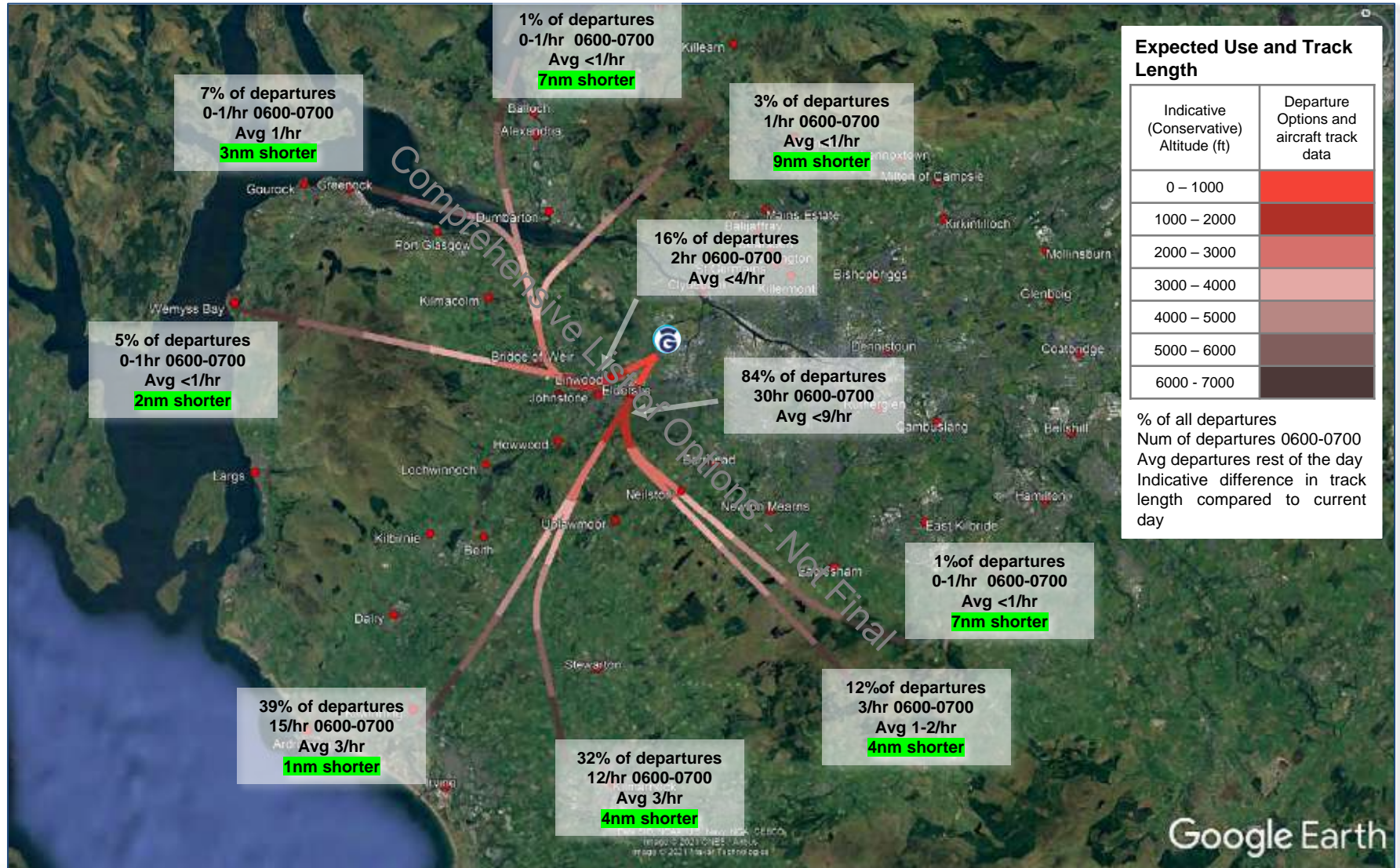
Offset right departures with turns at 2nm from the runway.

Offset left departures with turns at 1nm and 5nm from the runway.

NORBO traffic is shared between two departure routes however they are the same route until 5nm from the runway.

# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option B



1% of departures  
0-1/hr 0600-0700  
Avg <1/hr  
**7nm shorter**

7% of departures  
0-1/hr 0600-0700  
Avg 1/hr  
**3nm shorter**

3% of departures  
1/hr 0600-0700  
Avg <1/hr  
**9nm shorter**

16% of departures  
2hr 0600-0700  
Avg <4/hr

5% of departures  
0-1/hr 0600-0700  
Avg <1/hr  
**2nm shorter**

84% of departures  
30hr 0600-0700  
Avg <9/hr

1% of departures  
0-1/hr 0600-0700  
Avg <1/hr  
**7nm shorter**

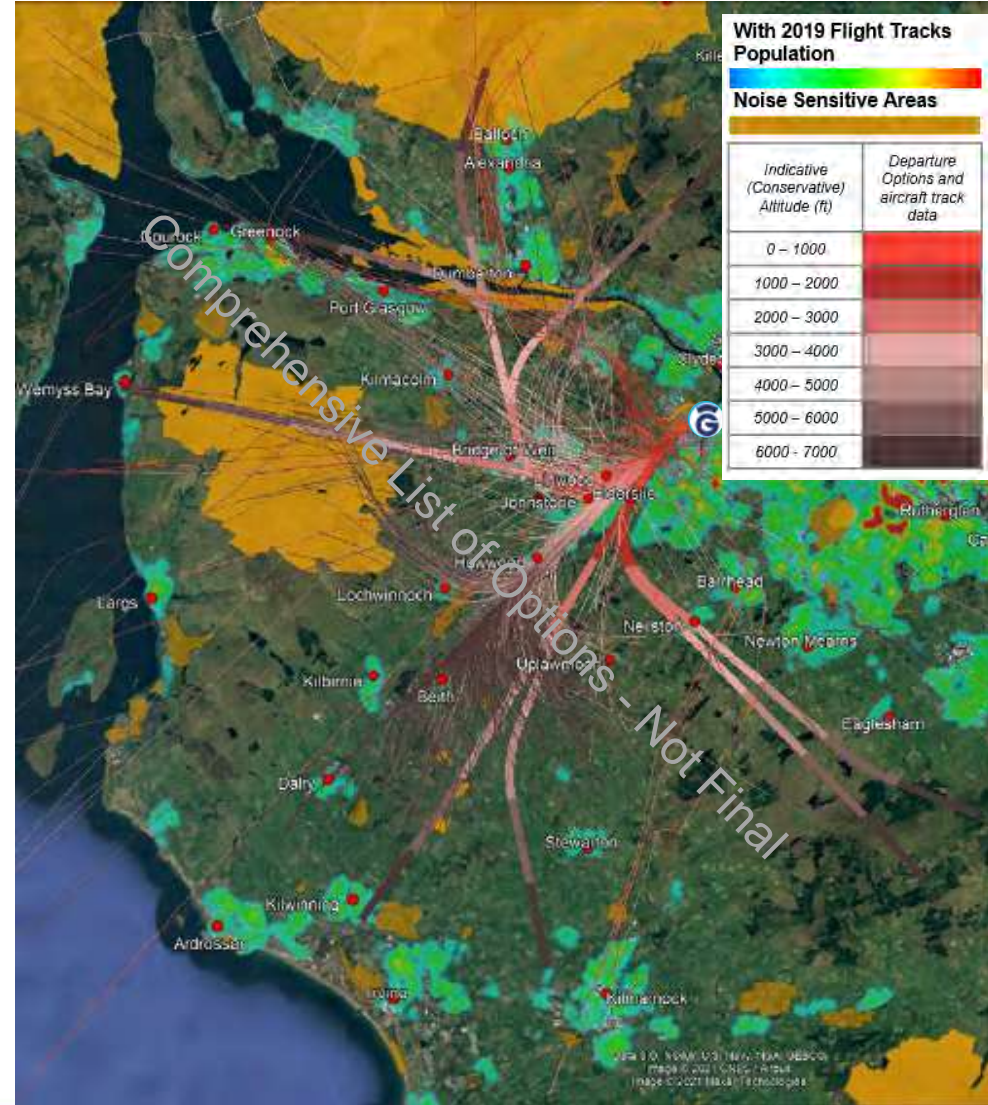
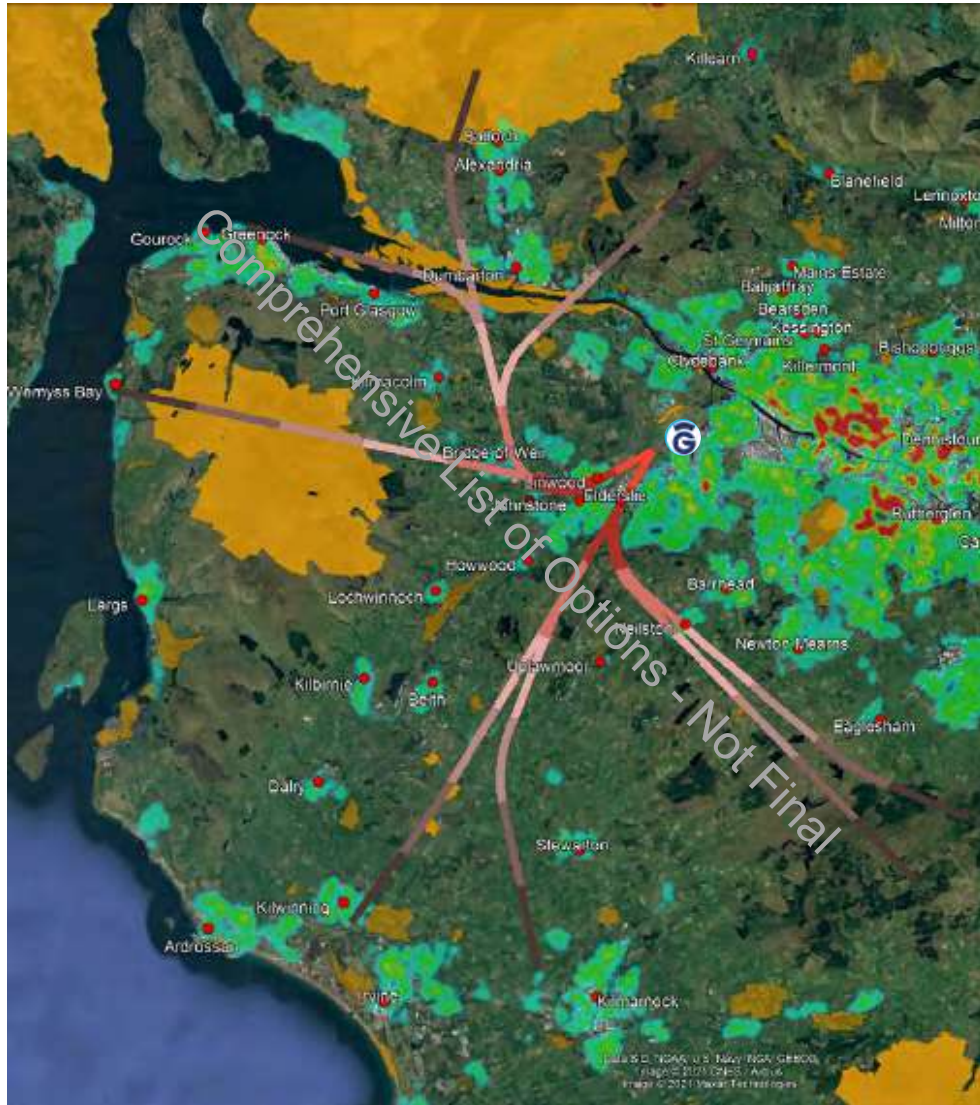
39% of departures  
15/hr 0600-0700  
Avg 3/hr  
**1nm shorter**

32% of departures  
12/hr 0600-0700  
Avg 3/hr  
**4nm shorter**

12% of departures  
3/hr 0600-0700  
Avg 1-2/hr  
**4nm shorter**

# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option B



# Runway 23 Departure Option C

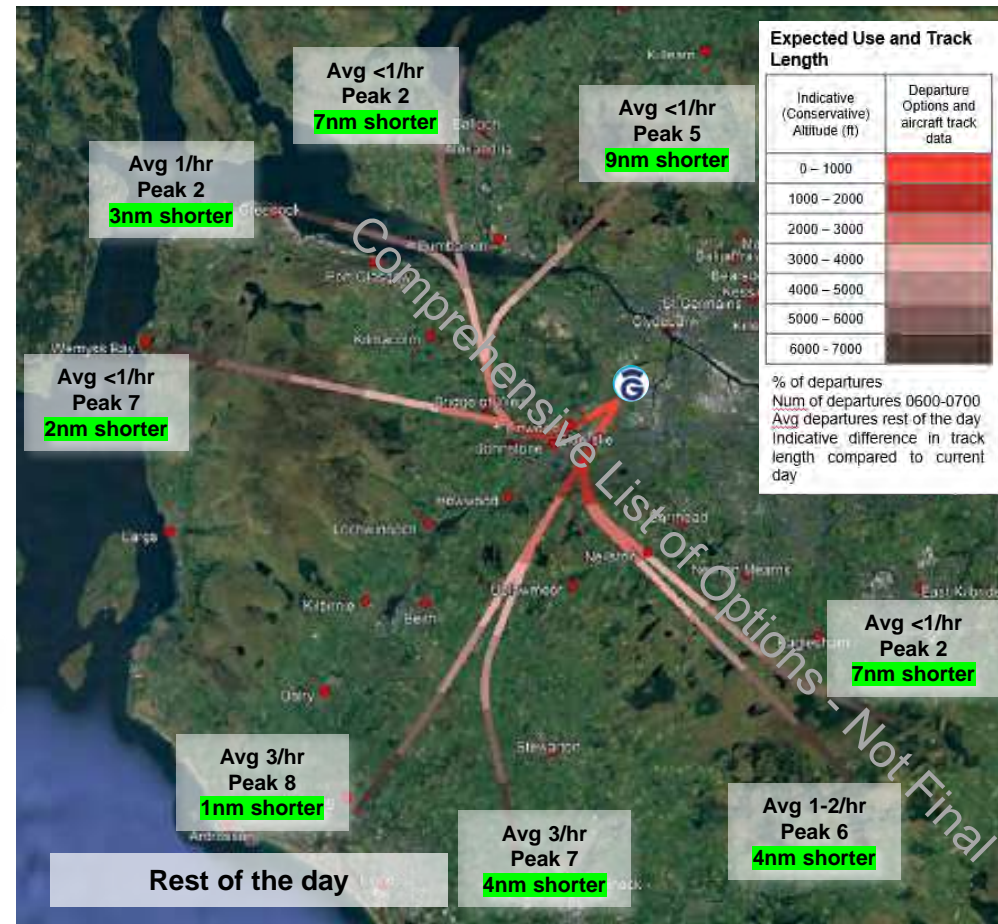
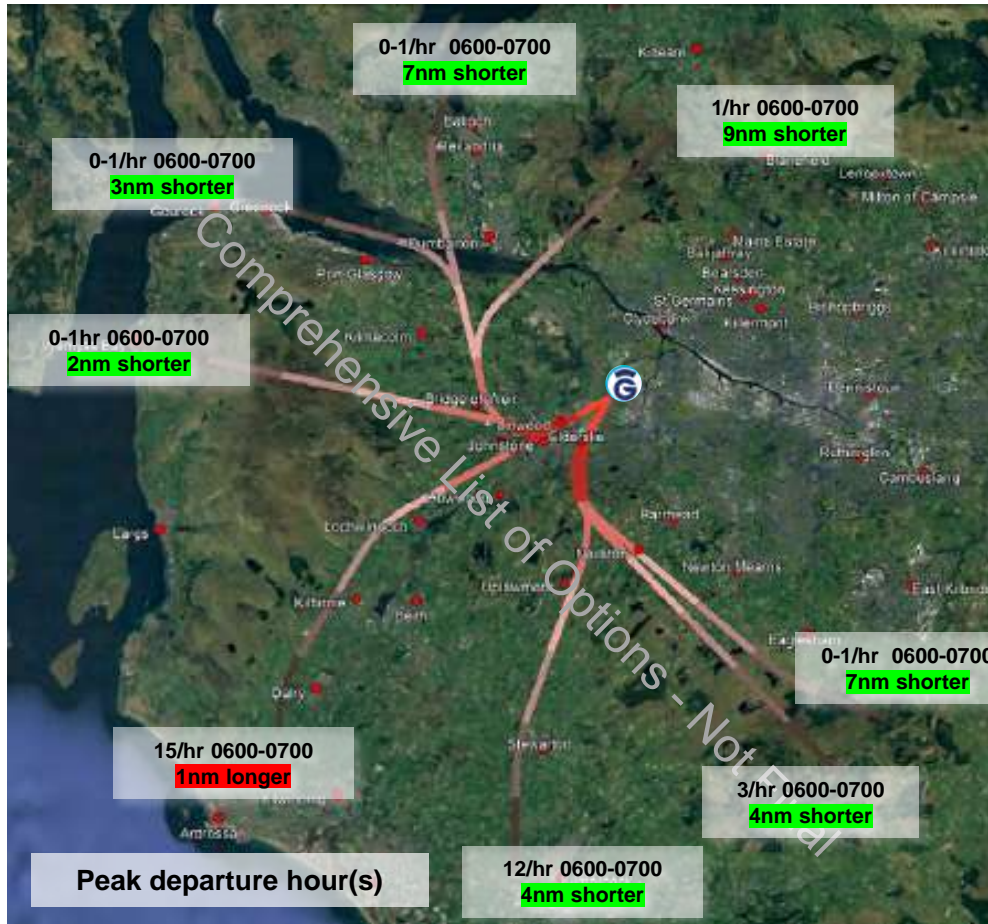
This option has two, slightly different route configurations and assumes one configuration would be used for the peak departure period each morning. The configuration would then switch for the rest of the day.

In the morning, the NORBO traffic is shared between an offset left turn departure and an offset right turn departure with both routes available at the same time.

For the rest of the day, all the NORBO traffic would then use different flight path which offsets to the left, with the rest of the routes remaining the same.

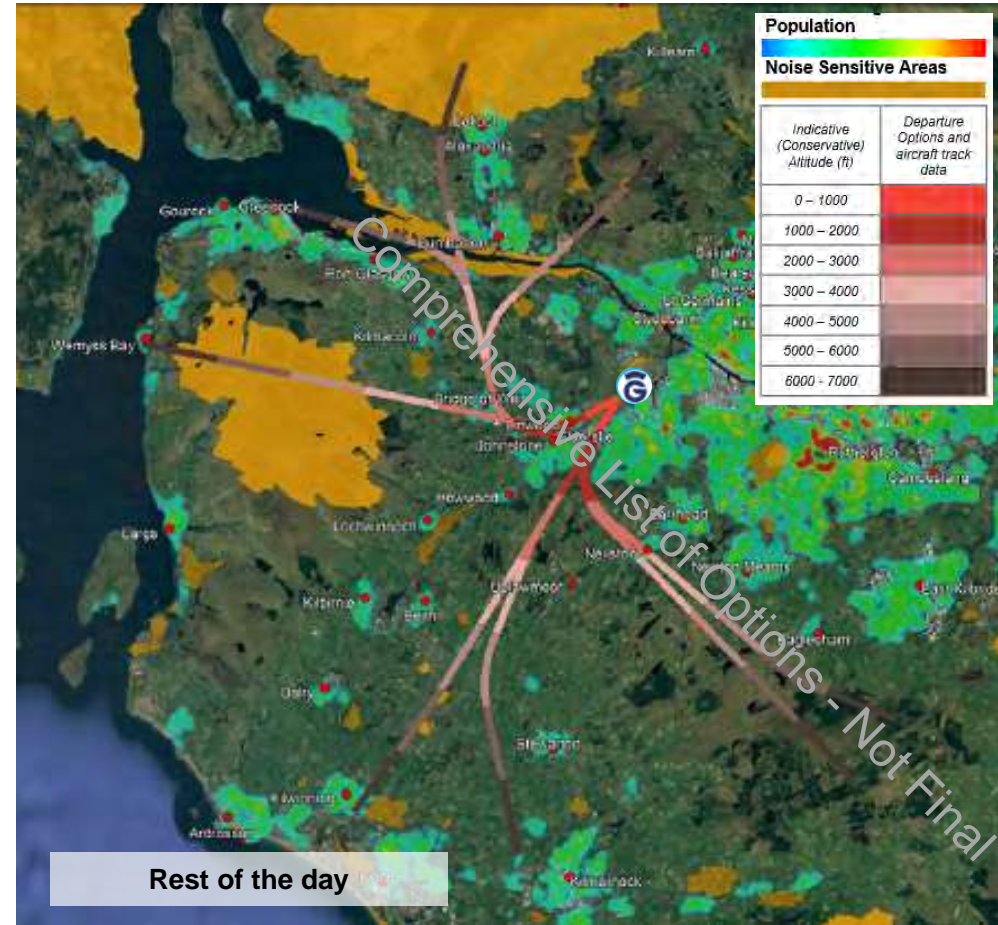
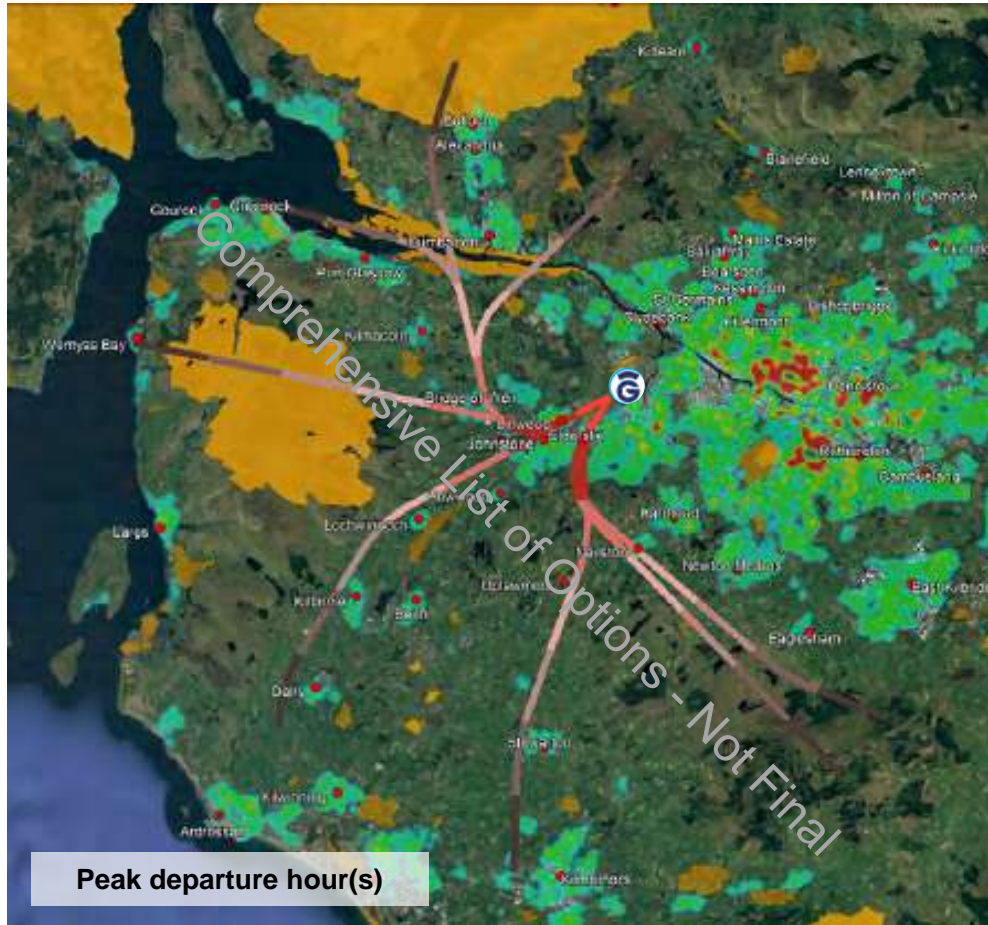
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option C



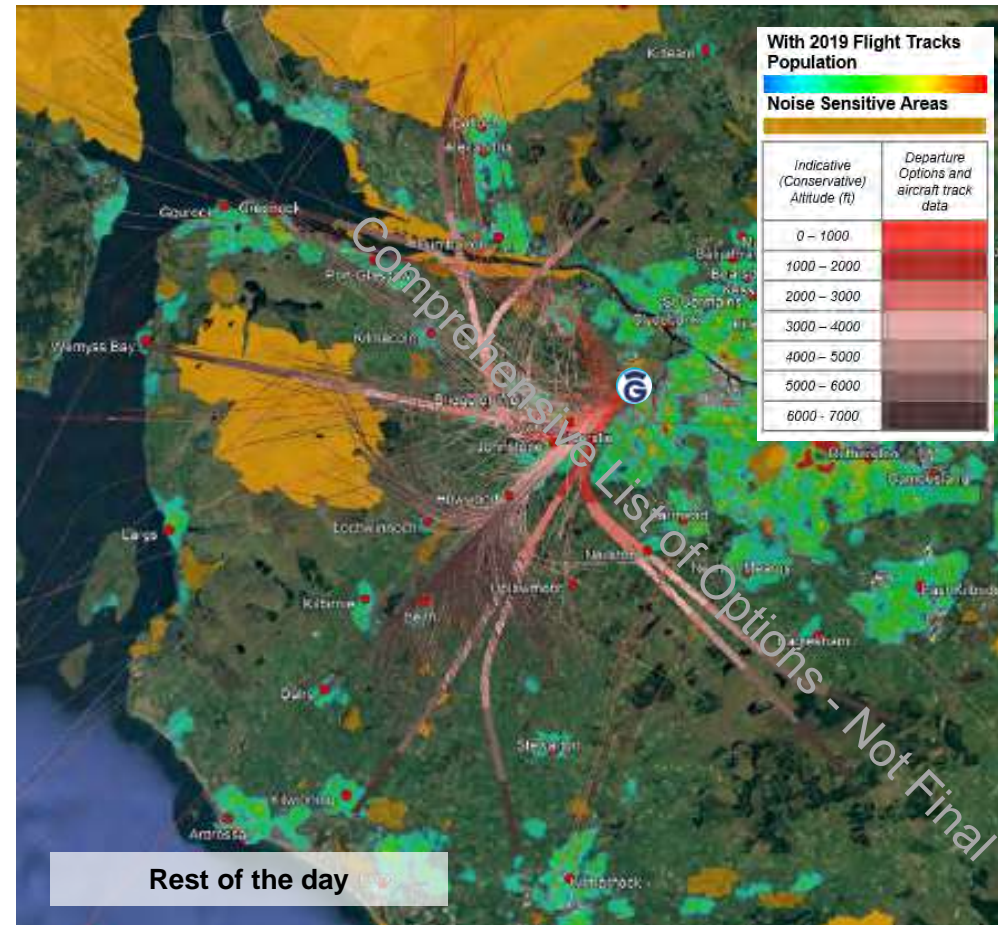
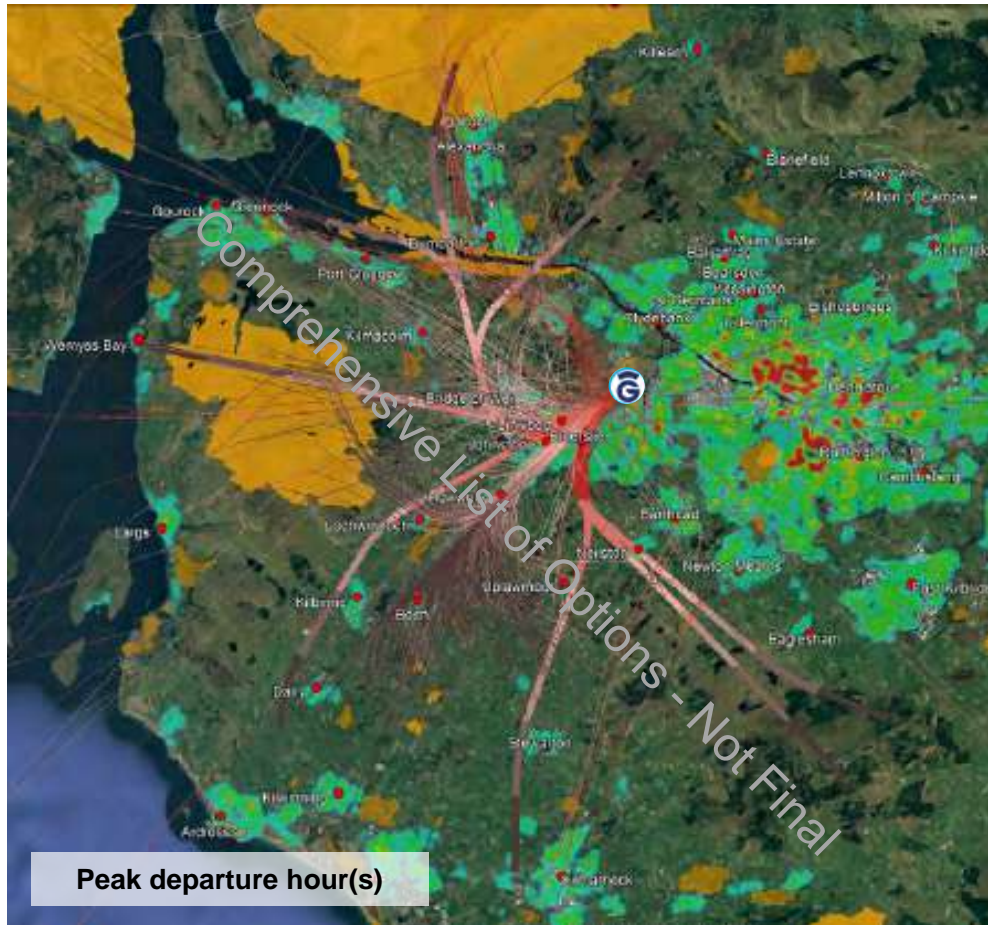
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option C



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option C



With 2019 Flight Tracks Population

Noise Sensitive Areas

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 - 1000	Red
1000 - 2000	Dark Red
2000 - 3000	Light Red
3000 - 4000	Orange
4000 - 5000	Yellow
5000 - 6000	Light Green
6000 - 7000	Dark Green

# Runway 23 Departure Option D

This option has two, slightly different route configurations and assumes one configuration would be used for the peak departure period each morning. The configuration would then switch for the rest of the day.

In the morning, the NORBO traffic is shared between an offset left turn departure and an offset right turn departure with both routes available at the same time.

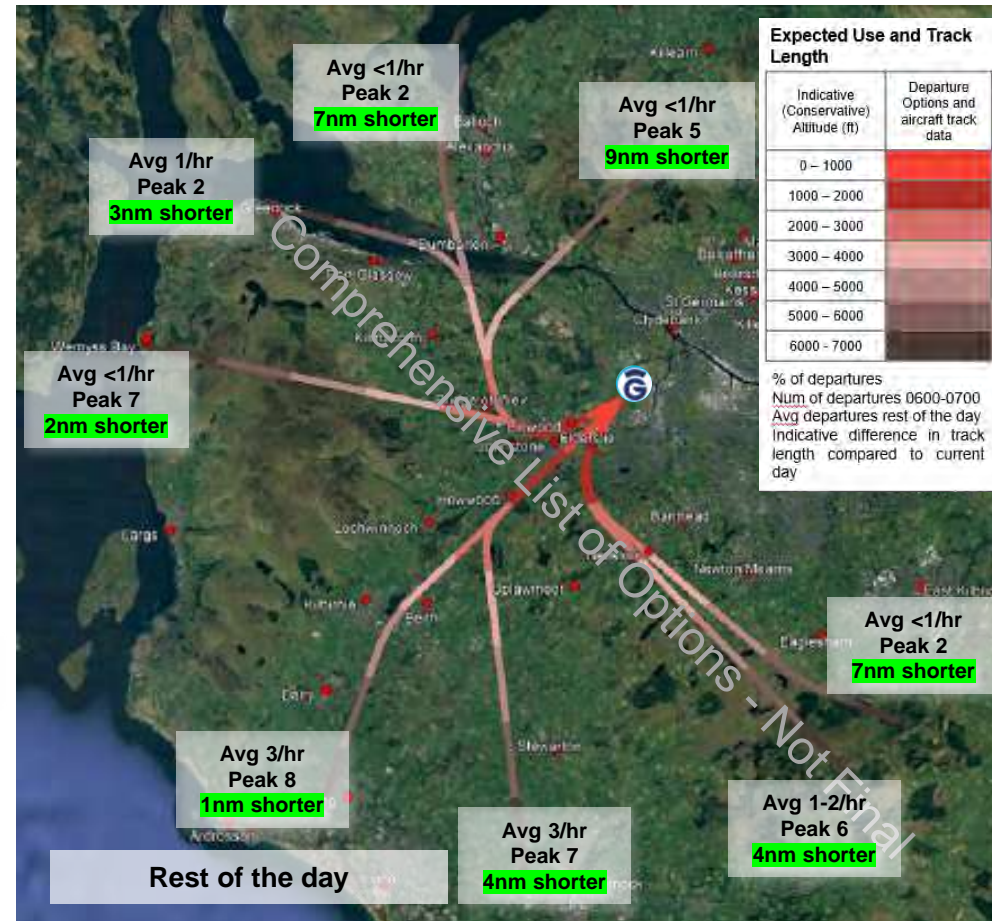
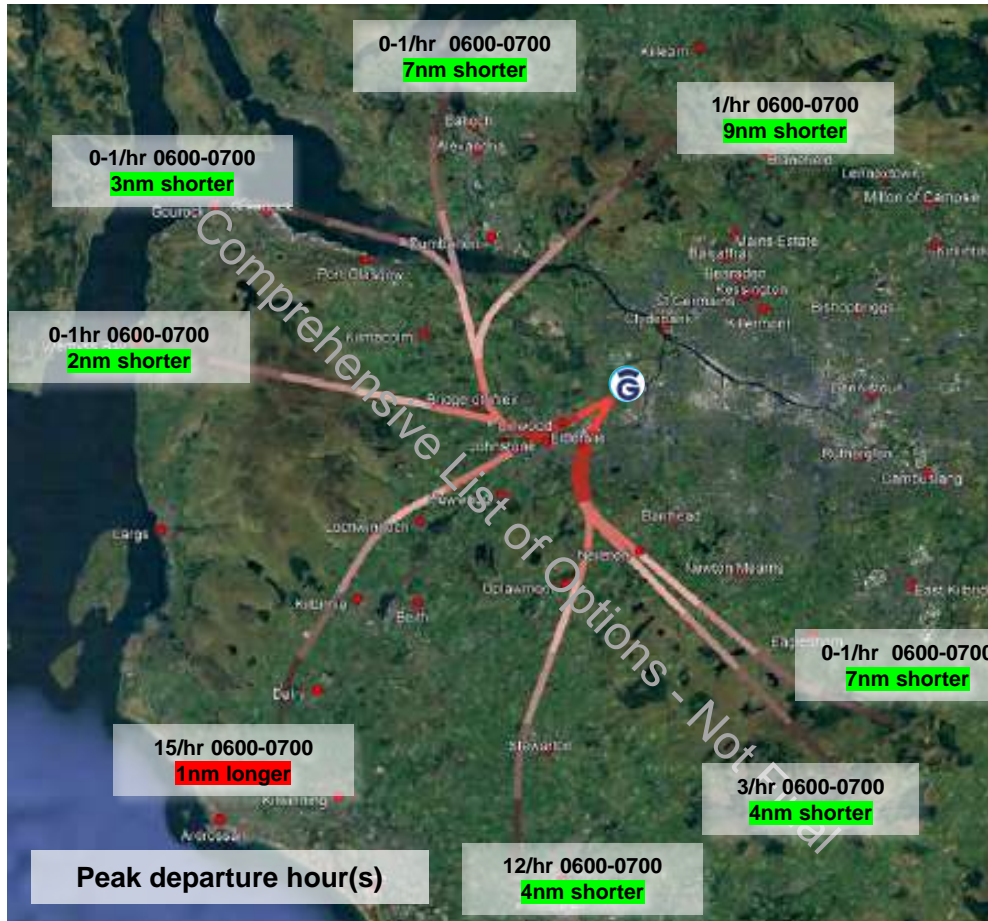
For the rest of the day, all the NORBO traffic would then use a different flight path which follows a straight line from the runway until splitting at 5nm, with the rest of the routes remaining the same.

This option is similar to Option C except that the daytime (non-peak) NORBO route is different.



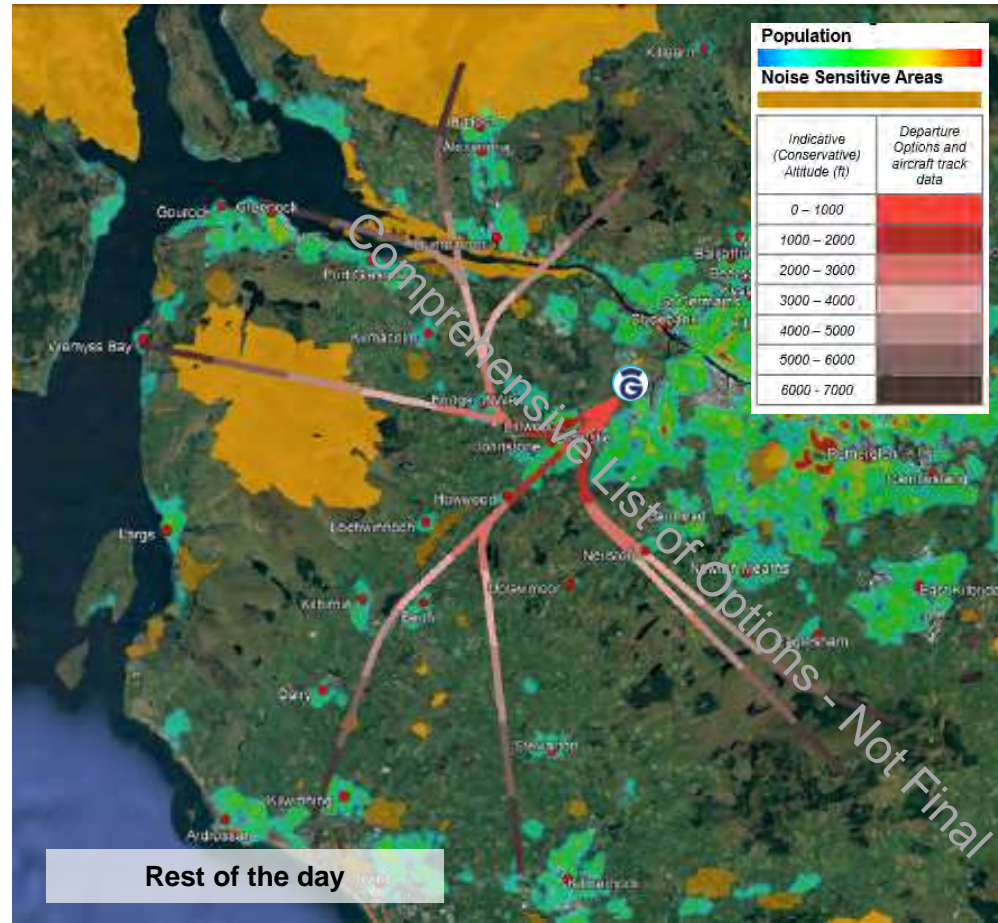
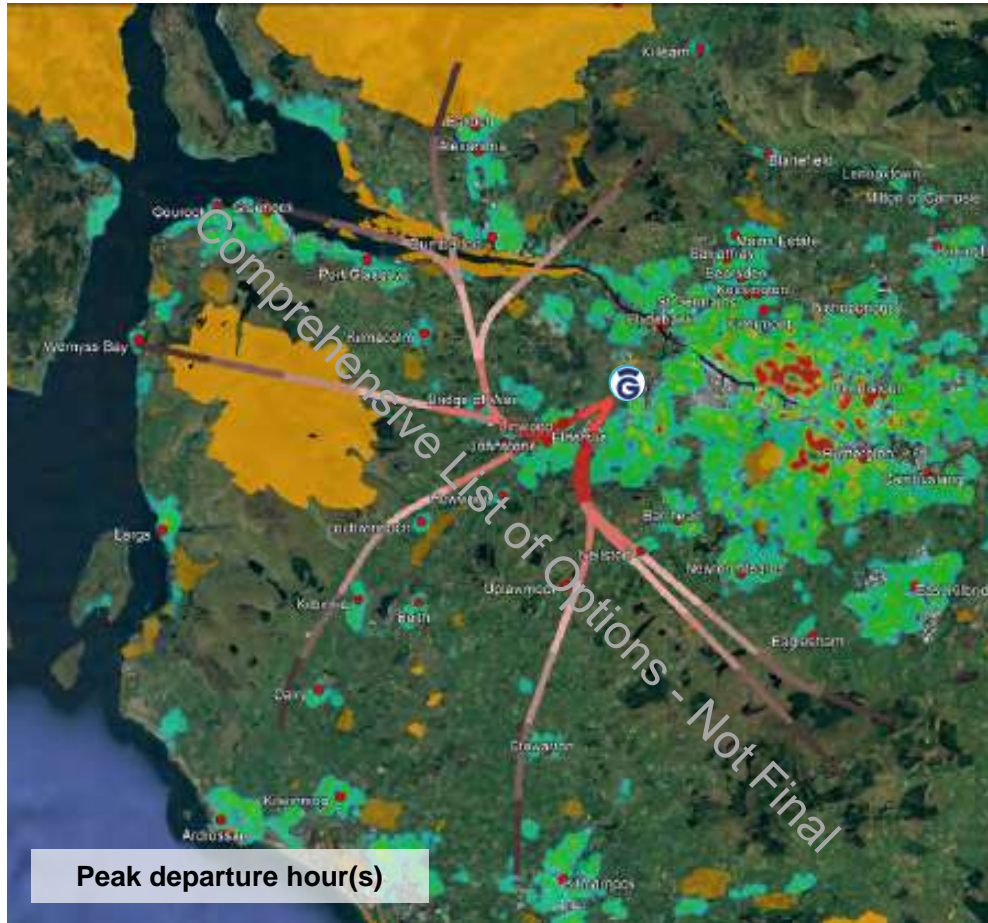
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option D



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

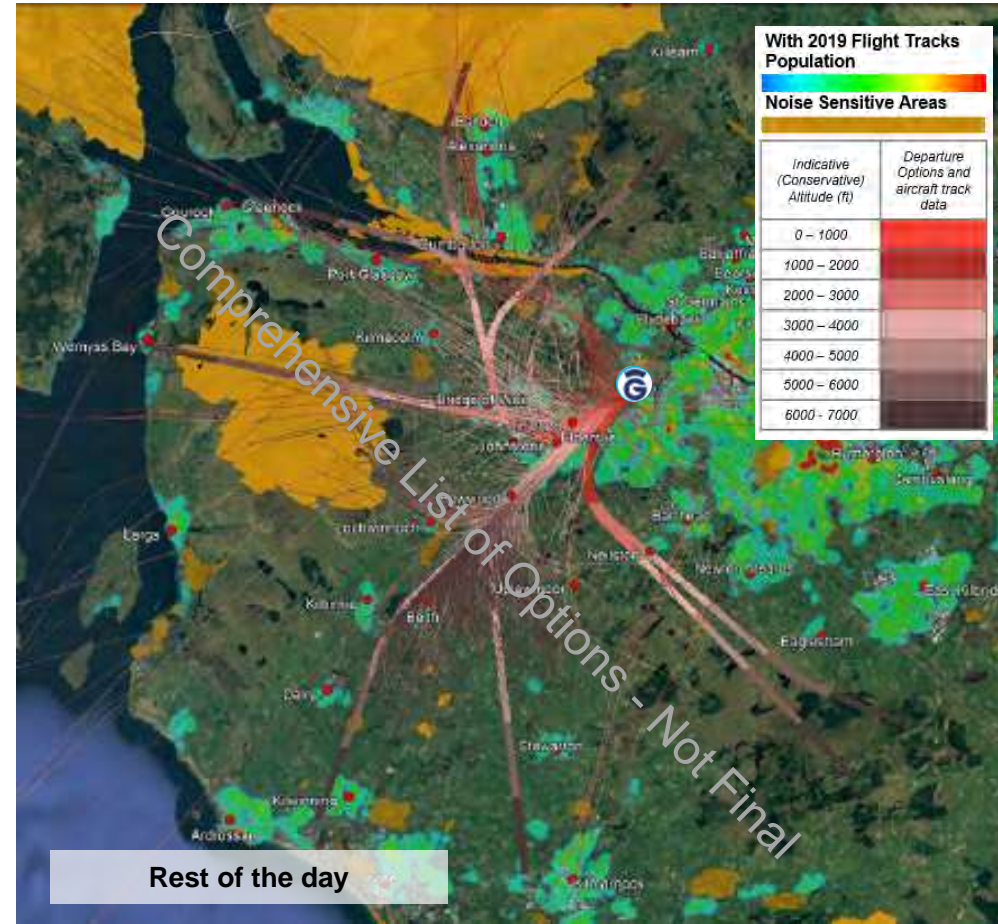
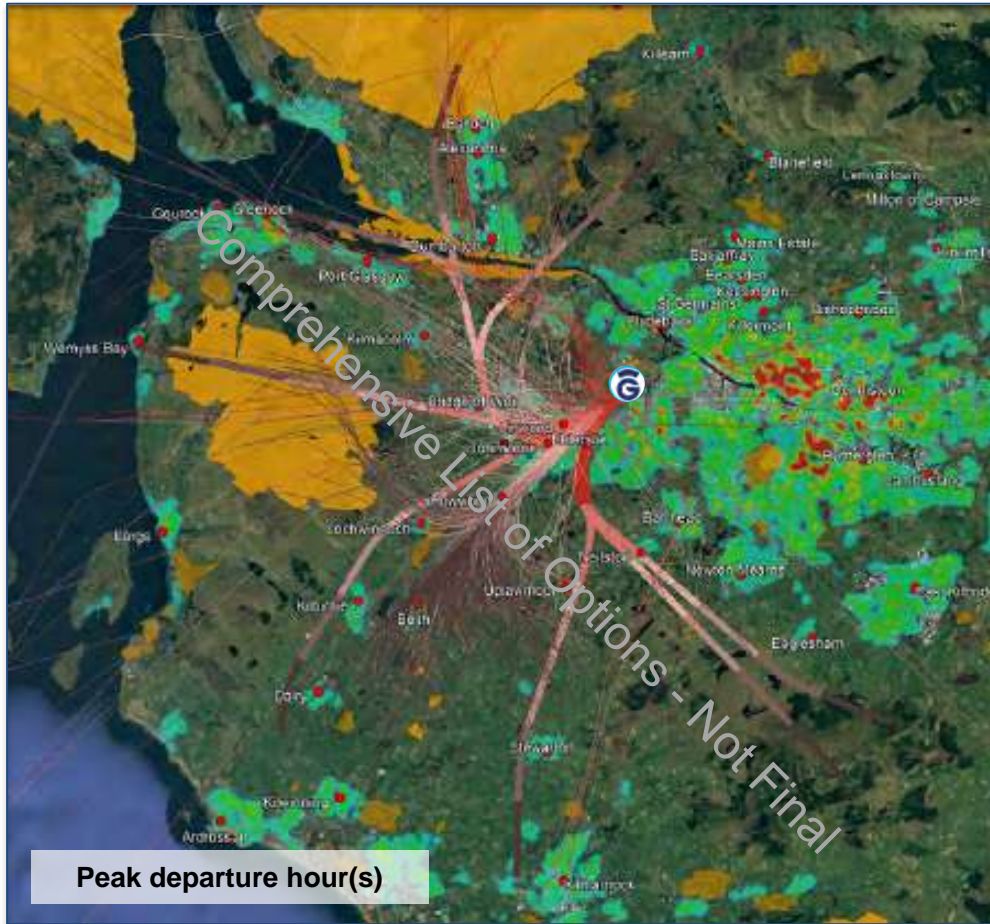
## Runway 23 Departure Option D



Population	
Noise Sensitive Areas	
Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 - 1000	Red
1000 - 2000	Dark Red
2000 - 3000	Light Red
3000 - 4000	Orange
4000 - 5000	Yellow-Orange
5000 - 6000	Yellow
6000 - 7000	Light Green

# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option D



With 2019 Flight Tracks  
Population

Noise Sensitive Areas

Indicative (Conservative) Altitude (ft)	Departure Options and aircraft track data
0 - 1000	Dark Red
1000 - 2000	Red
2000 - 3000	Light Red
3000 - 4000	Orange
4000 - 5000	Yellow
5000 - 6000	Light Green
6000 - 7000	Dark Green

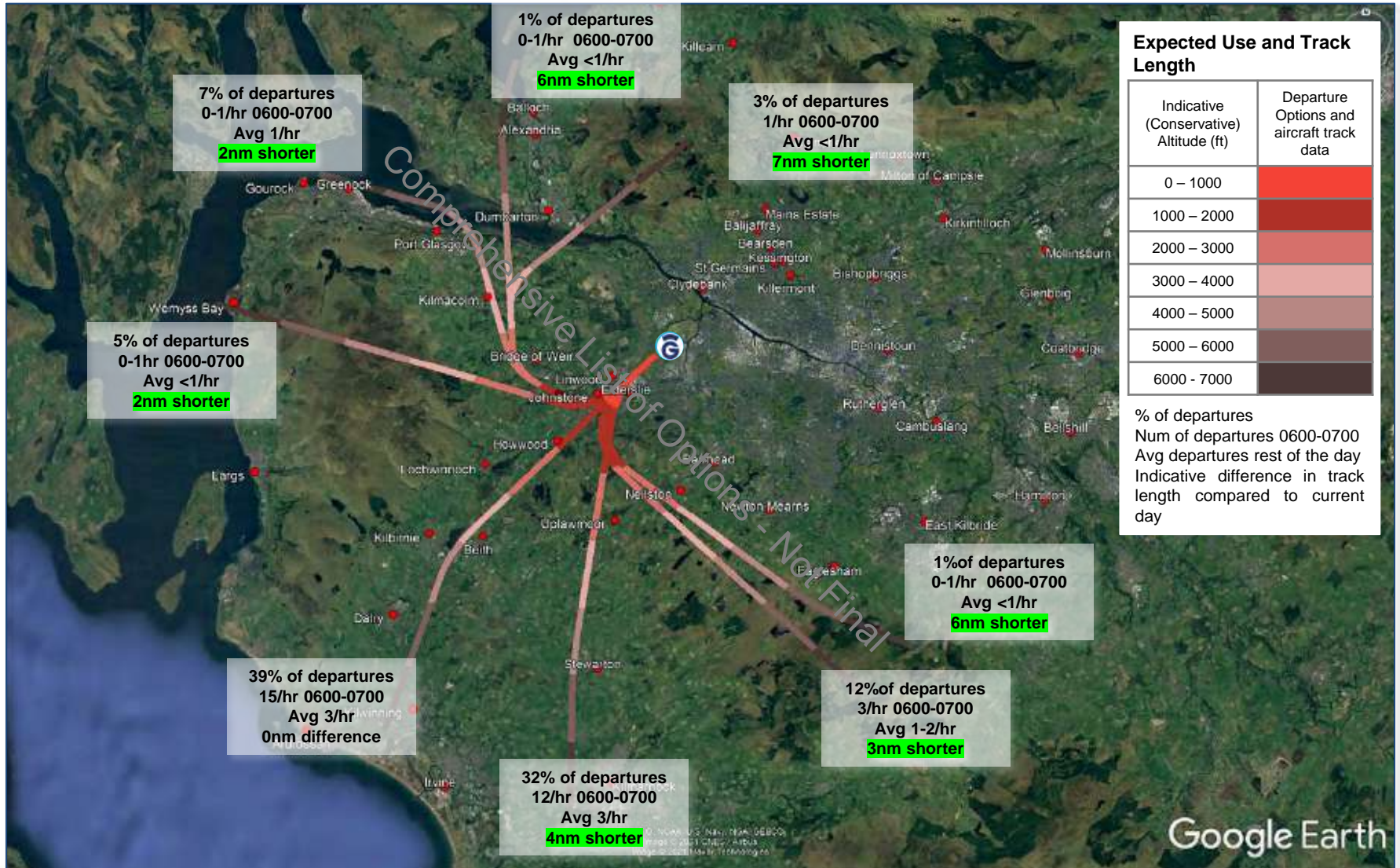
# Runway 23 Departure Option E

Straight ahead departures only (no offsets) with turns at 1nm, 2nm and 9nm from the runway

NORBO is traffic is shared between a route that turns left at 2nm and one that doesn't turn until 9nm from the runway.

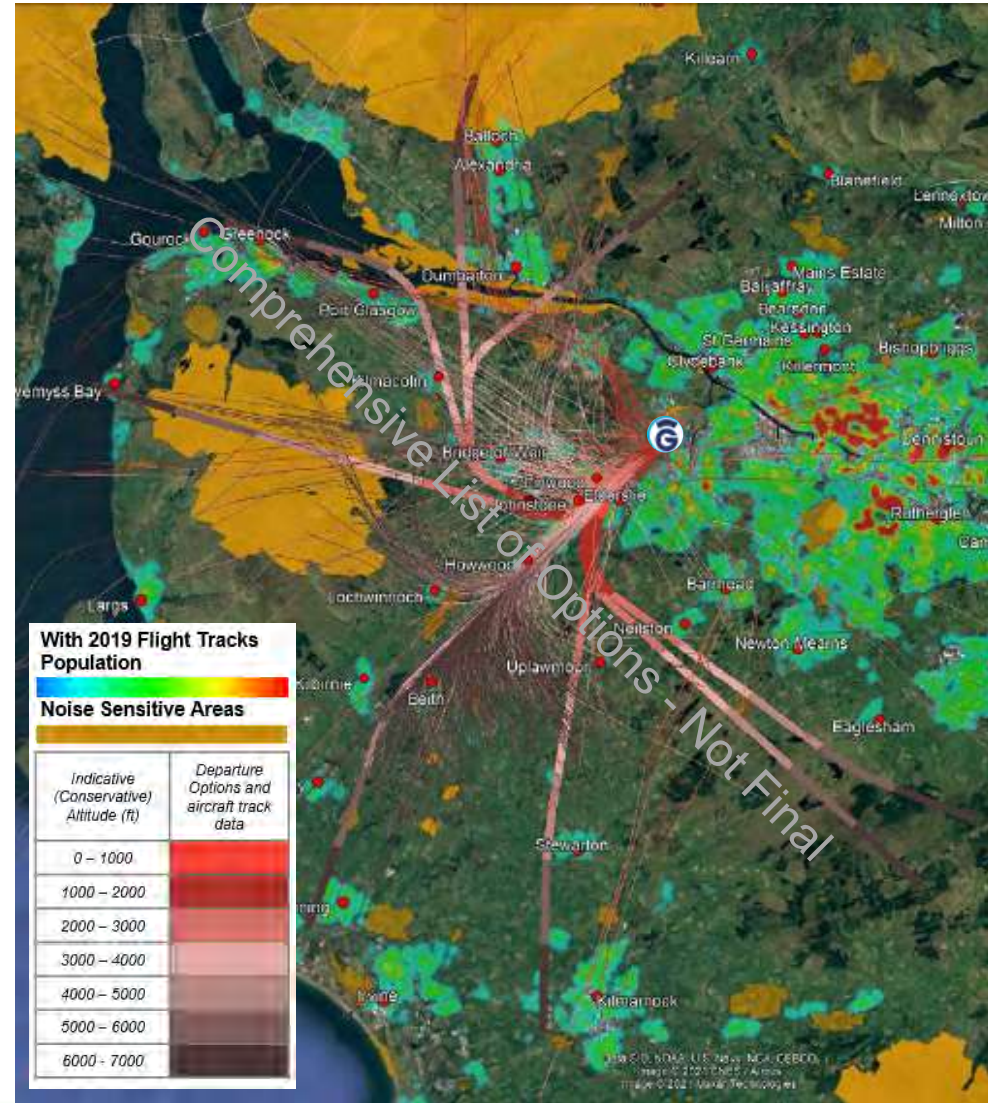
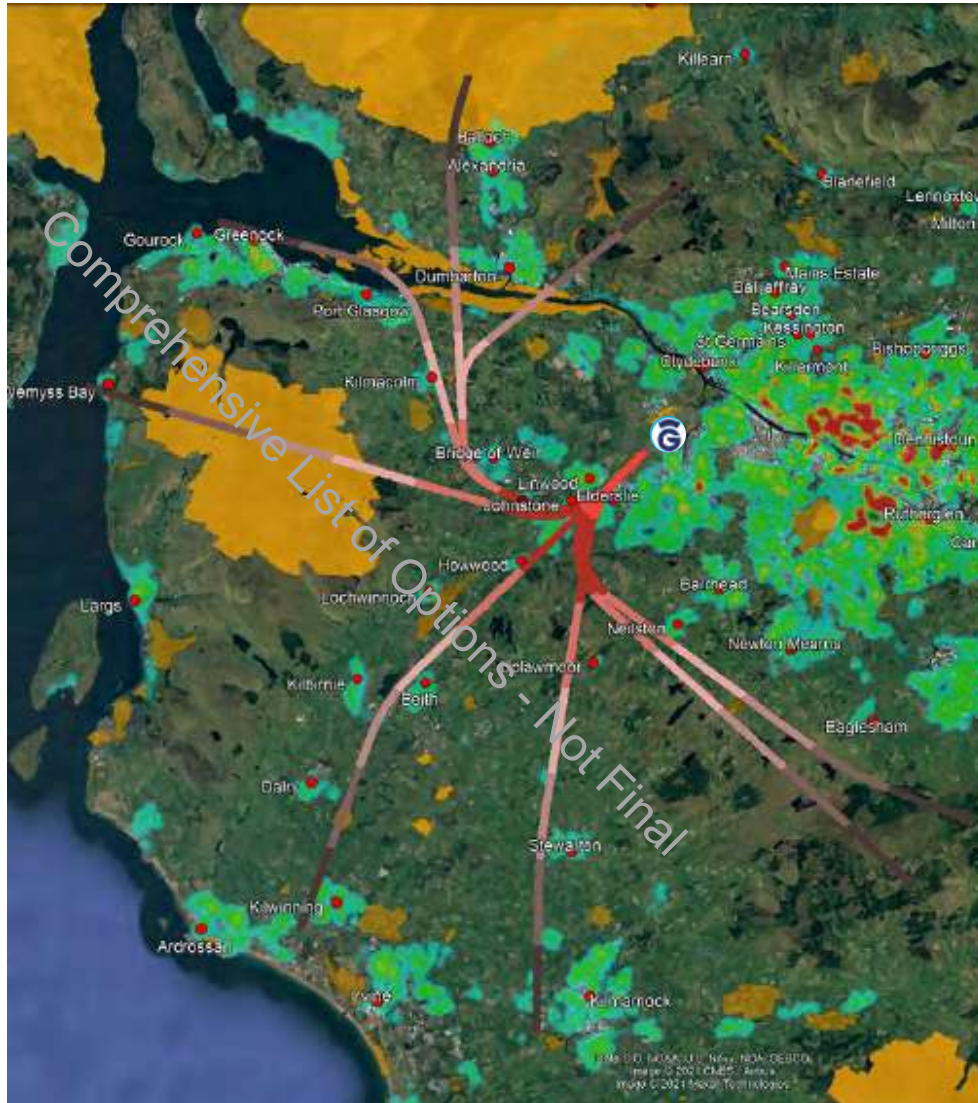
# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option E



# 4. COMPREHENSIVE LIST OF OPTIONS: RUNWAY 23 DEPARTURES

## Runway 23 Departure Option E



# Controlled Airspace

## 4. COMPREHENSIVE LIST OF OPTIONS

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### Controlled Airspace

Our Comprehensive List of Options is formed of 10 arrival options and 12 departure system options. We have ensured that the departure and arrival options are compatible however we have kept them as separate options so that we do not limit the number of potential combinations at this stage.

To generate a bespoke controlled airspace (CAS) volume for every option given the many permutations is not practical, and we will therefore develop detailed CAS volumes for the full system options shortlisted at Stage 3.

For engagement purposes and to start the conversation we have created one CAS volume which we are calling 'an initial illustrative CAS volume'. This volume:

- Covers all the options in accordance with the CAA's Controlled Airspace Containment Policy
- provides airspace for a CDA from each direction,
- provides symmetry and simplicity where possible.
- doesn't propose any particular classifications

This initial illustrative volume is not the proposed controlled airspace volume option for Glasgow's ACP.

**We've held a separate workshop to speak to General Aviation Stakeholders around the Controlled Airspace Arrangements and the presentation will be available as part of our feedback website.**

**If any stakeholders would like to learn more about the development of the CAS volume then please get in touch with the Glasgow Airspace team [airspace@glasgowairport.com](mailto:airspace@glasgowairport.com)**

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## 5. Our questions for you

## 5. OUR QUESTIONS FOR YOU

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- The purpose of this engagement is NOT to seek feedback on individual route options by examining the detailed specific geographical position of the options.
- The purpose of this session was to explore and test our approach to developing the options.
- The questions we are asking:
  - **Are you satisfied that we have taken into account the Design Principles when developing our comprehensive list of route options?**
  - **Are there any further considerations that relate to the Design Principles which we have not taken into account?**
- We will use your feedback to try and address any concerns raised. We are able to refine or develop more options, based on your feedback.
- Please submit your feedback on our feedback website using the link below by Monday 10th January 2022.

<https://glasgowairport.consultationonline.co.uk/>

- Please send any questions to [airspace@glasgowairport.com](mailto:airspace@glasgowairport.com), please note that feedback must be submitted via the link above.

## 6. Next steps

## 6. NEXT STEPS

### Design Principle Evaluation

- Following the close of the feedback period we will review all suggestions and refine or create new options as appropriate.
- Our full comprehensive list of options will then be taken forward to the Design Principle Evaluation. This is where we assess each option against each design principle to understand whether it has met, partially met, or not met that principle. This is a qualitative assessment although quantitative data from the airspace design database will be used to support the qualitative analysis undertaken where applicable.
- The outcome of the Design Principle Evaluation may be a shorter list of options taken forward to the Initial Options Appraisal at Step 2B.
- Our Design Principle Evaluation will be published on the CAA's [Airspace Change Portal](#)

