

# Noise Management Around Airports, a view from UK Air Traffic Control

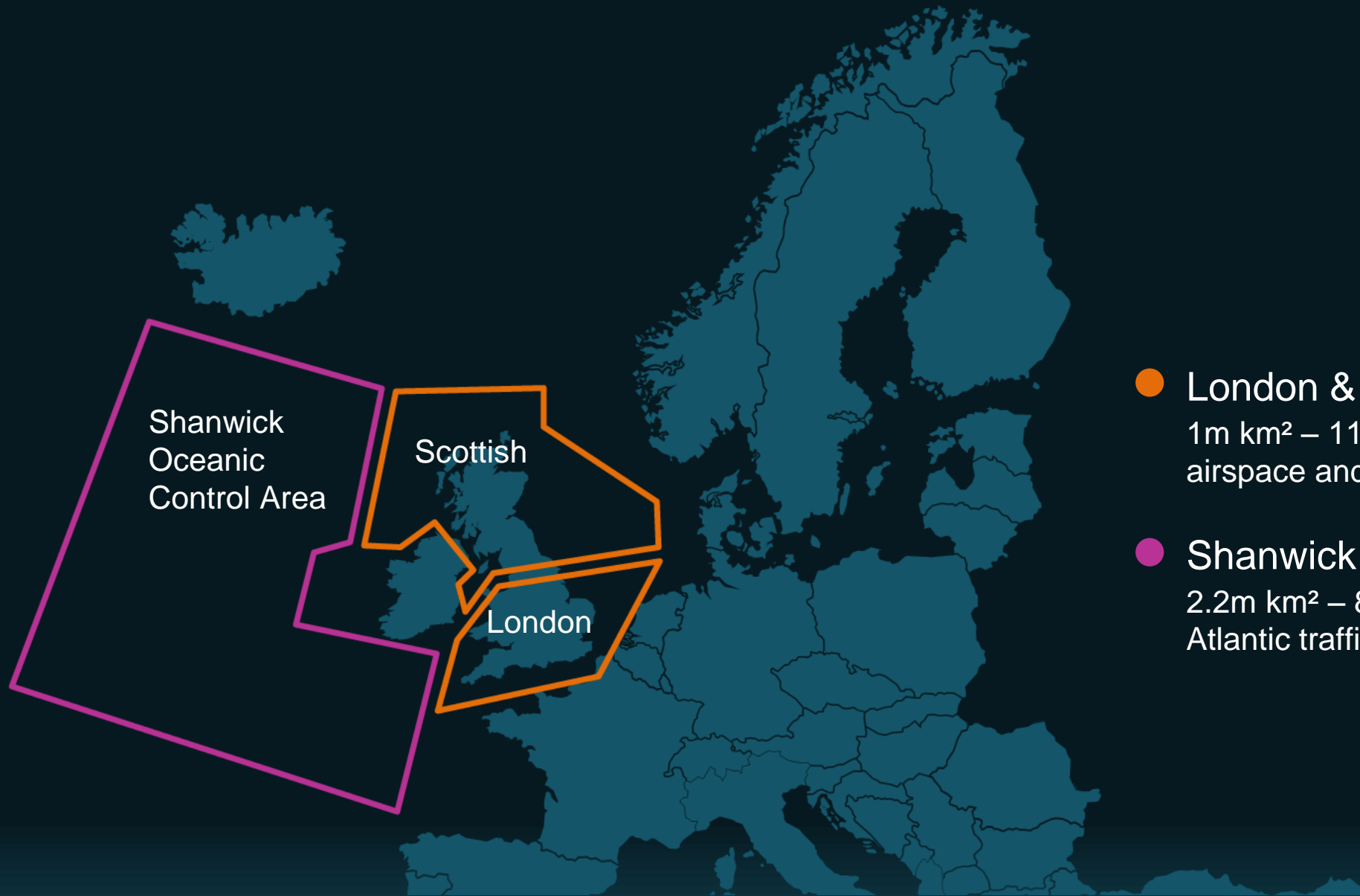
Ian Jopson

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NATS

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- London & Scottish:  
1m km<sup>2</sup> – 11% of Europe's  
airspace and 25% of traffic
- Shanwick  
2.2m km<sup>2</sup> – 80% of North  
Atlantic traffic

# Management of UK Airspace



2.5 million flights.



Over 250 million  
passengers



13 of the busiest  
UK airports



World's first:  
environmental  
targets

# Context – UK's Aviation Strategy



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# UK Aviation Strategy - quicker, quieter and cleaner...



- UK Government's airspace modernisation objective ***to deliver quicker, quieter and cleaner journeys and more capacity***
- Progressively reduce the noise of individual flights, through quieter operating procedures
- Require that noise impacts are considered through the airspace design process
- Decisions over concentration vs respite - based on local circumstances in consultation with local communities
- An Independent Commission on Civil Aircraft Noise (ICCAN) to consider how they can best support communities in engaging with the airspace change process
- Legislation giving Secretary of State the power to direct airports or air navigation service providers to take forward airspace changes for reasons other than safety or capacity (...noise)



# UK Aviation Strategy – A Package of Measures on Noise

- Proposing a new objective to ***‘limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise’***
  - A new national indicator to track the long term performance of the sector in reducing noise.
    - a noise quota? a total contour area?
  - ‘Balance noise and growth’ set noise caps as part of planning approvals; provide future certainty to communities
  - All major airports: plans to commits to future noise reduction, periodic review
  - Improved flight path information for prospective home buyers; better informed decisions
  - Statutory enforcement powers for Independent Commission on Civil Aircraft Noise or CAA
  - For airspace changes causing significantly increased overflight, a new minimum threshold of an increase of 3dB LAeq, which leaves a household in the 54dB LAeq contour or above as eligible for assistance with noise insulation
-

# Context – UK Sustainable Aviation Coalition

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# SUSTAINABLE AVIATION

Cleaner. Quieter. Smarter.

## 90,095

tonnes of CO<sub>2</sub> saved due to more efficient flights in UK airspace since 2014

## 63,267

more continuous descent approaches in 2015/16 than 2014, reducing noise and CO<sub>2</sub>



The **Airbus A350-900** and **Boeing 787-9**

have reduced the area impacted by noise by at least 2.4km<sup>2</sup> than the aircraft they replace

## 12,200

fewer people in noise contour areas at 5 SA airports than in 2014 despite 13% passenger growth

### UK industry

has taken a key role in the development of global aviation industry carbon offset scheme

## Over 140

innovation and technology projects

are being supported by the UK aerospace industry, worth over

## £700 million

to cut future aircraft emissions and noise, including development of hybrid and electric aircraft



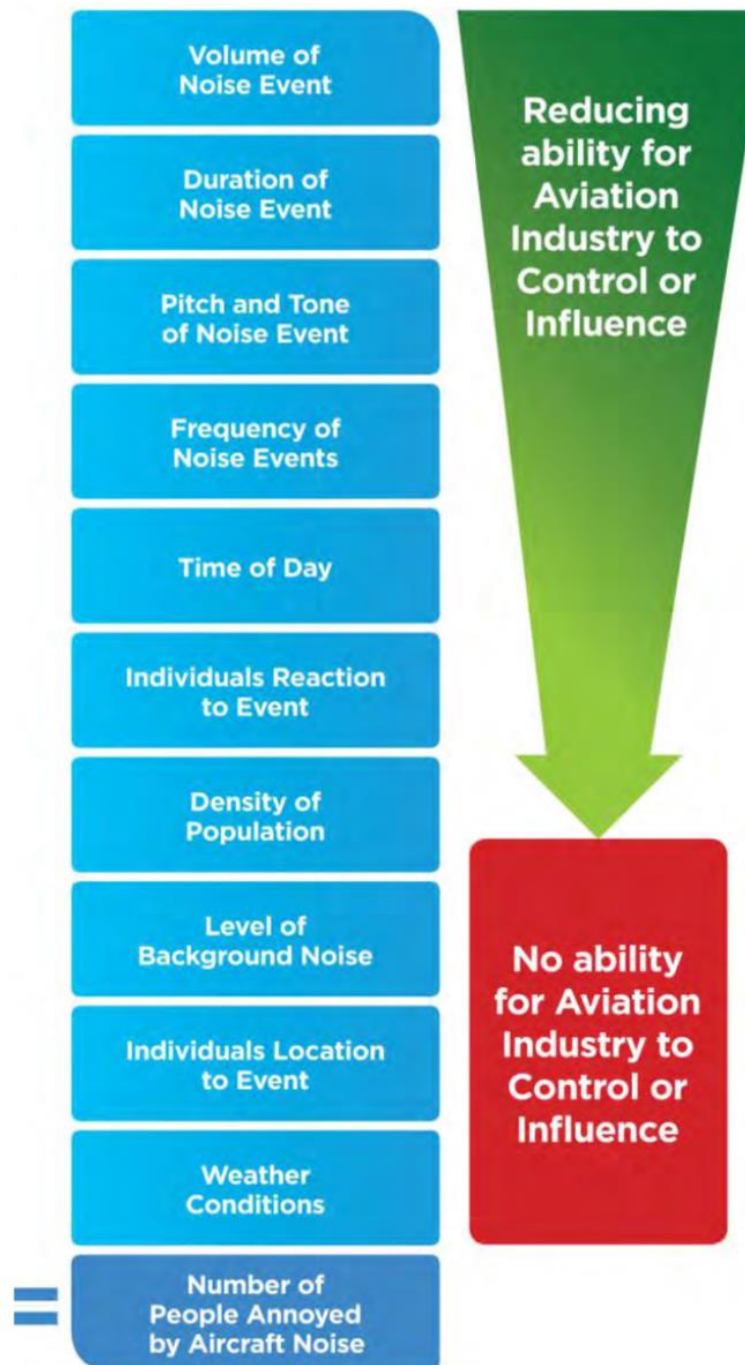
## 1%

of UK NO<sub>x</sub> emissions from aircraft



**Disconnecting growth** in UK aviation from growth in emissions and noise





## Aircraft noise.... a classic 'externality'

externality    *[ ek-ster-nal-i-tee ], noun*

'the cost or benefits of a transaction to parties who do not directly participate in it; can be either positive or negative'

'an external effect, often unforeseen or unintended, accompanying a process or activity'

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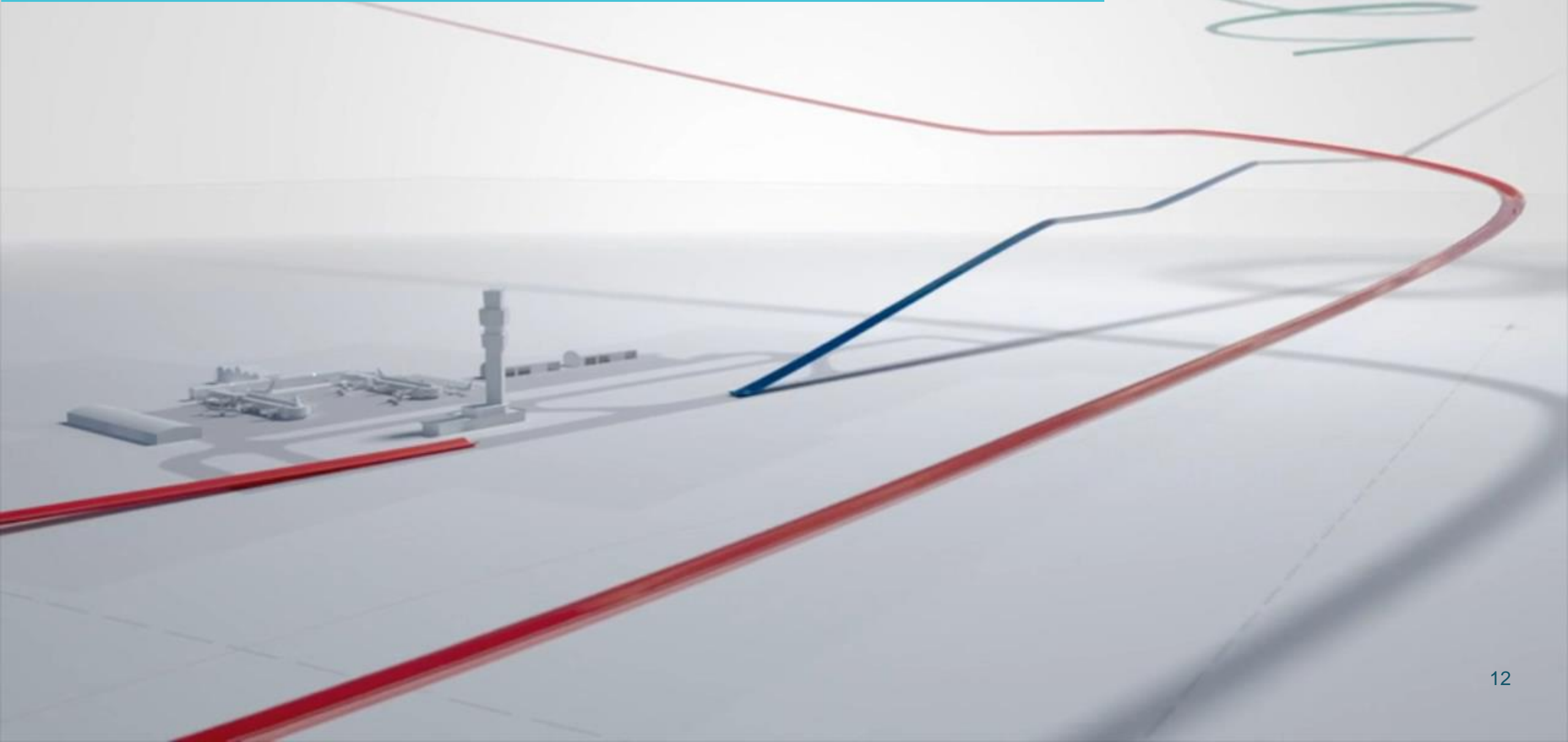
# UK Airspace Modernisation (PBN) – a noise opportunity...?

Two decorative magenta lines, one thick and one thin, curve across the lower half of the slide. The thick line starts from the bottom left and curves upwards and to the right. The thin line starts from the middle left and curves more gently to the right.

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# Performance Based Navigation



# PBN – Noise Management Opportunities



- Sharing routes over a wider area with multiple PBN routes (although might increase the total number of people overflown)
  - Routing aircraft accurately over urban areas where there is higher general noise levels
  - Routing aircraft over rural areas where fewer people live
  - Protect parks and other quiet spaces by routing aircraft over built up areas or vice versa
  - Prioritise noise over CO<sub>2</sub> emissions in low level airspace; or the reverse in areas where noise has less impact
  - Use multiple PBN routes to alternate flights over different areas, possibly on a planned basis to give community predictable periods of respite or temporary relief from aircraft noise
  - Changing PBN routes at particular times of day to manage noise impacts
-

## PBN – benefits...



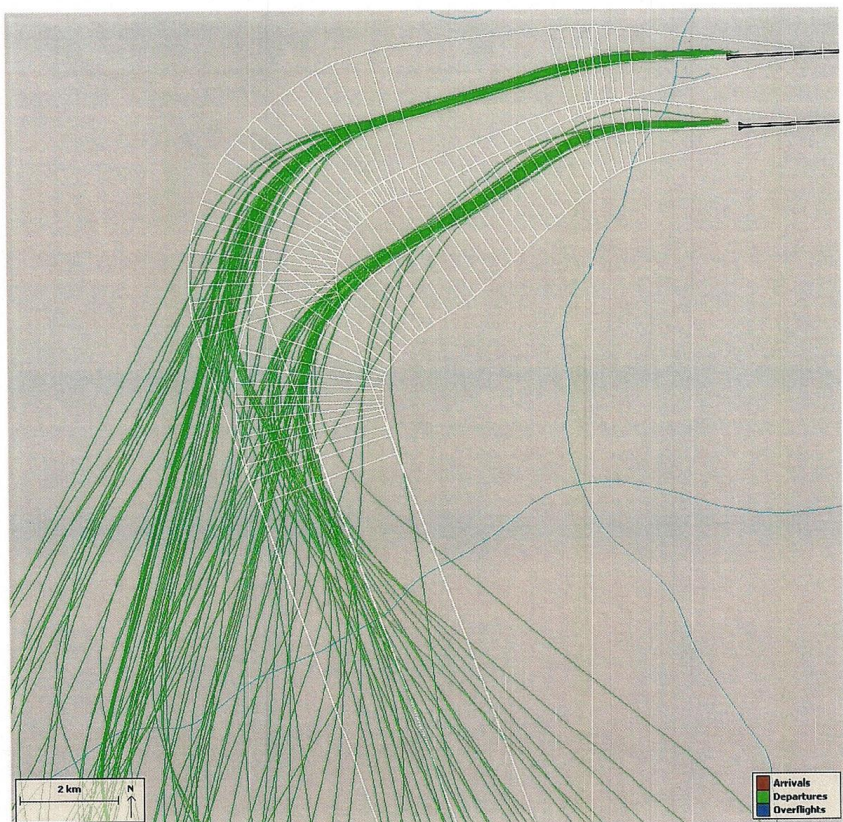
- London City PBN SID replications led to 1.2 million fewer people being overflown below 7,000ft
- Stansted PBN departure routes on two SIDs led to a 83% and 87% reduction in overflown population
- Edinburgh offered the potential to reduce the number of people overflown by up to 46%
- Possible 10-20% emissions reduction in UK airspace

	Potential % Reduction in Size of Noise Footprint per Flight at 55dB
Birmingham	10.3%
Cardiff	3.1%
Bristol	0.6%
Luton	27.8%
Gatwick	20.8%
London City	70.2%
Heathrow	34.2%
East Midlands	5.2%
Stansted	19.3%

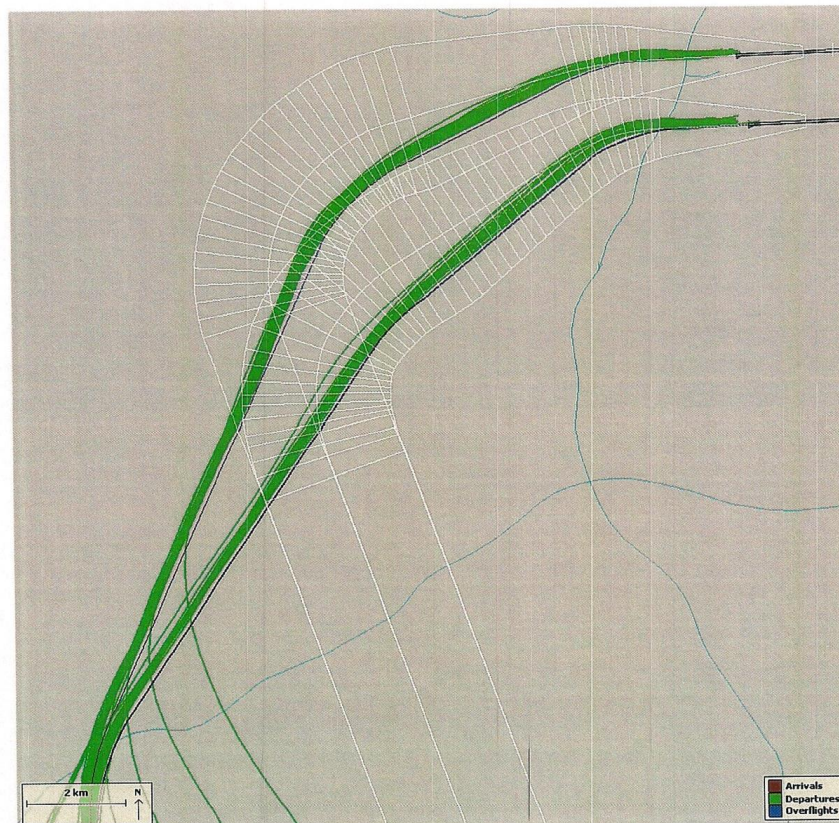


# All good...?

MID departures, 15 December 2013 (with NPRs shown)

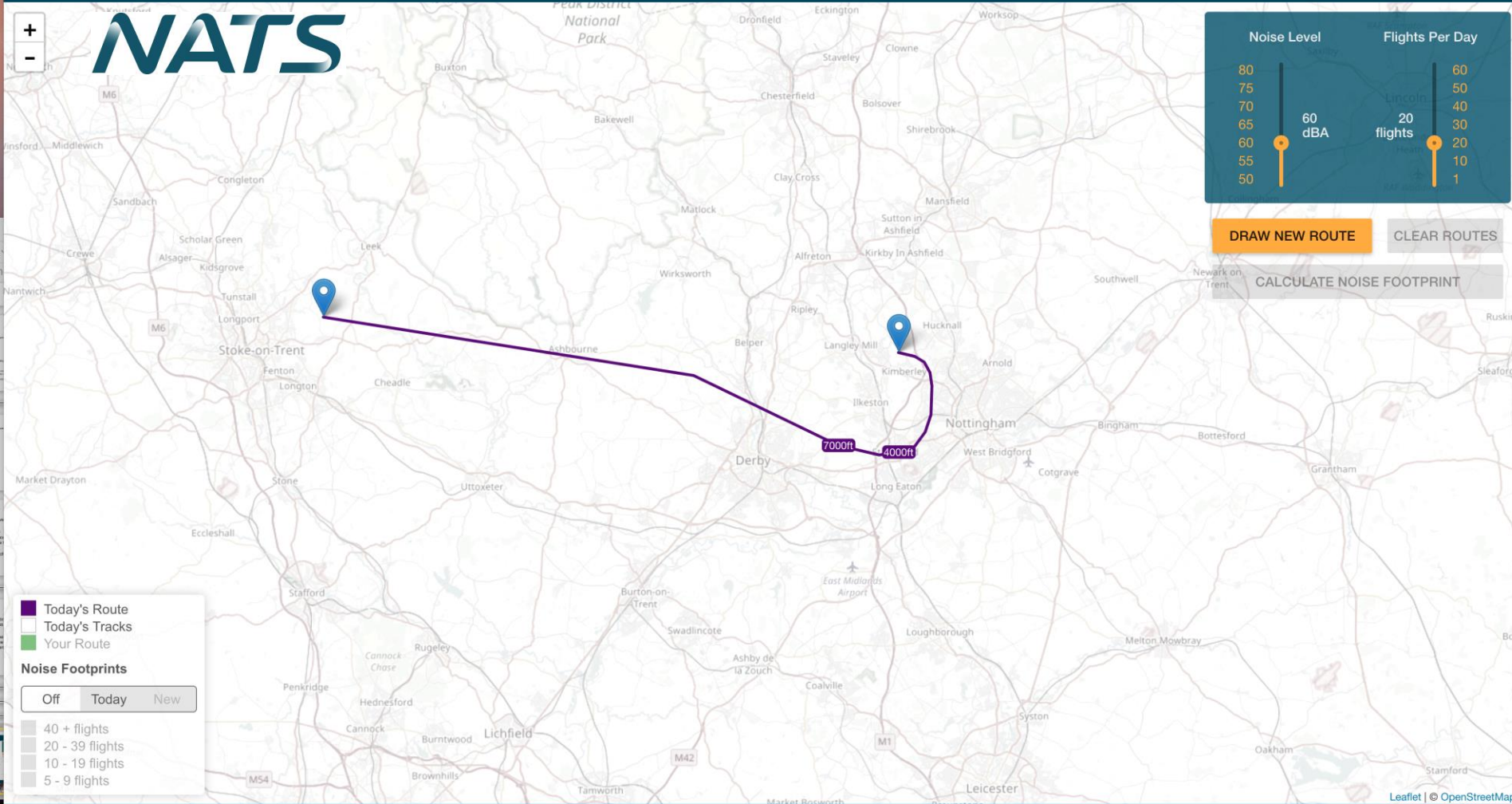


MID departures, 16 December 2013 (with NPRs and DOKEN routes shown)





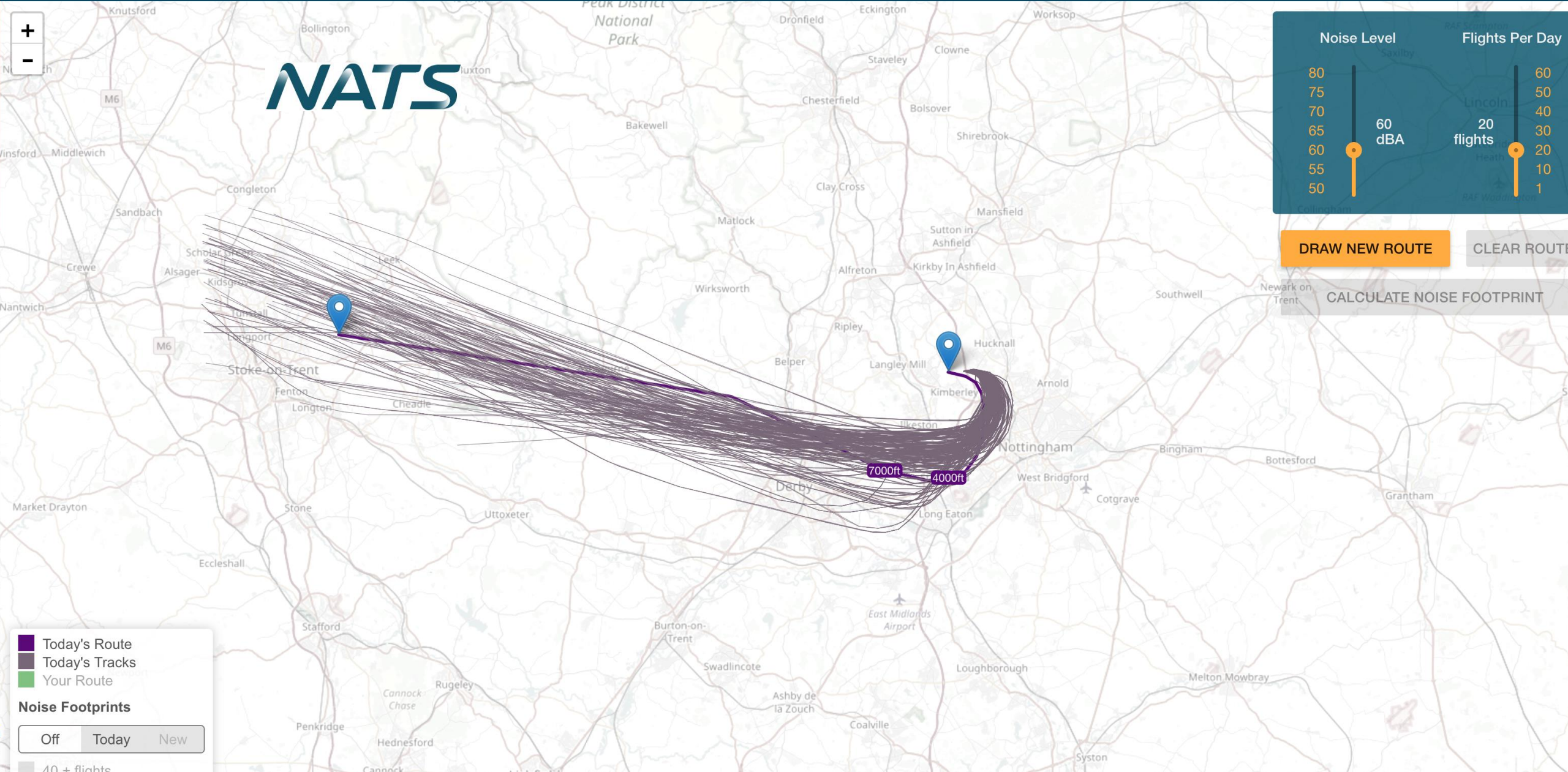
# Comp-Air



- Screen Shot 2017-06...19.49.32
- Screen Shot 2017-06...20.00.14
- Screen Shot 2017-06...20.00.22
- Screen Shot 2017-06...14.07.45
- CompAir1
- CompAir2
- CompAir3
- Screen Shot 2017-07...07.21.22
- Screen Shot 2017-07...07.24.56

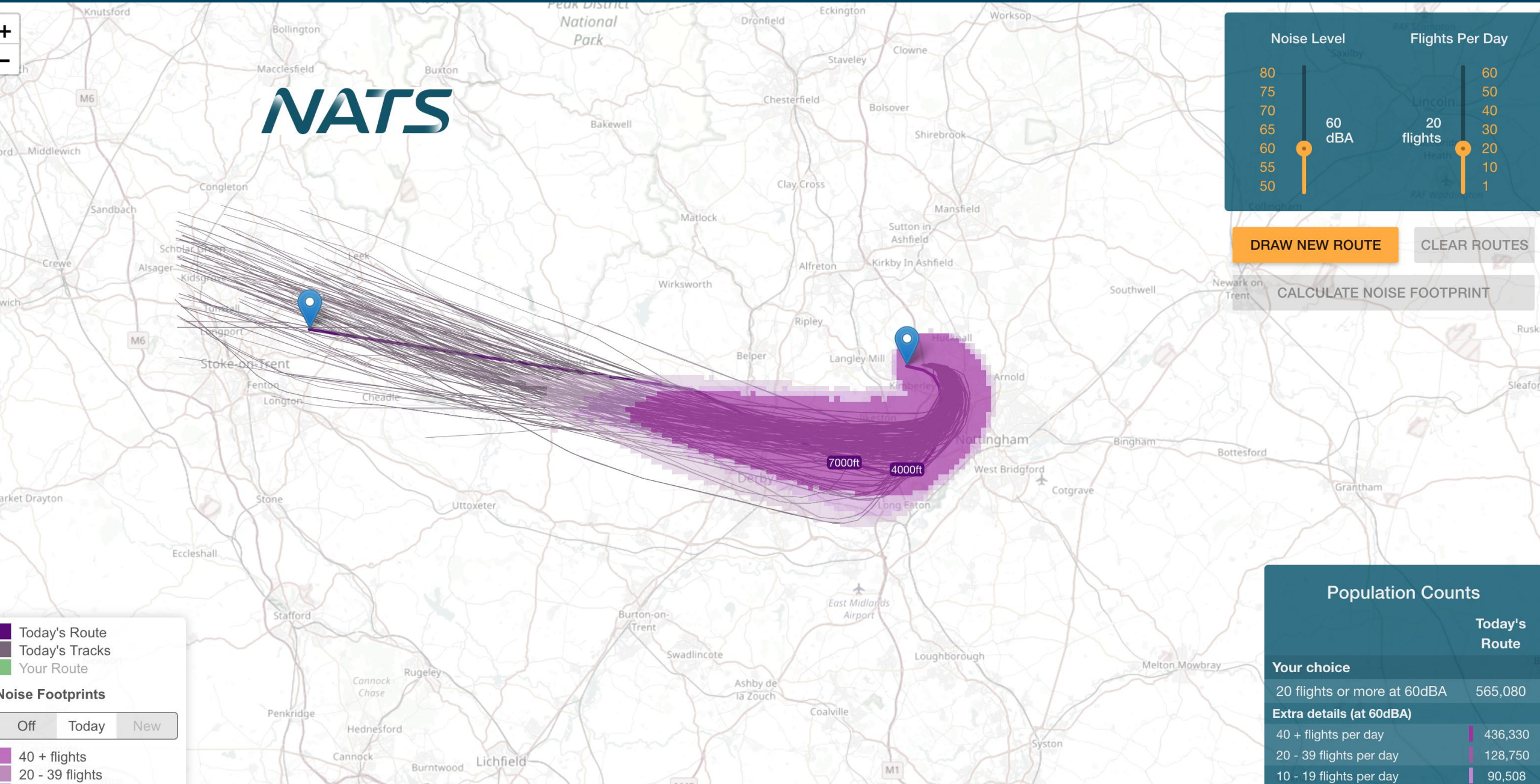


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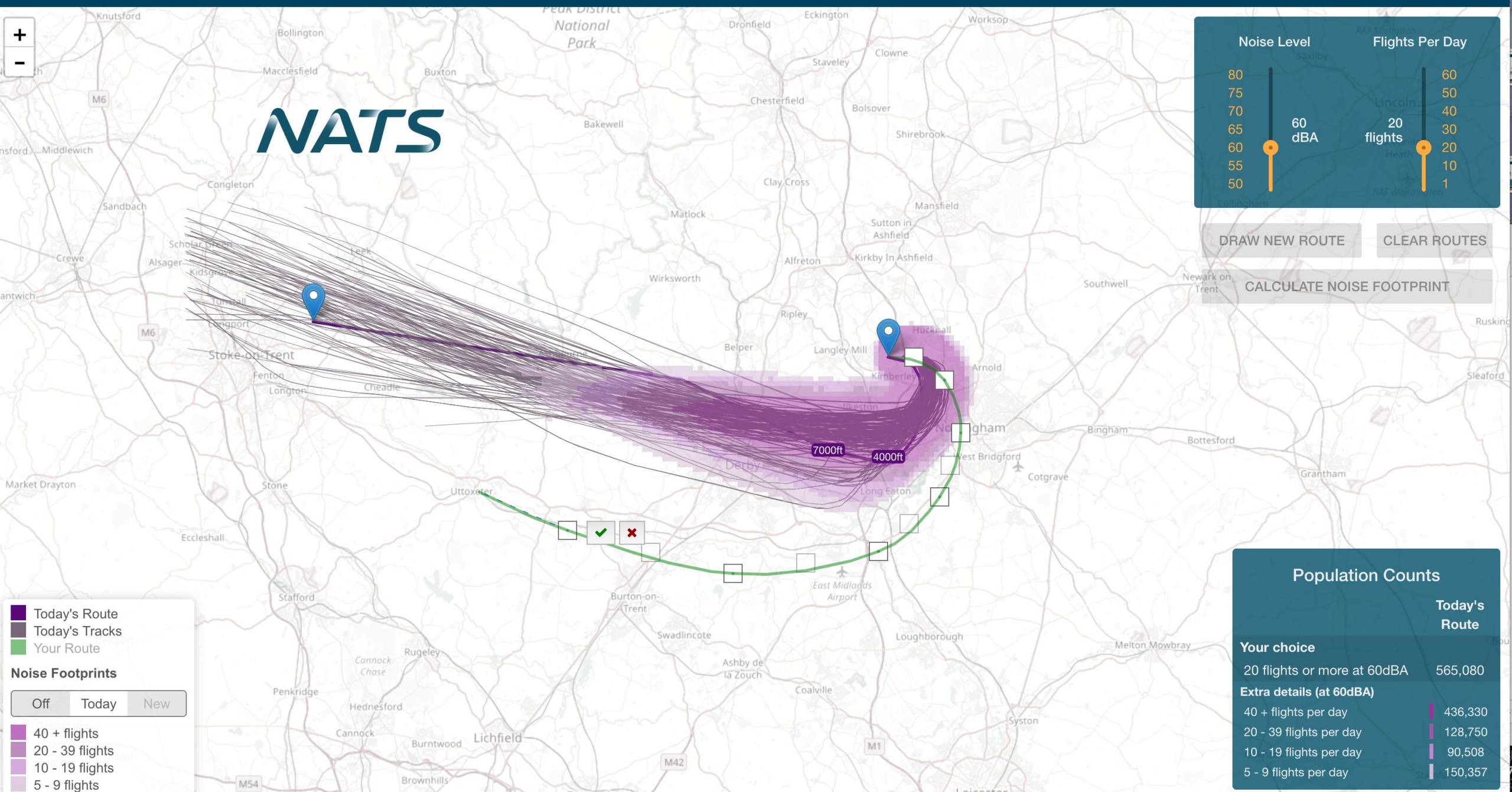




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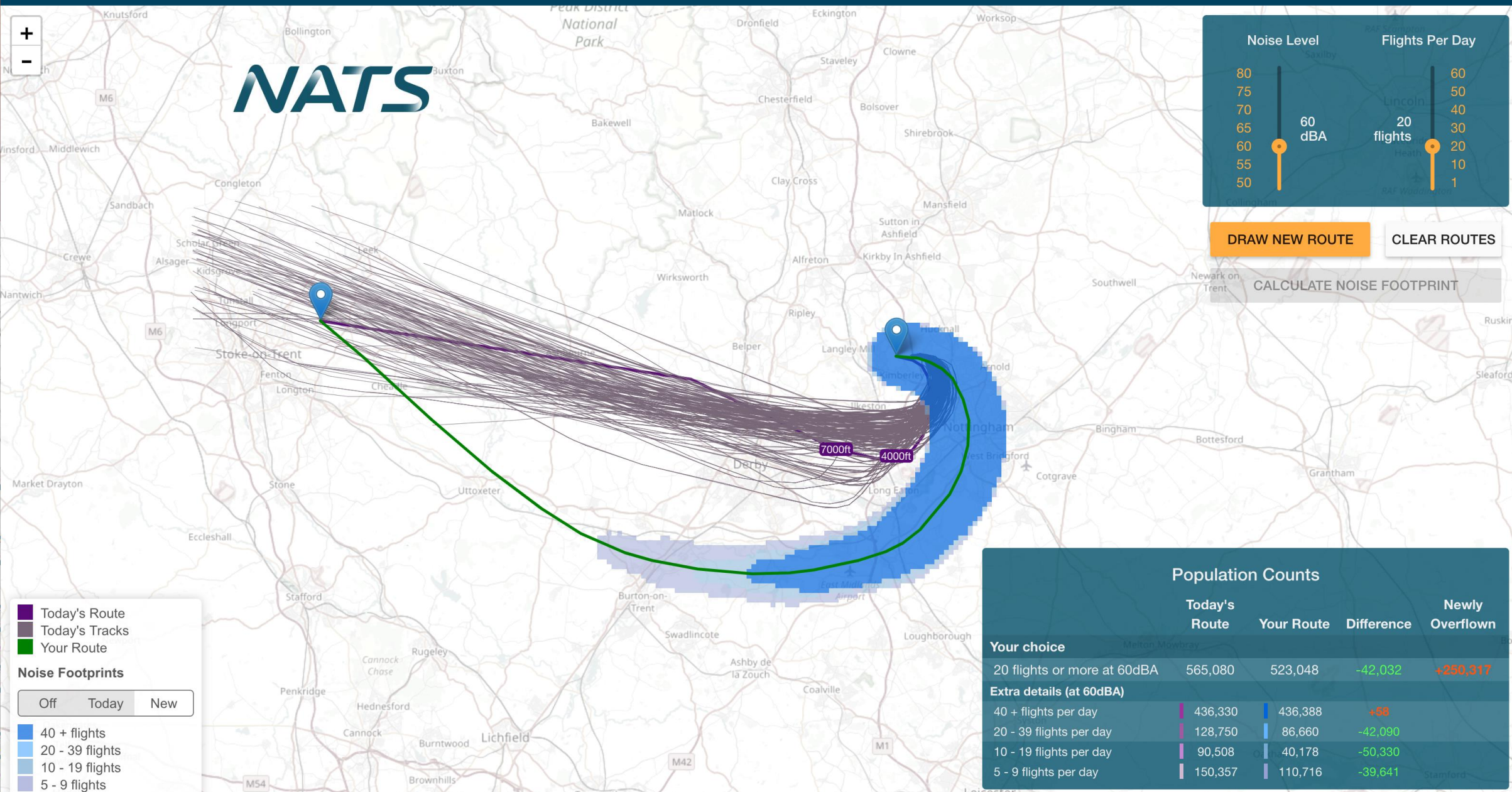






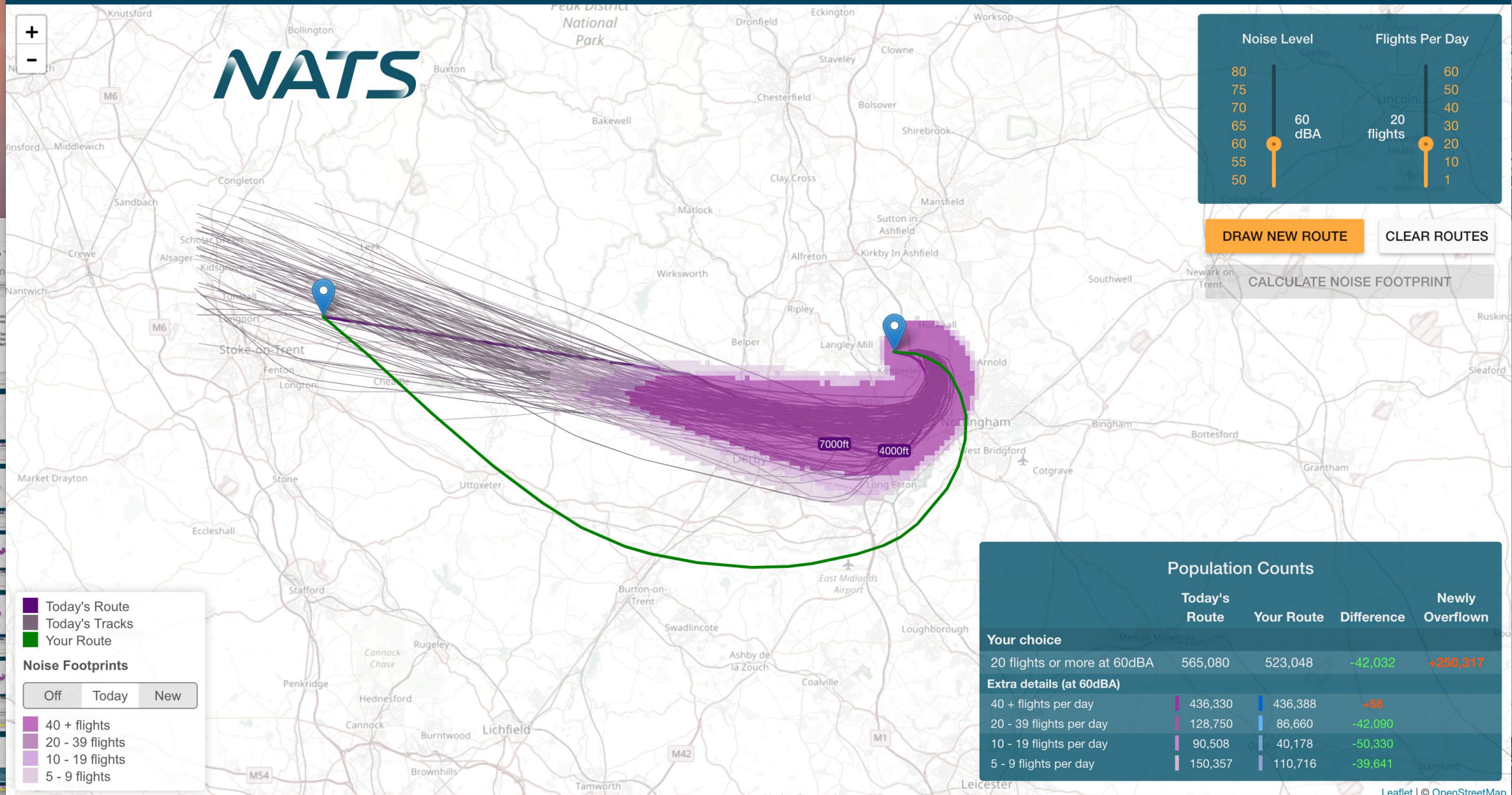


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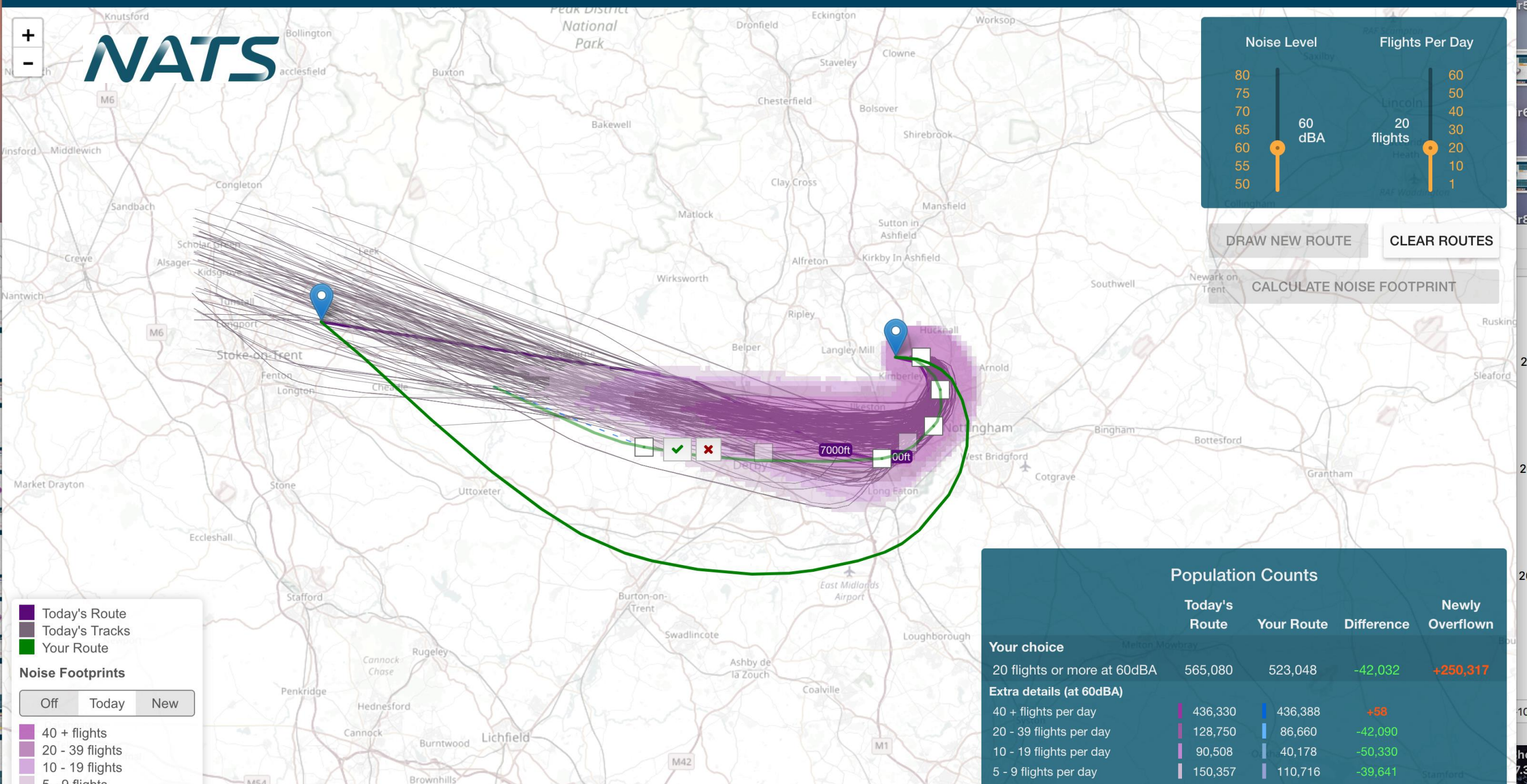


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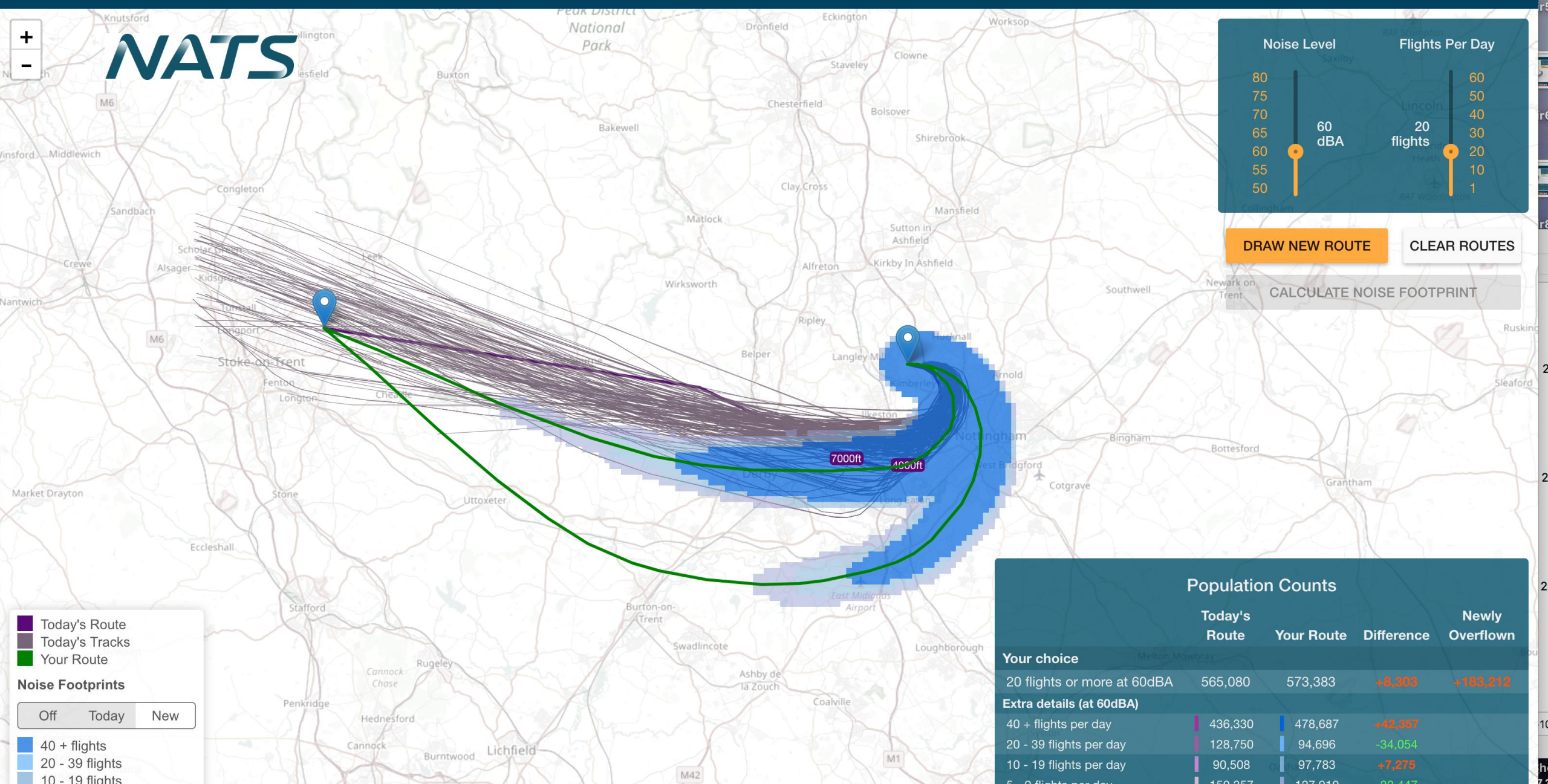


# Comp-Air





# Comp-Air



Noise Level

80  
75  
70  
65  
60  
55  
50

60 dBA

Flights Per Day

60  
50  
40  
30  
20  
10  
1

20 flights

DRAW NEW ROUTE

CLEAR ROUTES

CALCULATE NOISE FOOTPRINT

Today's Route

Today's Tracks

Your Route

Noise Footprints

Off

Today

New

40 + flights

20 - 39 flights

10 - 19 flights

Population Counts				
	Today's Route	Your Route	Difference	Newly Overflown
Your choice				
20 flights or more at 60dBA	565,080	573,383	+8,303	+183,212
Extra details (at 60dBA)				
40 + flights per day	436,330	478,687	+42,357	
20 - 39 flights per day	128,750	94,696	-34,054	
10 - 19 flights per day	90,508	97,783	+7,275	
5 - 9 flights per day	150,257	127,010	-23,247	

# Summary



- UK's Aviation Strategy sets out a framework for aviation to grow sustainably
  - As an industry, aviation has made great strides in reducing noise at source, improving operational procedures
  - In the UK noise has been disconnected from growth in traffic
  - But has the noise problem gone away...?
  - Airspace modernisation (PBN) is coming - and offers significant operational benefits
  - Community reaction to PBN is likely to be significant a blocker to improvements
  - Is this about externalities? How can we bring communities closer to the airspace modernisation debate to deliver future growth and capacity in a sustainable way
-

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