

# Noise in the Community

## RNAV implementation



London  
Luton  
Airport

6<sup>th</sup> October 2016 Community Meeting  
Putteridgebury Campus

# RNAV Implementation

## Community Meeting



### Introduction

On the 6<sup>th</sup> October 2016 London Luton Airport (LLA) held a meeting with local communities to review the implementation of the RNAV flight Path along the 26 westerly Brookmans Park (BPK) route. Residents, Parish, Town, District County Councillors and community groups from the local area attended, some of which are listed below:

- Markyate & Flamstead
- Redbourn
- Harpenden
- St Albans (including)
  - Jersey farm
  - Marshalswick
  - New Greens
- Sandridge
- Childwickbury

Presentations were given by the Airport, NATS and LADACAN (Luton And District Association for the Control of Aircraft Noise) relating to a number of topics followed by a discussion panel and questions from the floor. The presentations included;

- Background which led to the change
- The Airspace Change Process and options
- Post Implementation
- LLA in the London Terminal Manoeuvring Area
- Experience of a RADAR controller
- View from the ground

The presentations are available in the appendices of this document.

This document provides a summary explanation to the slides in the appendices and will also detail some of the questions, answers and suggestions that were discussed during the day.

## Presentation from London Luton Airport part I (Appendix A)

LLA presented on the background to the RNAV airspace change and that the process was born of feedback from local communities relating to aircraft straying from the published flight path.

Three options were derived for the airspace change proposal and ultimately one was taken through for final submission. Full details of the airspace change process including all the options considered can be found at <https://www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Decisions/Luton-runway-26/>

Following implementation, the uptake for RNAV was very rapid and within 2 weeks all operators were using the new route, significantly improving the track keeping. Some issues were identified with certain aircraft types: these were investigated immediately and are due to be resolved by the end of 2016. The CAA's post implementation review will commence roughly 6 months after the resolution is implemented - the date is still to be confirmed.

## Presentation from NATS (Appendix B)

NATS, the UK principal Air Traffic Control provider presented on how LLA fits into the London Airspace Network and explained the detail around interacting flight paths between different airports which prevent some Luton departures from being cleared for continuous climb.

The interaction at the Brookmans Park reporting point is complex and due to the outdated structure in place, it is difficult to make changes to one flight path without it having a ripple effect and requiring changes to be made by other airspace users.

The London Airspace Management Program (LAMP), which was due to make significant changes to the airspace north of London by 2019, has been delayed for various reasons within Government including a decision regarding additional runway capacity in the South East.

NATS talked through a video recording of a radar session in the Swanwick Control Centre which illustrated what the controller sees when communicating with aircraft, and what they are focused on achieving.

## Options for Next Steps (Appendix A)

Several options were presented for next steps in the short, medium and long term.



### Short Term – (approximately 12 months)

- Work with our airline customers to encourage all aircraft to climb quickly when permitted to do so without creating significant additional noise from increased thrust. Investigations have shown that 50-60% of aircraft on the westerly BPK route are cleared for continuous climb to 10,000ft, and some aircraft currently climb at a slower pace than others.
- Further explore the possibility of reducing the altitude constraints currently in place for the interaction between the LLA westerly departures and the Heathrow easterly departures when both airports are operating from westerly runways. This should achieve a 1,000ft improvement in climb profile.



### Medium Term – (approximately 2-3 years)

- Implement Required Navigational Performance (RNP) routes that further improve track adherence by keeping them closer to the centreline. This is due to be explored alongside an increase in altitude and an option to avoid overflying communities (e.g. Sandridge).
- Feasibility study to understand how we can design the LLA BPK flight paths to reach 10,000ft every time by the time they cross the railway between Harpenden and St Albans.

### Long Term – (more than 5 years)

- London Airspace Management Program and the complete redesign of the London Airspace structure.

## Presentation from LADACAN (Appendix C)

LADACAN presented on the view from the ground and explained that the increased disturbance experienced by some members of the community are down to a number of changes over the last few years, not necessarily all related to RNAV. These changes include:

- An increase in the numbers of flights operating from the airport
  - Approximately 50% increase in number flights using the westerly departure via Brookmans Park between 2013 and 2015
- The noisiness of the aircraft mix:
  - The percentage of A320/A321s has increased compared to the percentage of A319s
- RNAV Airspace Change Process:
  - Aircraft are flying in a much tighter concentration along the centreline than previously

LADACAN also presented on the relation between noise footprints on the ground and aircraft at different altitudes, and the widely discussed definition of “overflowed” outlined in the document CAA CAP 1378. LADACAN encouraged more dialogue with stakeholders about objectives and expected outcomes as part of any future Airspace Change process.

## Panel Discussion Q&A

During the coffee break attendees were given the opportunity to note down any questions that they may have had from the first half of the session. These were then put to a discussion panel formed of NATS, LADACAN and LLA.

**Q – Why do all of the flights on this route go south and then east over towns and cities - why can they not be routed north and then east over rural Bedfordshire?**

A – This was proposed by NATS in 2008 as part of the TC North Airspace change process. These changes would have increased the number of people affected by noise by 110%. The arrivals and departure flight paths were also 30nm and 50nm longer respectively than they are now which would have created more noise and emissions for a longer period of time. The consultation received enough response to warrant delaying the program so as to encompass the changes in a much wider program which became LAMP.

**Q – Why is the Noise Preferential Route so narrow? Why can't the flights be spread across a wider area?**

A – The NPR was narrowed as the RNAV procedure utilises navigational technology that ensures the aircraft flies closer to the centre of the route. This route was designed in line with the Government's overall policy on aviation noise which is **to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise** and also **to limit and where possible reduce the number of people adversely affected by aircraft noise, it is desirable to concentrate aircraft along the fewest possible number of specified routes in the vicinity of airports and that these routes should avoid densely populated areas as far as possible.**

**Q – Why are some flights vectored before the railway line?**

A- Whilst there is a restriction in place for vectoring that under normal circumstances restricts aircraft being taken off route until they have passed the waypoint at the railway line between Harpenden and St Albans **AND** reached an altitude of at least 4000ft, there are occasions when it is required. These reasons can be to avoid bad weather further along the route and to ensure that aircraft are safely separated (3nm laterally or 1000ft vertically). Sometimes an aircraft will be taken off route so that it can be given clearance to climb to a higher altitude and thus create less noise disturbance and emissions.

**Q – What timescales are there for a revision of height limits to benefit local communities and what does the airport identify as the key issues?**

A – We cannot commit to definitive timescales because airspace change is a complex subject and as shown in the presentations there are many interacting flight routes in the area. We can say that we are looking to deliver the short term options we have discussed within 12 months. We cannot provide timescales for the medium and longer term options until we have conducted investigations and feasibility studies into how exactly the changes can be made.

We do appreciate that while millions of us enjoy flying every year, there is a noisy and sometimes distressing downside for some. We strive to be a good neighbour and continually work with our airport partners to minimise wherever possible the impact on the local communities.



**Q - Will we get to provide feedback on the Post Implementation Review (PIR) before the route is made final and can we go back to the old route?**



A- The Civil Aviation Authority will start the PIR after the design amendments have been approved, which should be towards the end of this year. At that point they will assess the outcomes against the original objectives and will then make a decision on whether the route has done everything it was expected to do or whether further amendments need to be made. The PIR is not a consultation process and there will not be an opportunity to provide feedback in the same way.



**Q – Will the airport commit to a more robust noise monitoring program within each of the local communities rather than just using the fixed noise monitors and publish the results.**

A- Yes we will look at creating a more robust schedule of monitoring will purchase more equipment to do so and publish more regular updates on noise monitoring results and performance statistics.

**Q – What influence does Luton Airport, NATS or the CAA have with the way Heathrow and other traffic is currently routed over our region. Heathrow flights can be as low as 6000ft and fly over or close to populated areas?**

A – The Airport has no control over Heathrow's flight paths, although aviation noise is regularly discussed within the airport community in order to collaborate on new and innovate ways of reducing the impact of aircraft operations.

Almost every airport has routes that fly over or close to populated areas below 7000ft due to their location, which is why it is important for airports to look at ways of minimising and, where possible, reducing the impact on local communities.

**Q – Why is it that Bedfordshire gets all the gain and Hertfordshire gets all the pain?**

A – Flight paths both in and out of the airport do affect residents of Bedfordshire and in places at much lower altitudes than Hertfordshire.

The recent Oxford Economics report concluded that the airport supports almost 2000 jobs in Hertfordshire and delivered a GDP contribution of £88 million to the county. More passengers from the county use LLA than any other London Airport. Residents of St Albans District are Hertfordshire's most frequent flyers from LLA with 310,130 passenger journeys last year. That's the equivalent of every St Albans resident flying from the airport twice during 2015. 86% (266,386) were leisure journeys.

North Hertfordshire residents and Dacorum residents were the next biggest user group from Herts with 220,951 and 216,571 passenger journeys from those areas respectively.

**Q – When are we likely to see aircraft with quieter engines being introduced at Luton Airport?**

A – easyJet and Wizz Air are already using some of the quietest Airbus aircraft in production and have orders in place for the next generation Airbus (A320 NEO), we expect to see these at LLA by the end of 2017.

**Q: Will the airport operators postpone any further introduction of RNAV until the current noise issues are fully investigated?**

A – The airport will continue to work on options for navigational improvements to all of its departure routes. We will take into account fully the recommendations made by the CAA after the PIR when designing any new/replacement routes and RNAV has reduced the number of people overflown.

**Q: Would the airport operators consider postponing further capacity expansion until the current noise issues are resolve.**

A – In line with the final planning consent, granted July 2014, the airport will continue to increase annual passenger capacity from 12 to 18 million. A tightly controlled regulatory framework sets out the conditions for the airport to grow responsibly, such as restrictions on aircraft movements and the permitted scale of noise contours. We continue to work with our local communities to ensure we strike a balance between the significant social and economic benefits our growth brings to the region, and the impact of airport operations on our neighbours.”



# Noise in the Community

## RNAV implementation

17 October 2016



London  
Luton  
Airport



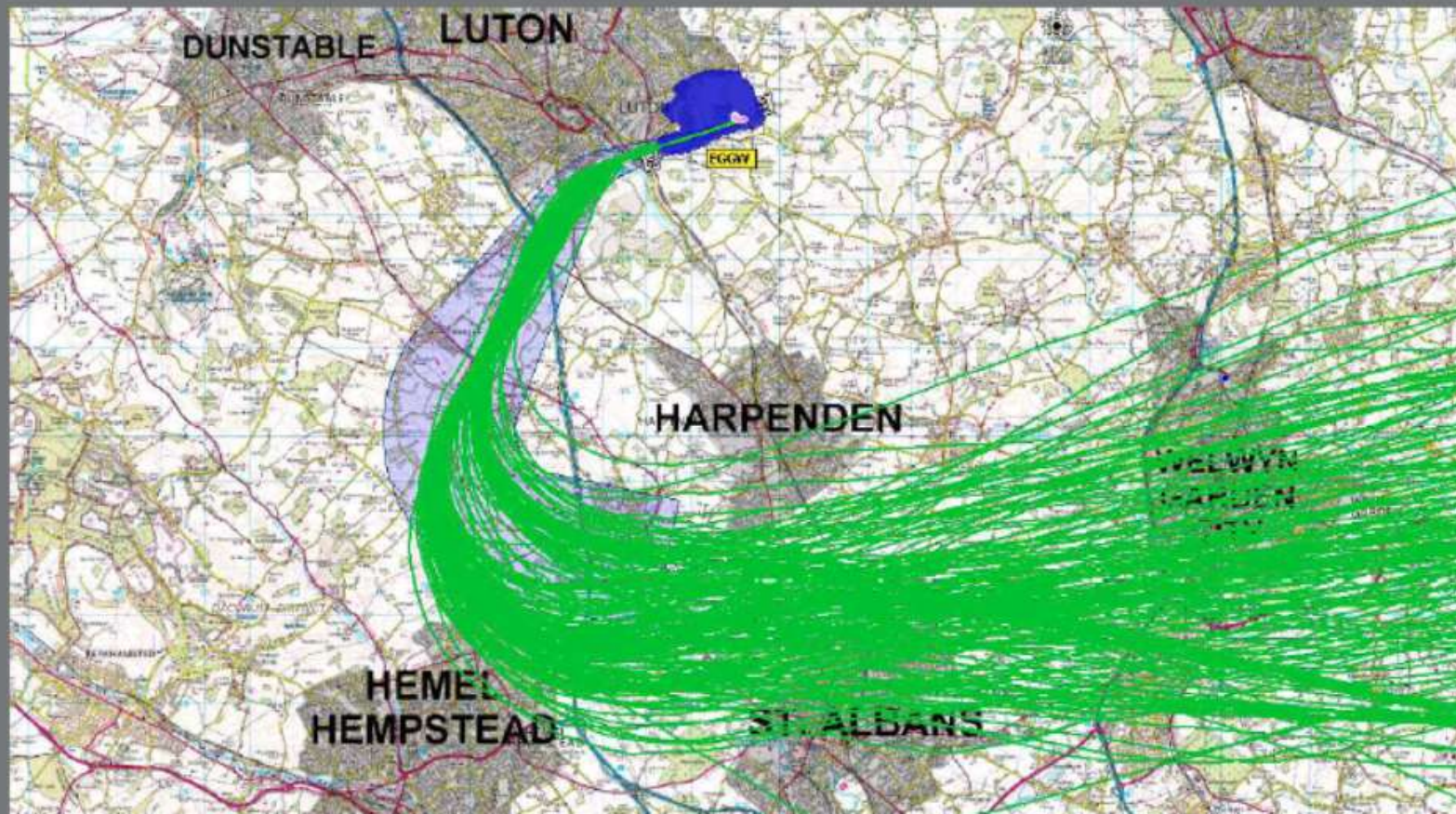
# Agenda

1. Introduction
2. The Airspace Change Process
3. Post Implementation
4. NATS
  - LLA in the London Terminal Manoeuvring Area
  - Experience of a TC RADAR controller

Break

5. Experience from the Ground
6. Options
7. Q & A

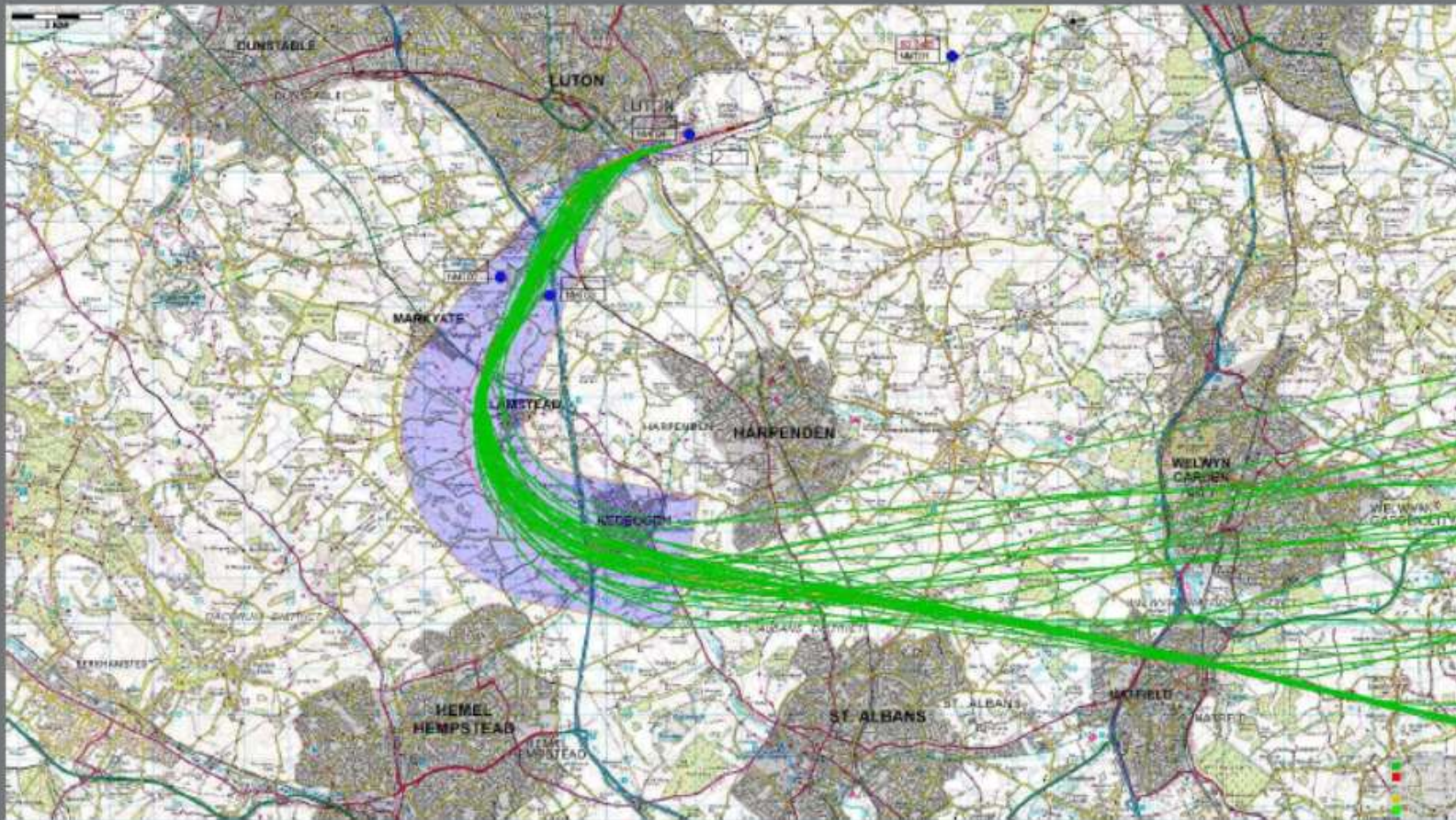
# Introduction





# The Airspace Change Process - Options

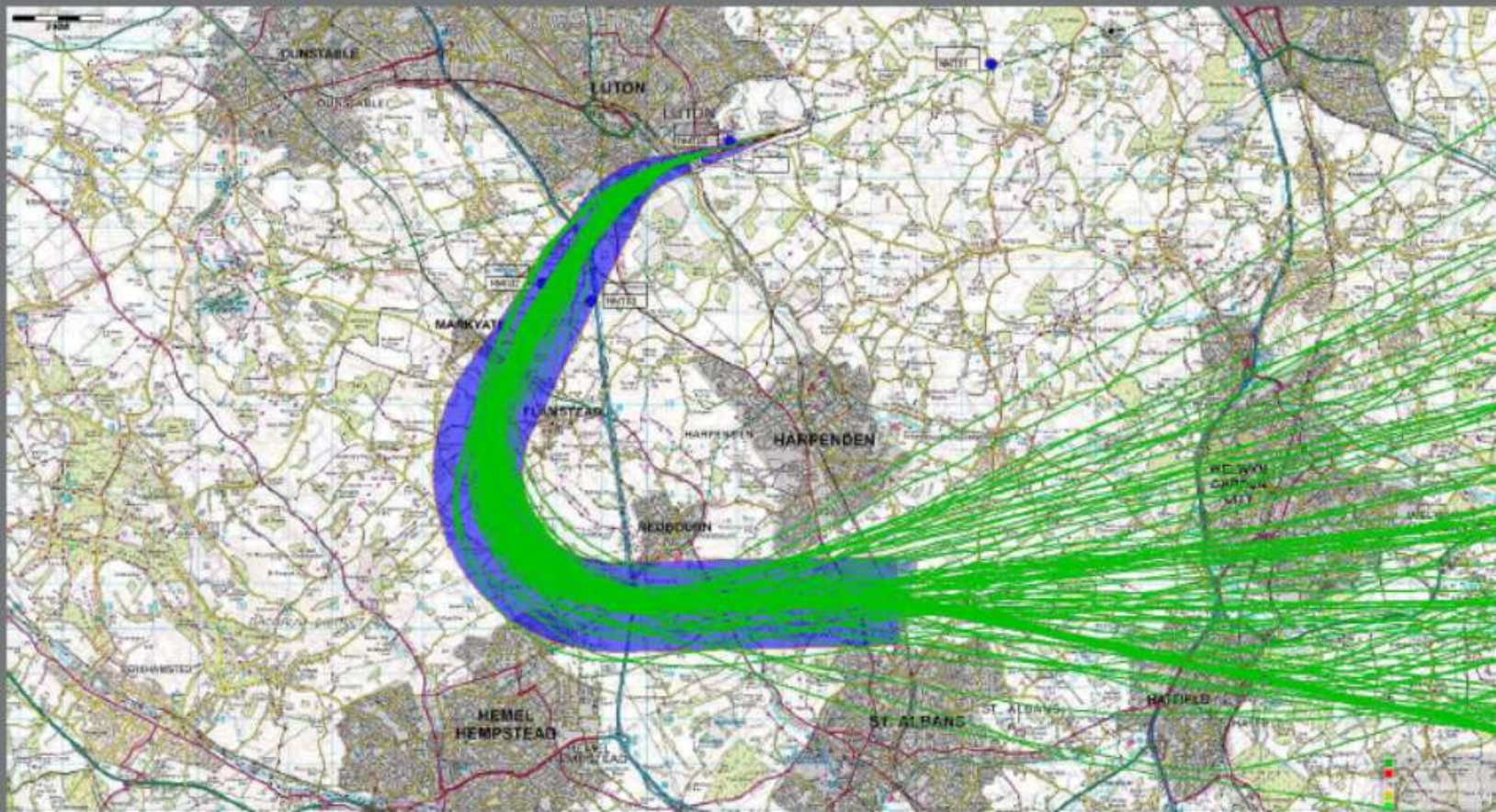
Reduce aircraft speed





# The Airspace Change Process - Options

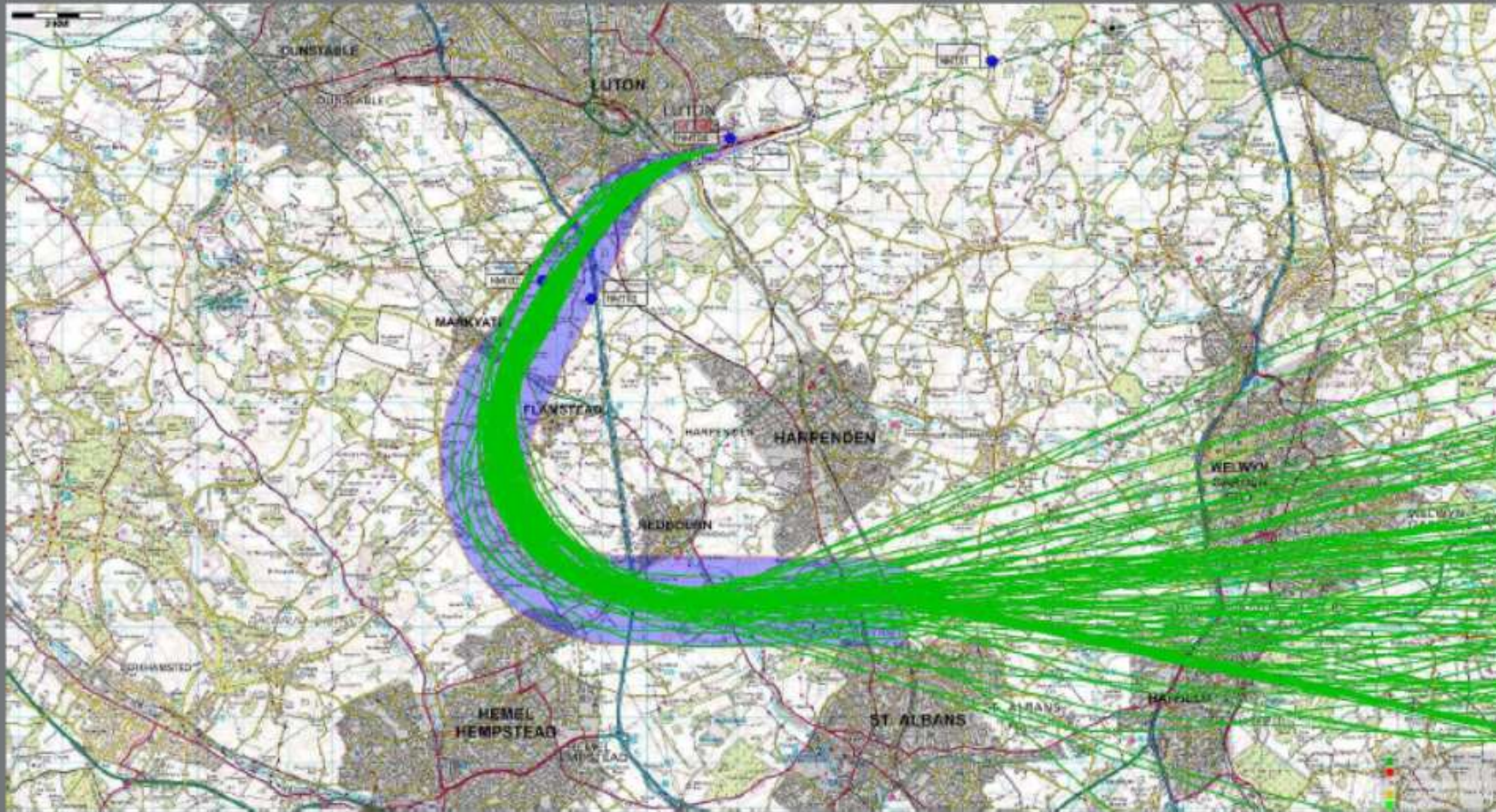
RNAV1 210 knts





# The Airspace Change Process - Options

RNAV1 220 knts



# The Airspace Change Process - Consultation

The consultation period took place between 10th April 2014 - 9th July 2014 (13 weeks).

The consultation was discussed and advertised in various media channels, including;

- LLA website
- Press release
- Local press
- London Luton Airport Consultative Committee
- Noise and Track Sub Committee
- Town and Parish council meetings



## **Airspace Change Proposal:**

RNAV1 Procedures on the  
Runway 26 Brookmans Park Departure Routes

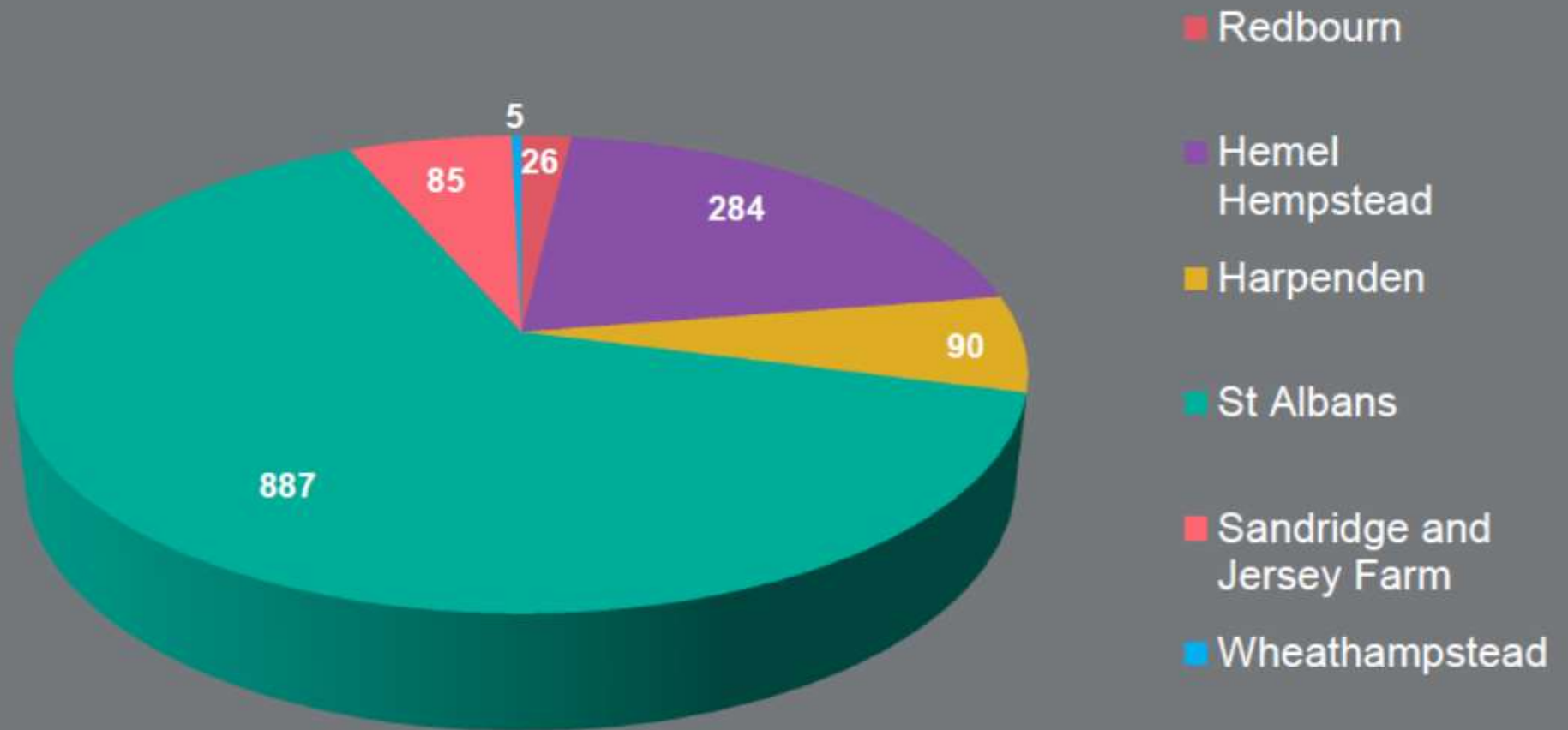
## **Stakeholder Consultation**

April 2014





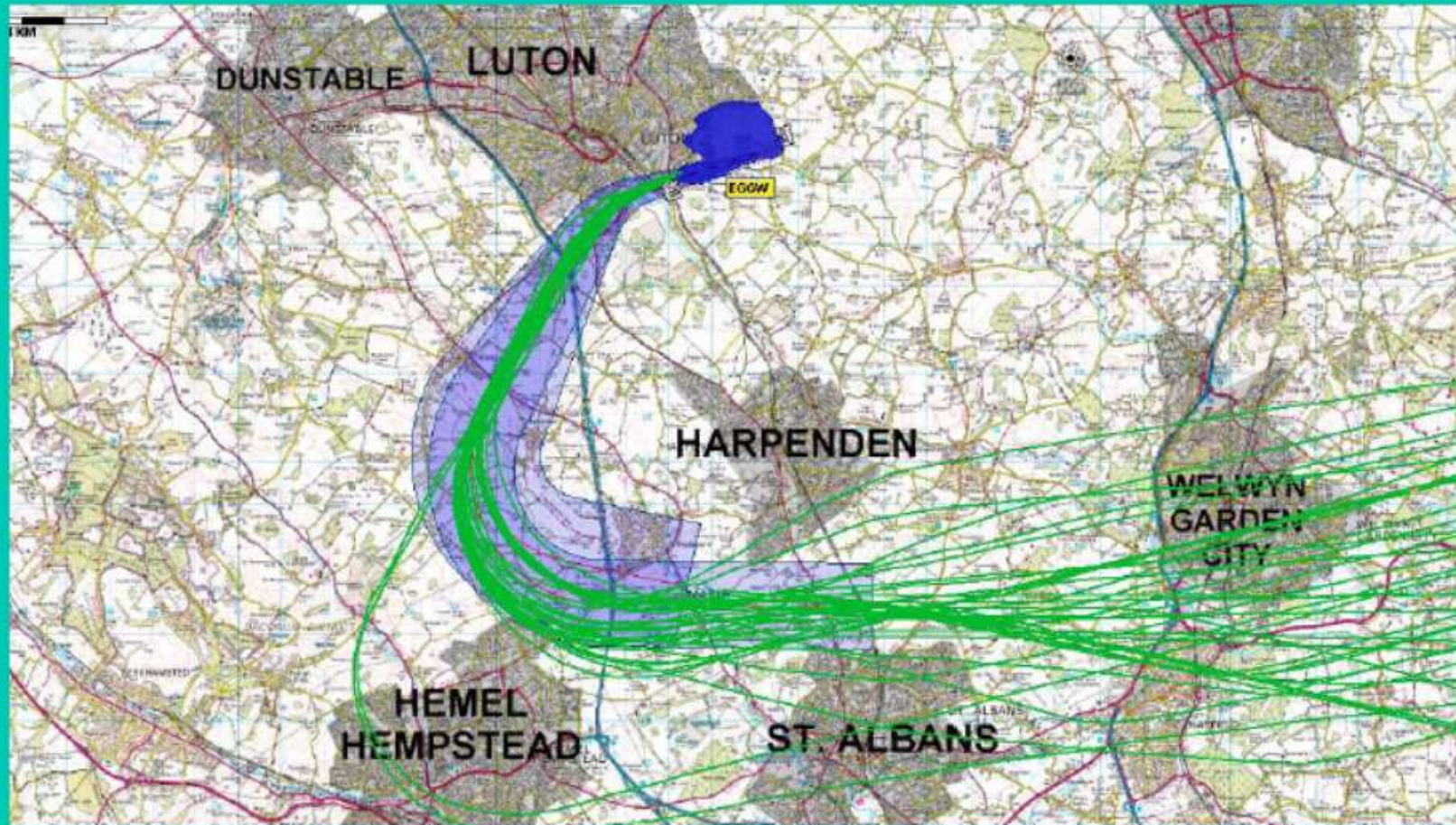
# Consultation Responses by location





# Post Implementation – 20<sup>th</sup> August 2015

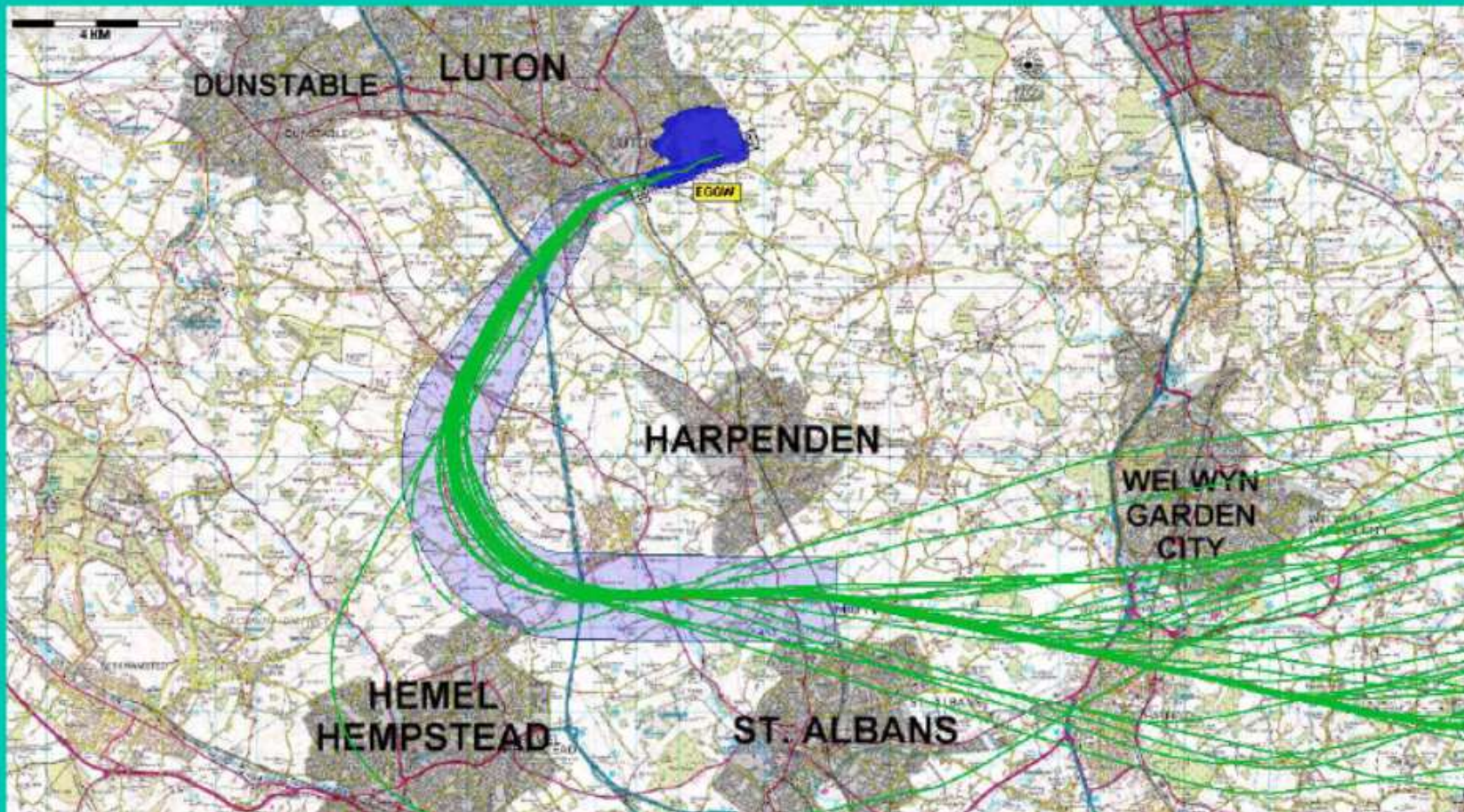
Day 1 - 53% of aircraft started using the RNAV route immediately.





# Post Implementation – 3<sup>rd</sup> September 2015

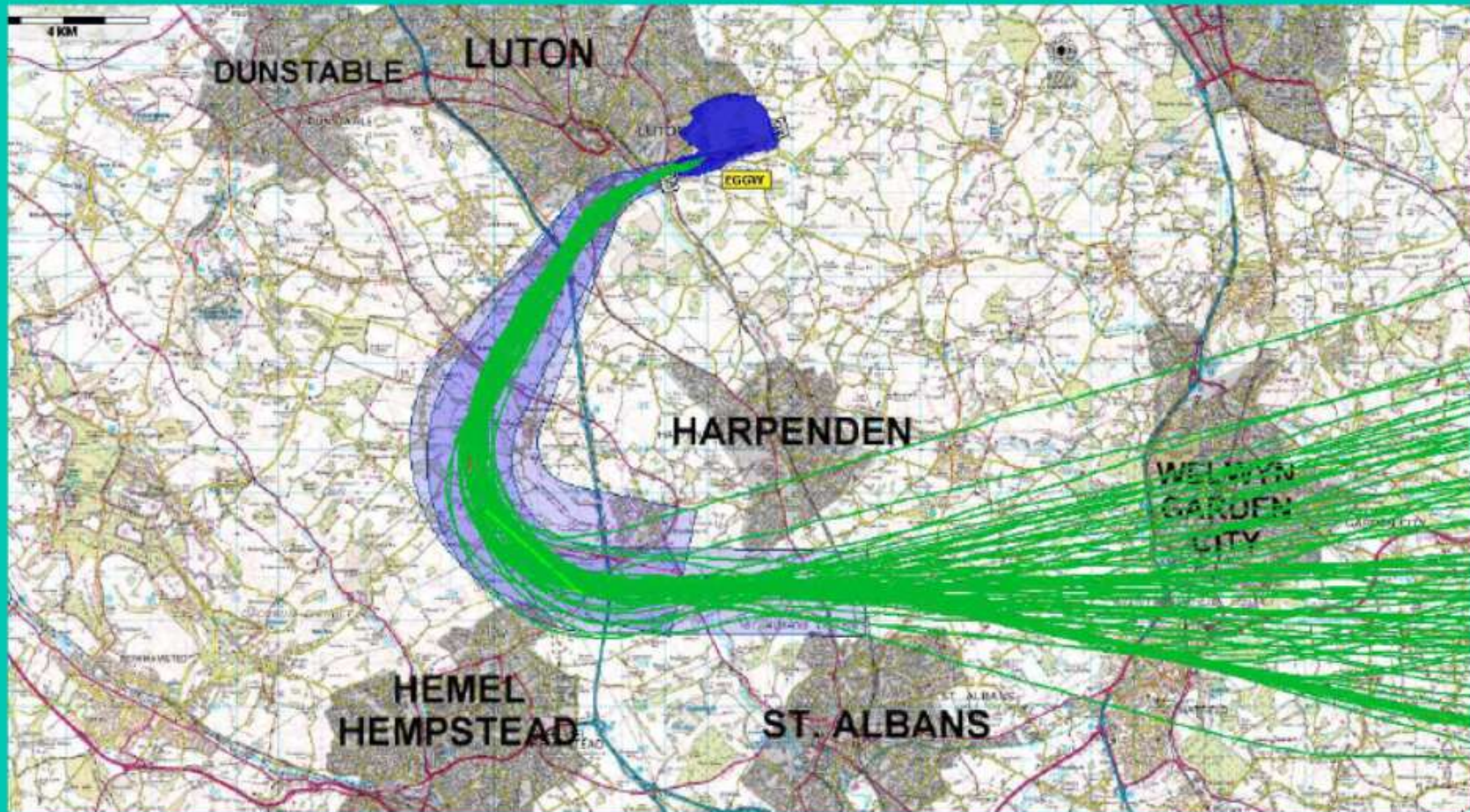
Two weeks - 100% of aircraft were using the RNAV route





# Post Implementation – 6<sup>th</sup> March 2016

By early March 2016 the Boeing aircraft went back to using the old route whilst the remainder continued using RNAV and the early vectoring had almost ceased completely

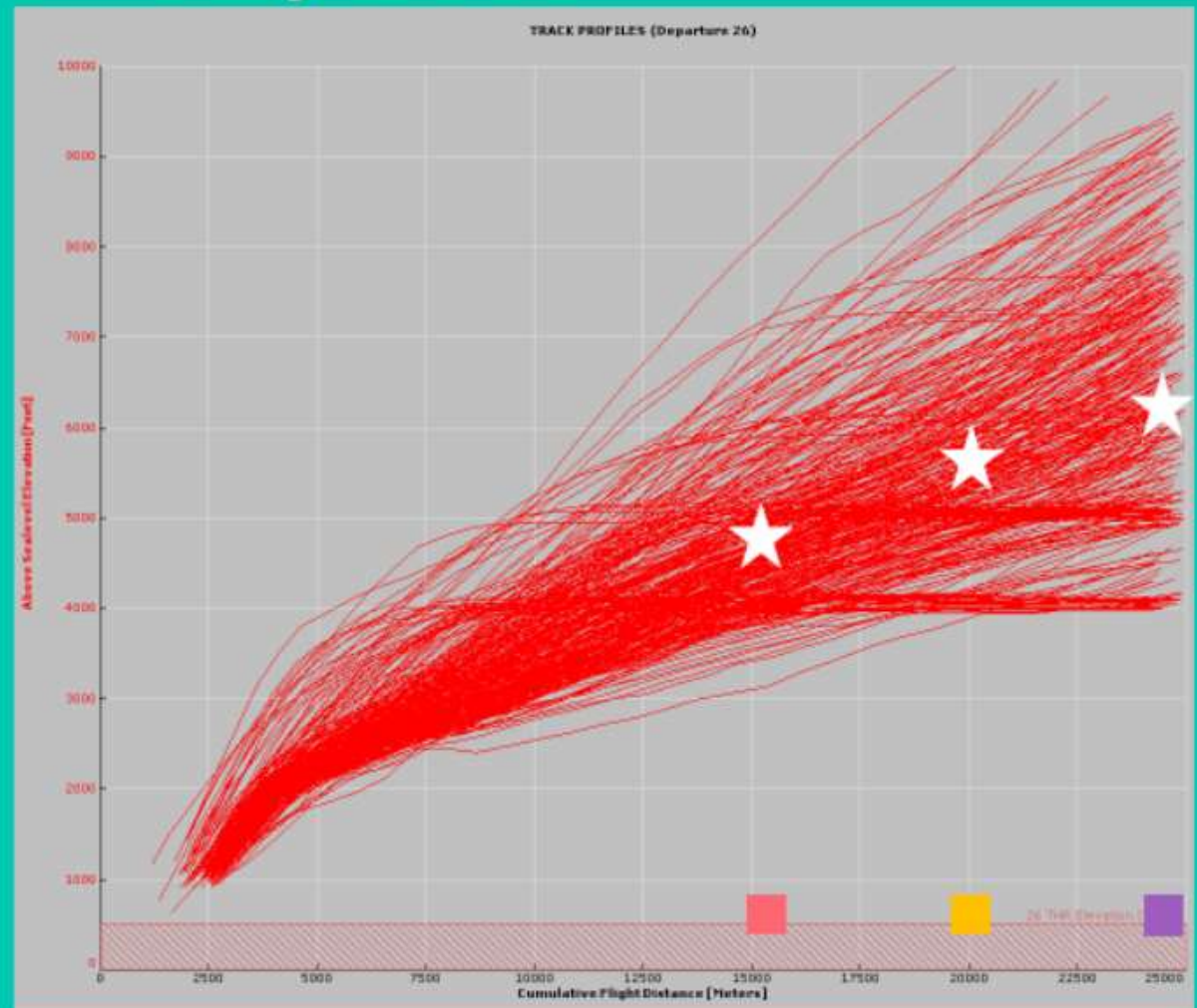




# Pre-Implementation – July 2015

## Climb profile

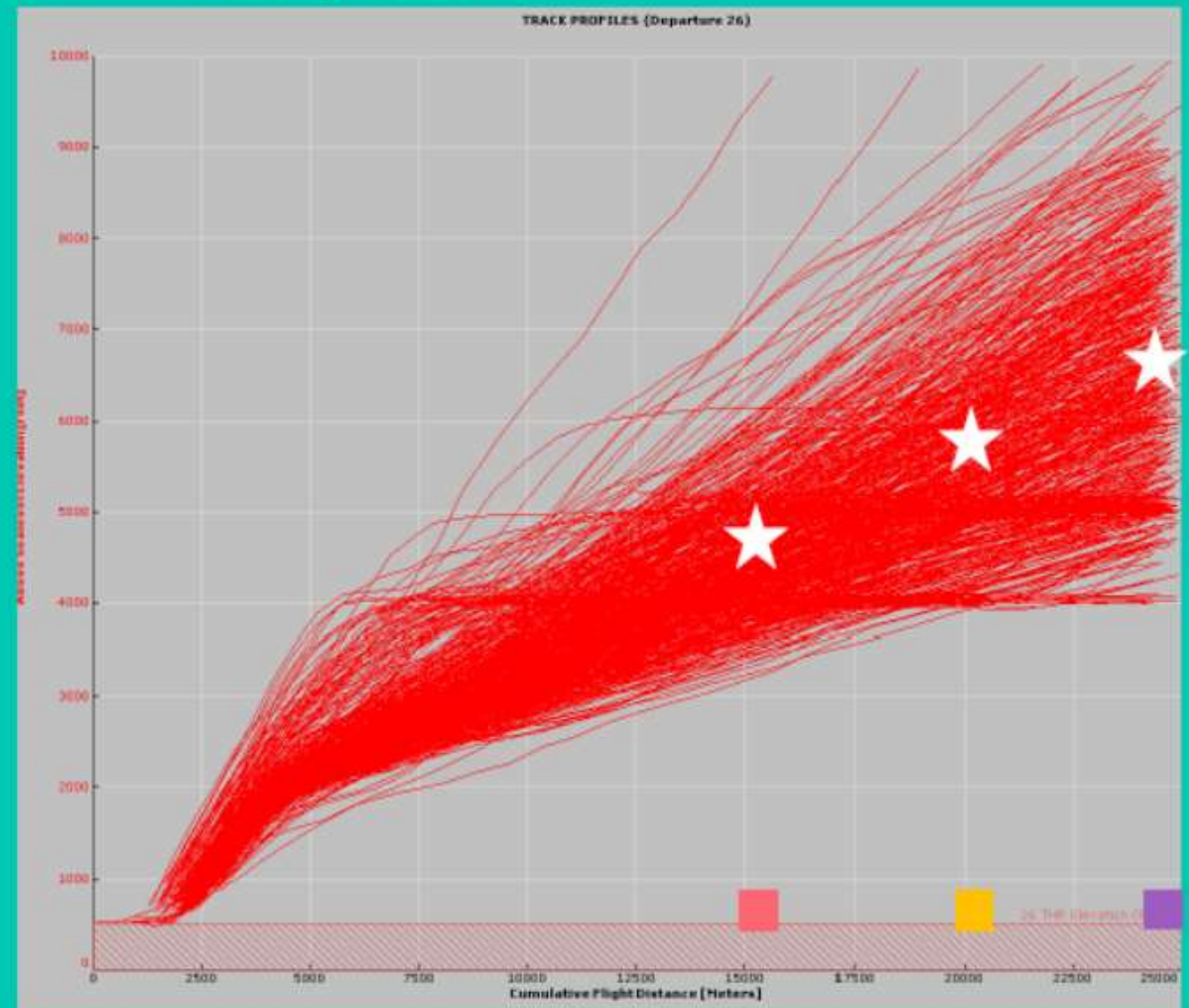
- Redbourn
- Childwickbury
- Sandridge
- ★ Average Height



# Post Implementation – July 2016

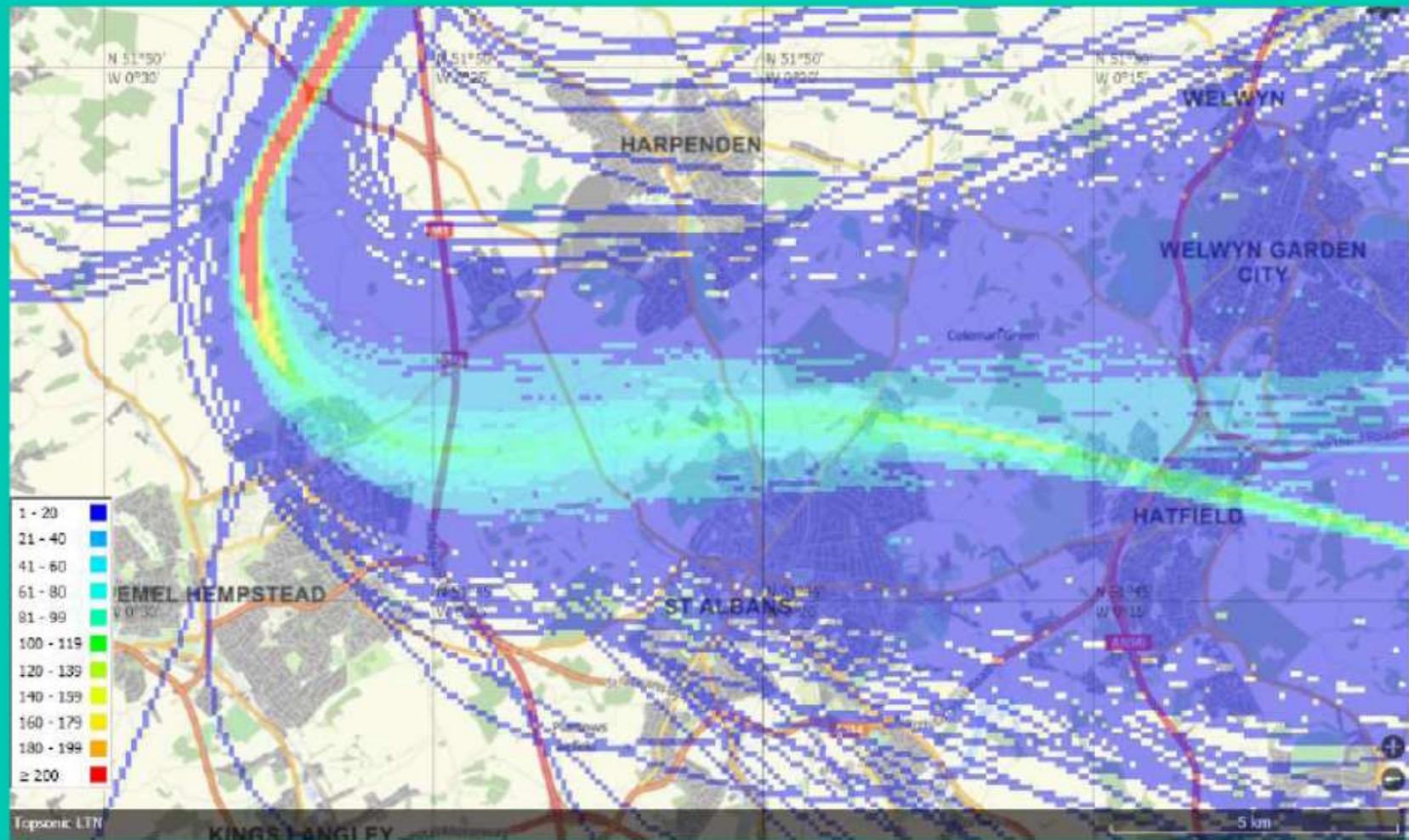
## Climb profile

- Redbourn
- Childwickbury
- Sandridge
- ★ Average Height



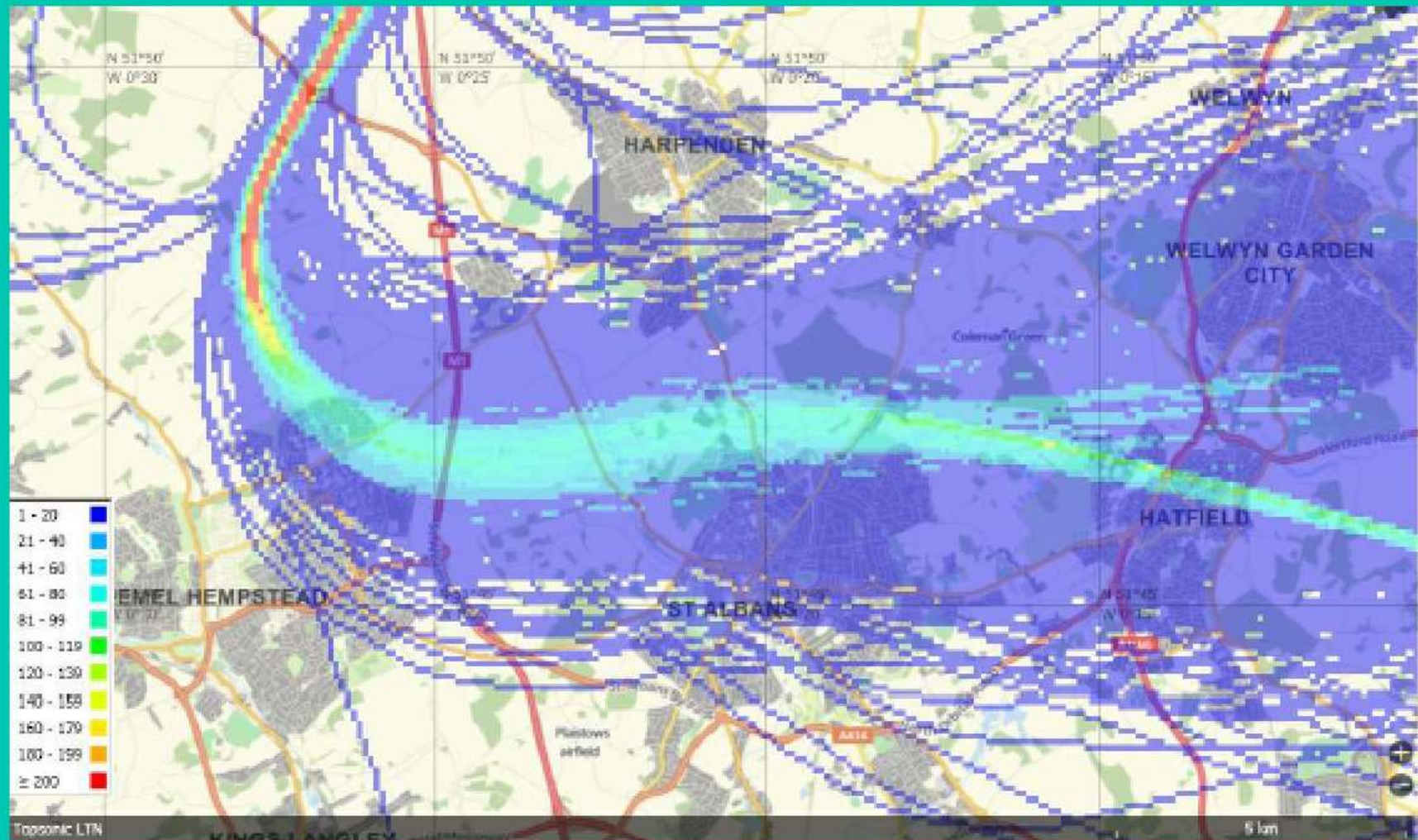


# Plot Density Aug 2013



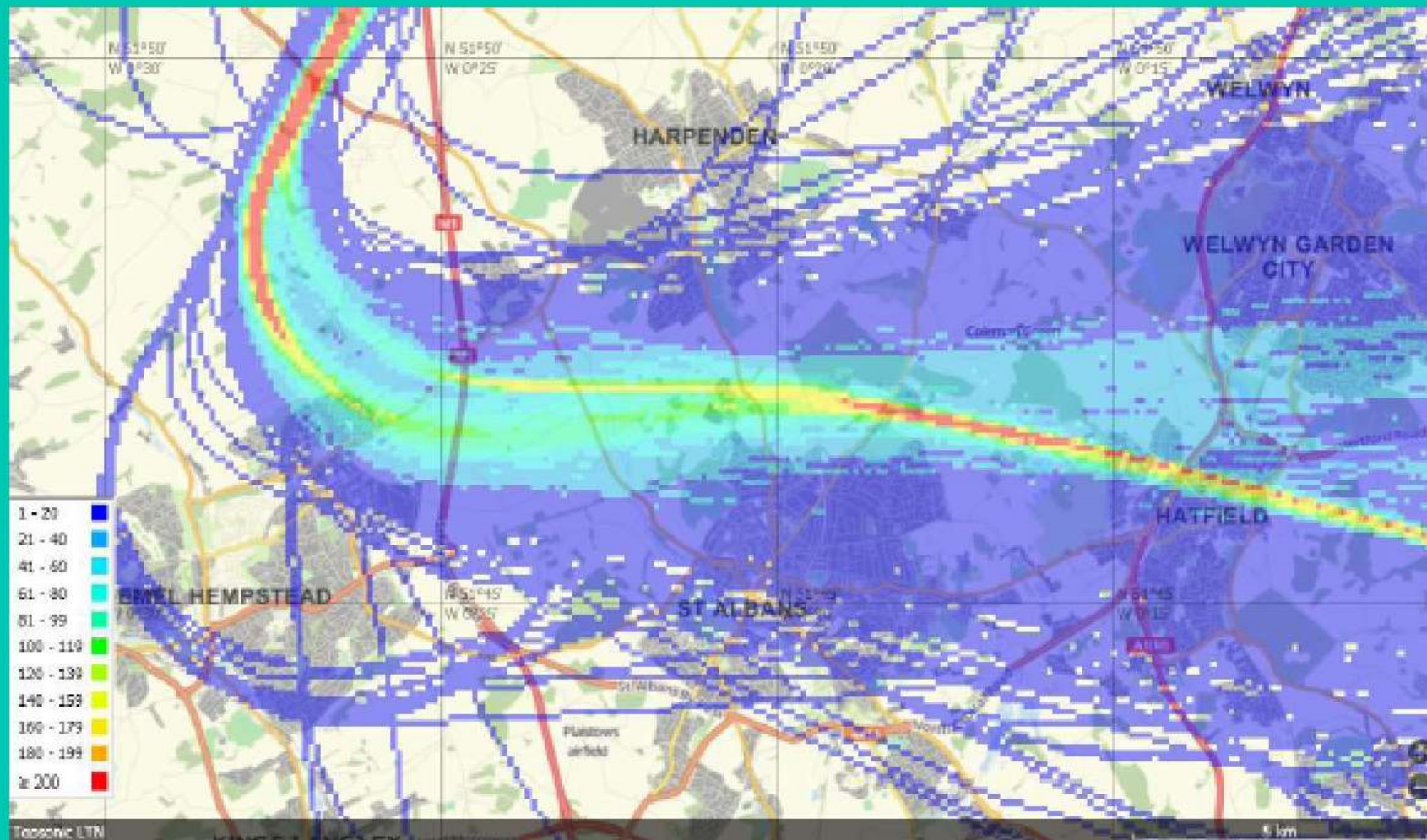


# Plot Density Aug 2014





# Plot Density Aug 2015





# Plot Density Aug 2016



# Post Implementation Review (PIR)

The purpose of the PIR is for the CAA to assess whether the change has delivered the impacts and benefits set out in the original airspace change proposal, and if not to ascertain why and determine the most appropriate course of action.

The PIR usually STARTS 12 months after implementation but our PIR has been delayed due to the technical issues mentioned with certain aircraft types.

Once the technical issues have been resolve the PIR will commence 6 months later.

# Options

The most beneficial solution for this congested sector of airspace is to get the aircraft at a much higher altitude and we are looking at a number of ways that this can be achieved.

## **Short Term**

- Remove conflict between Luton Westerly and Heathrow Easterly departures
- Increase aircraft climb profile where possible

## Medium Term

- Aircraft straight to 10,000ft
- Trials with other Airports
- RNP (Required Navigational Performance) to narrow the flight path and improve track keeping further.

## Long term

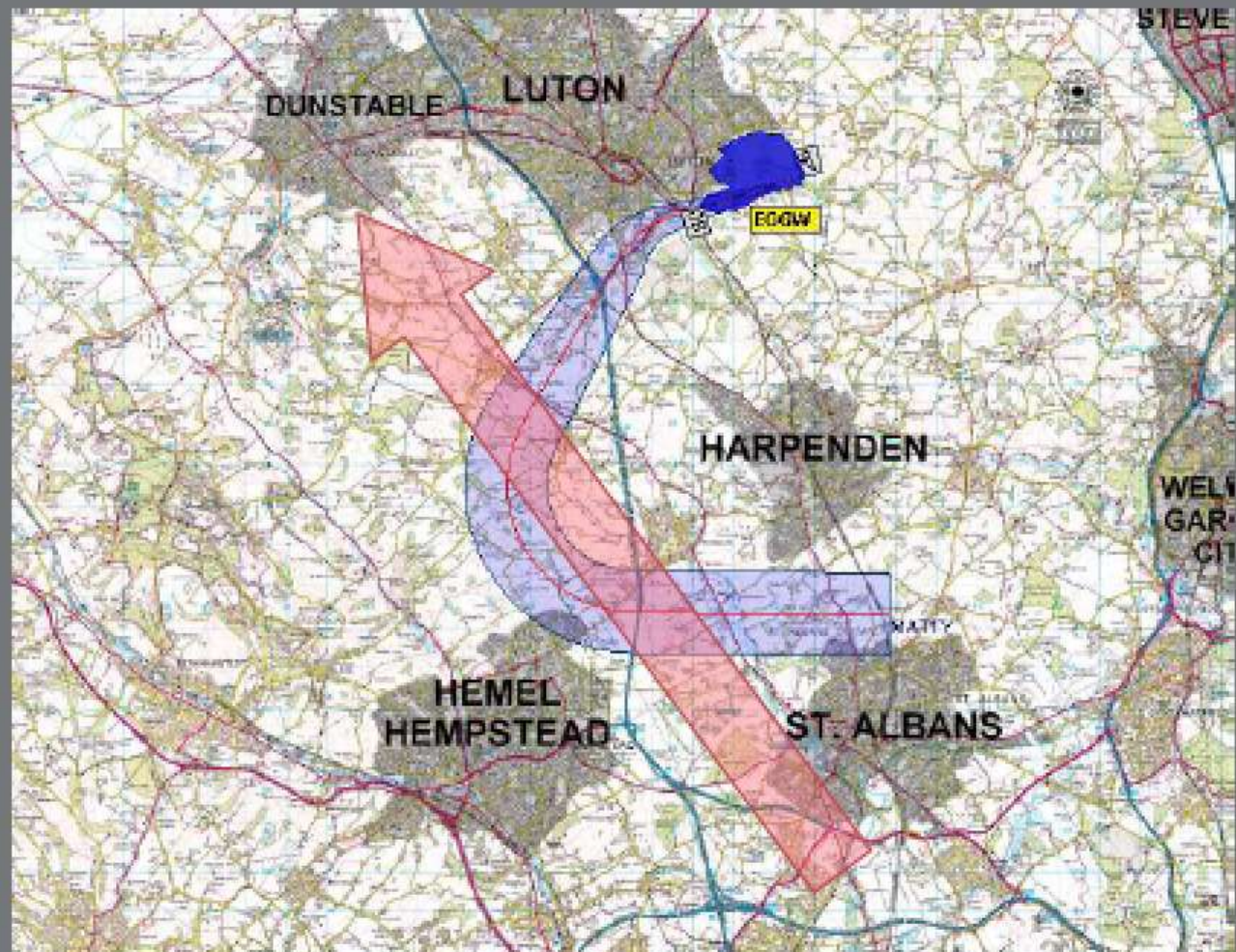
- London Airspace Management Program (currently no earlier than 2024)



# Short Term – Remove conflict with Heathrow

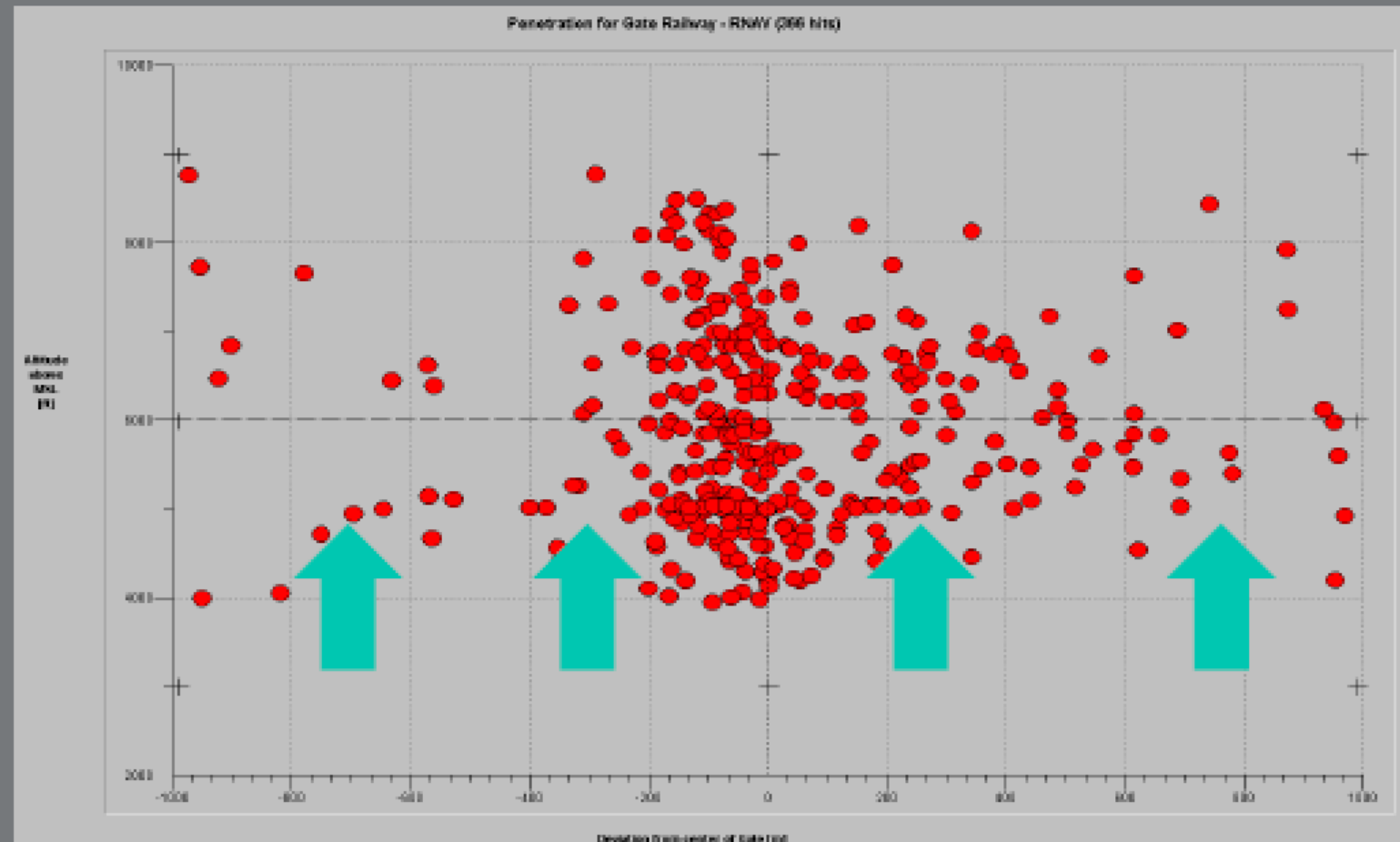
Luton Westerly  
SID at 4000ft

Heathrow Easterly  
SID at 5000ft



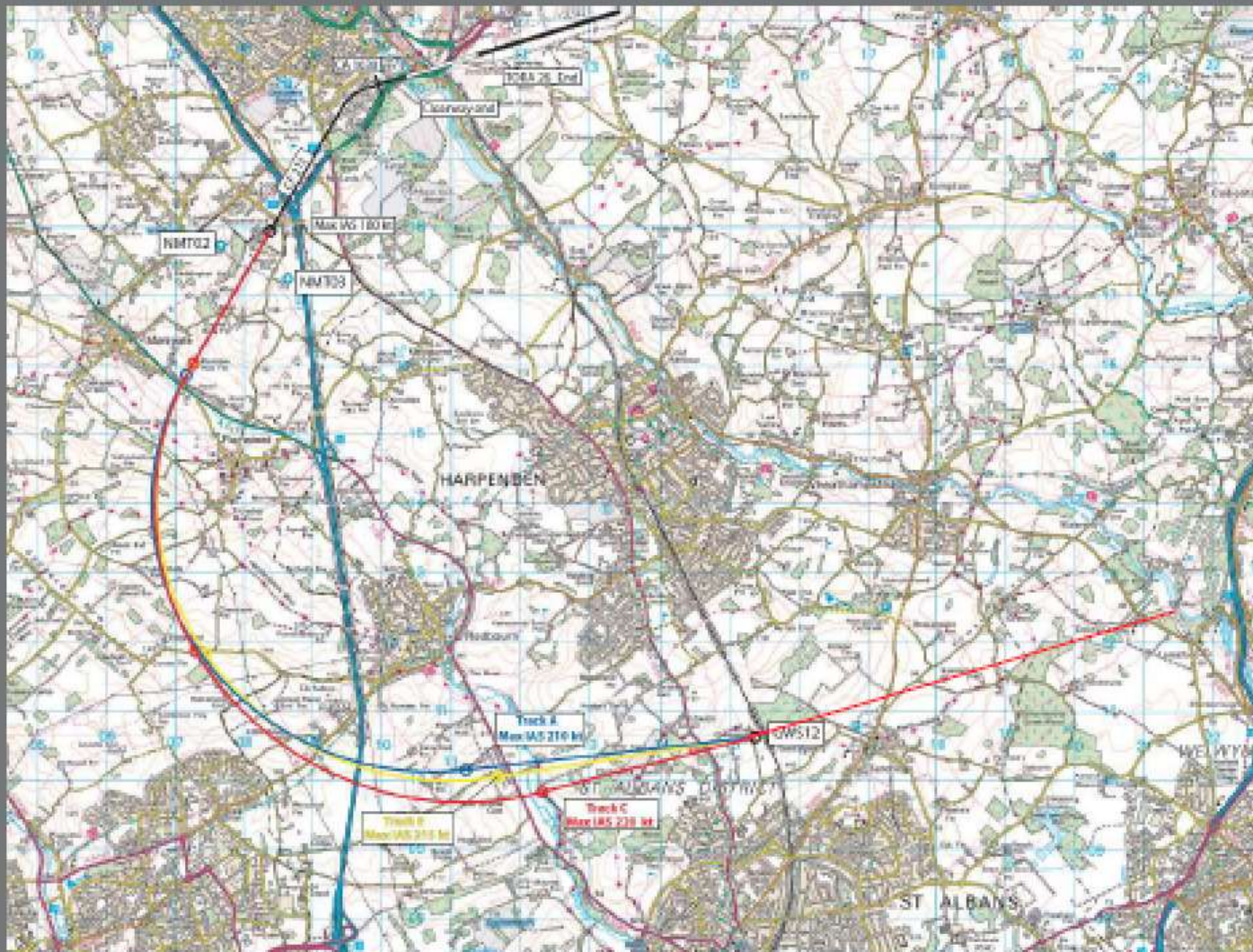
# Short Term – Increase aircraft climb profile

Whenever possible use best rate of climb





## Medium Term – RNP





## Medium/Long Term

Feasibility study  
underway to understand  
how we can achieve  
10,000ft every time



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# Long Term

## London Airspace Management Program (LAMP)

Today's modern, capable aircraft are flying in airspace designed 50 years ago for aircraft found only in museums – and for much less traffic than today.

Air traffic is forecast to grow from 2.4m movements today to 3.1m by 2030

Long term incremental programme of airspace modernisation is already underway – Future Airspace Strategy

Next major phases have been delayed by major political decisions



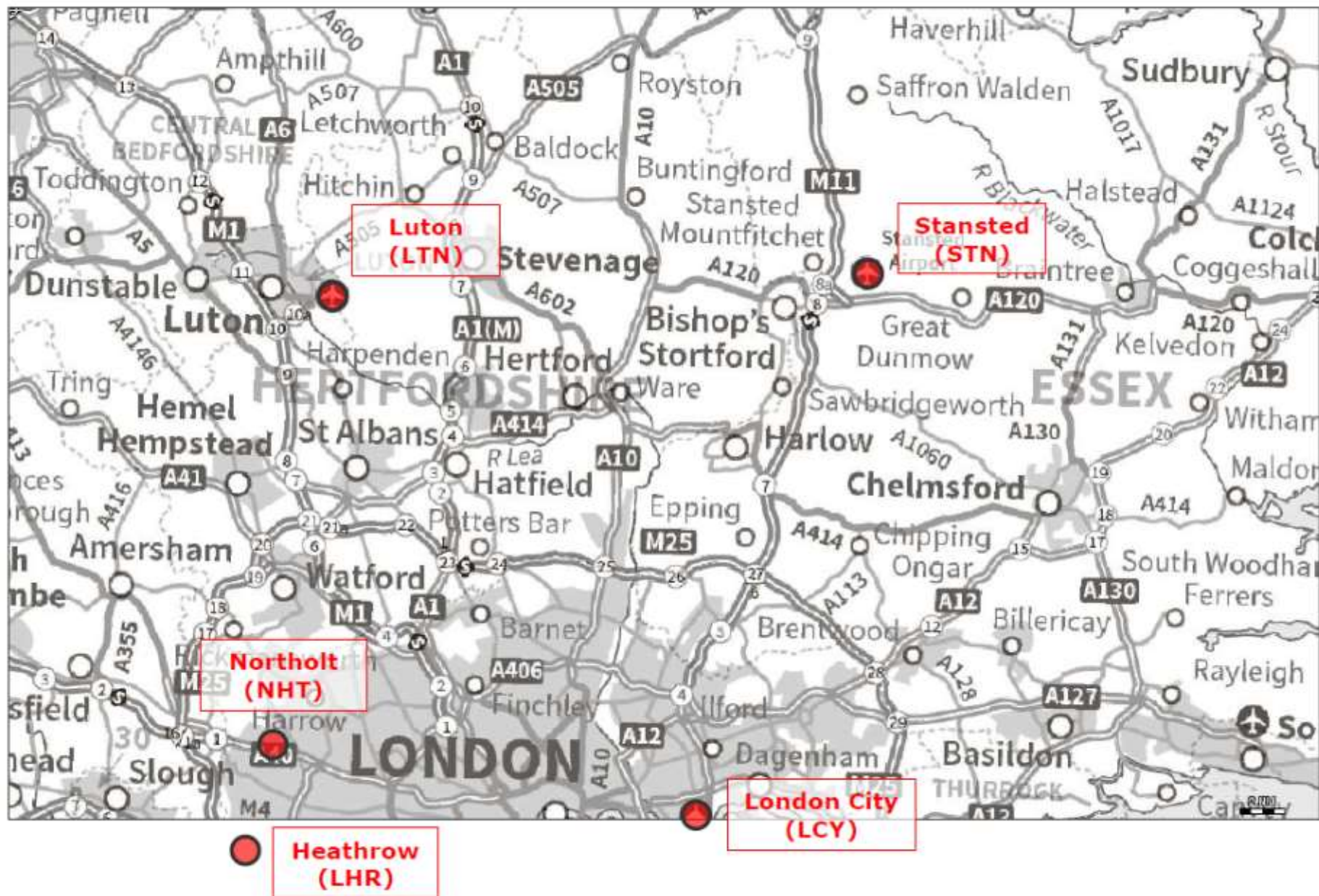
# Luton Match Departures

An illustration of departure interactions

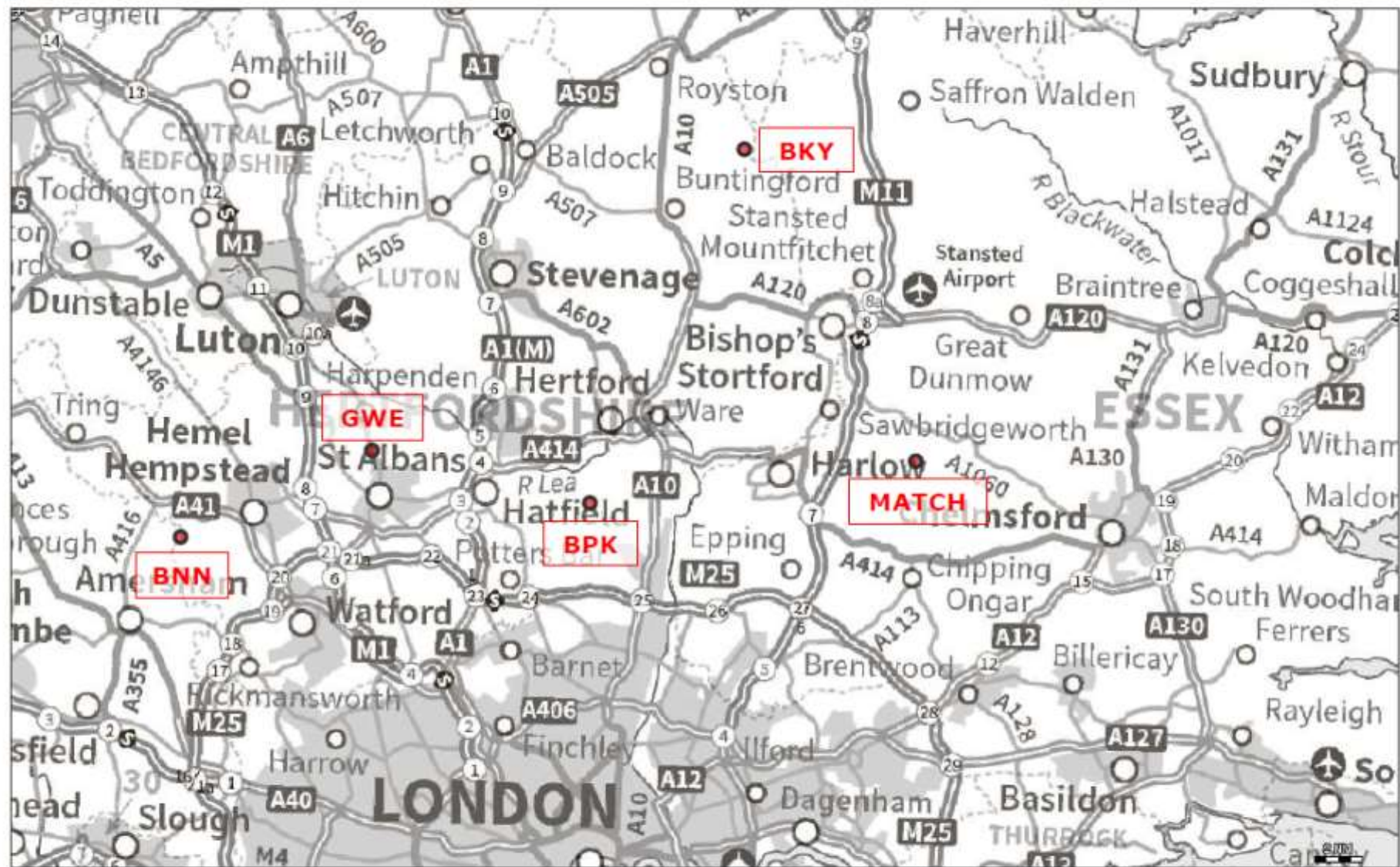
7th September 2016

NATS Private  
(Commercially Sensitive / Confidential)





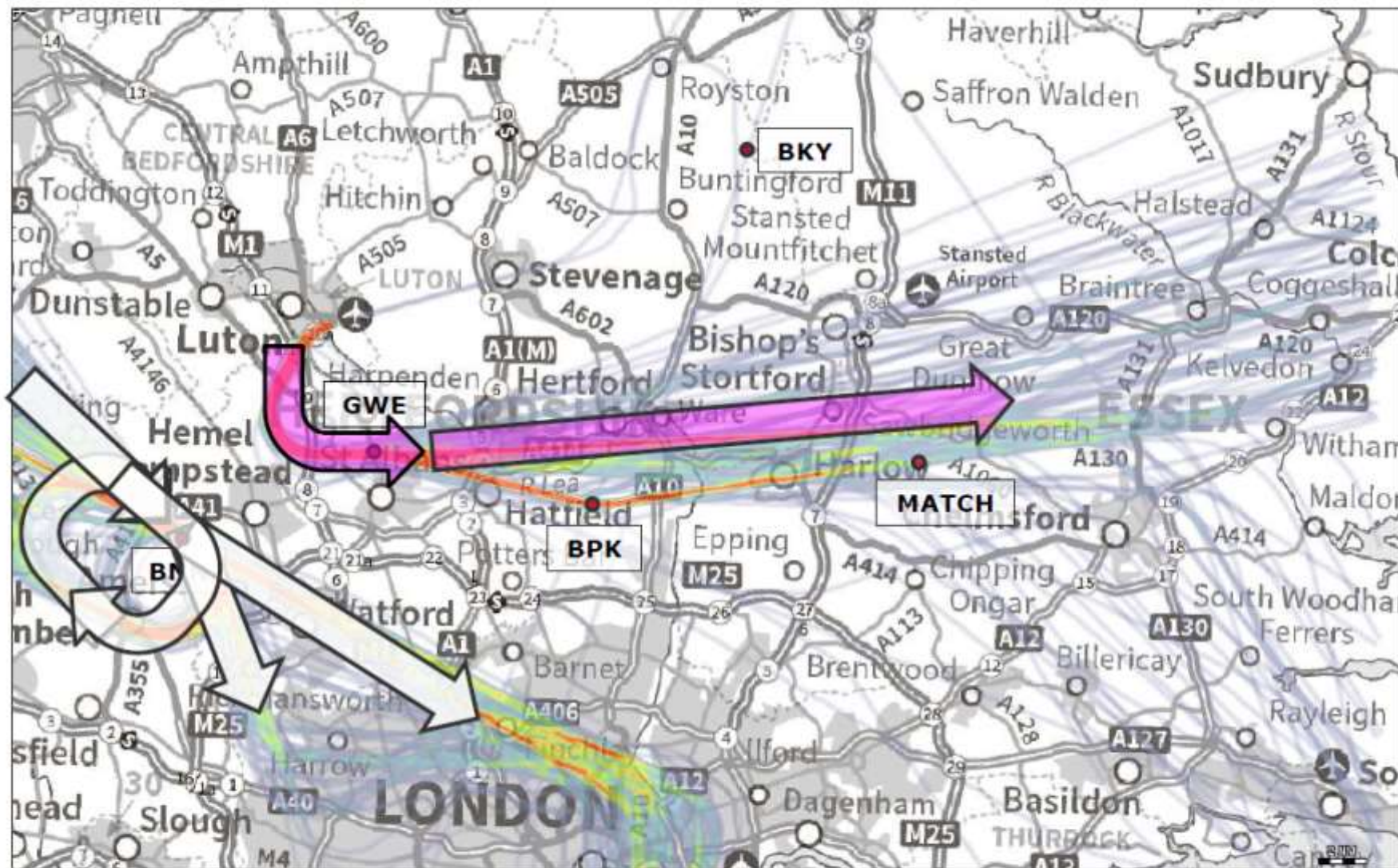




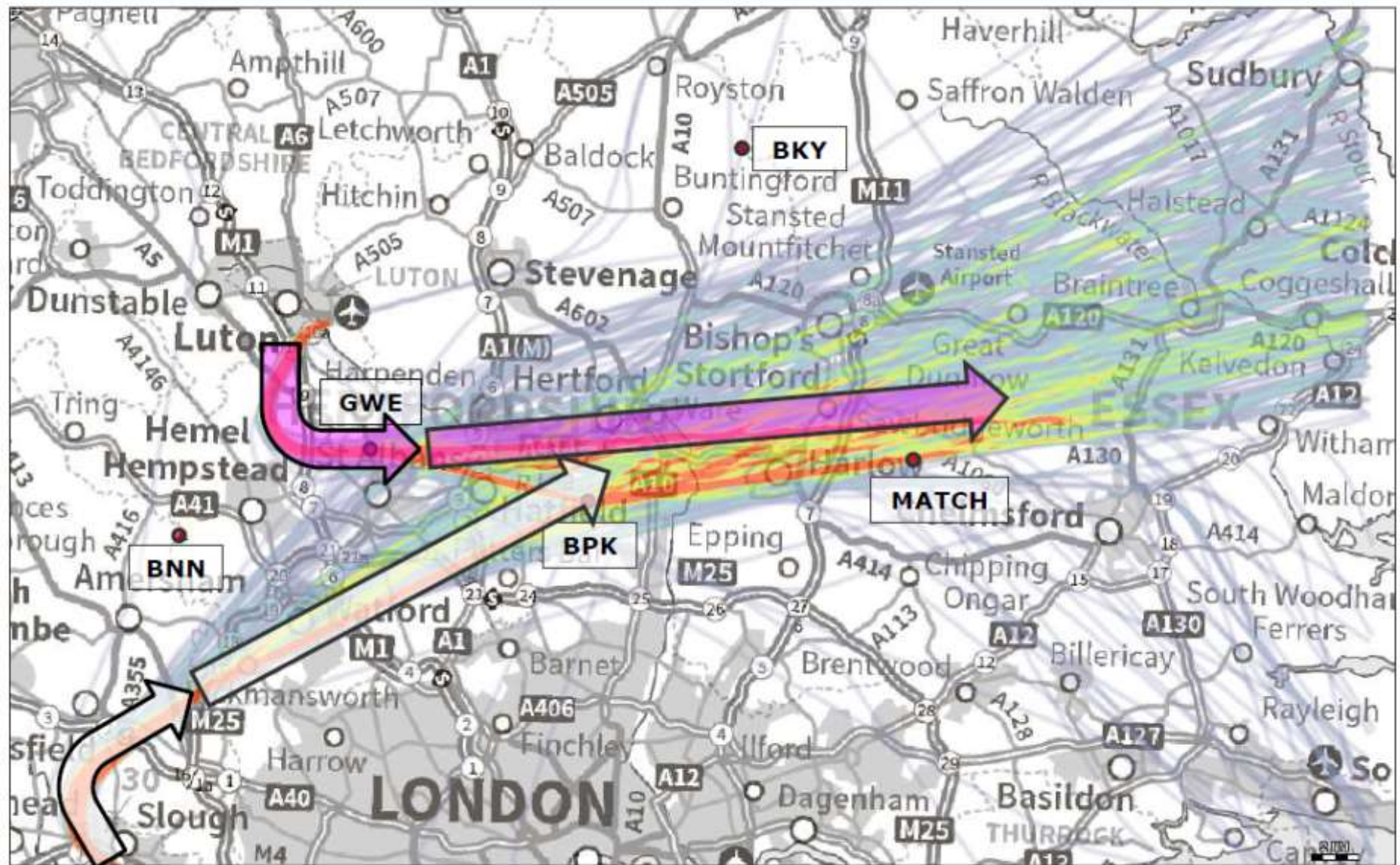




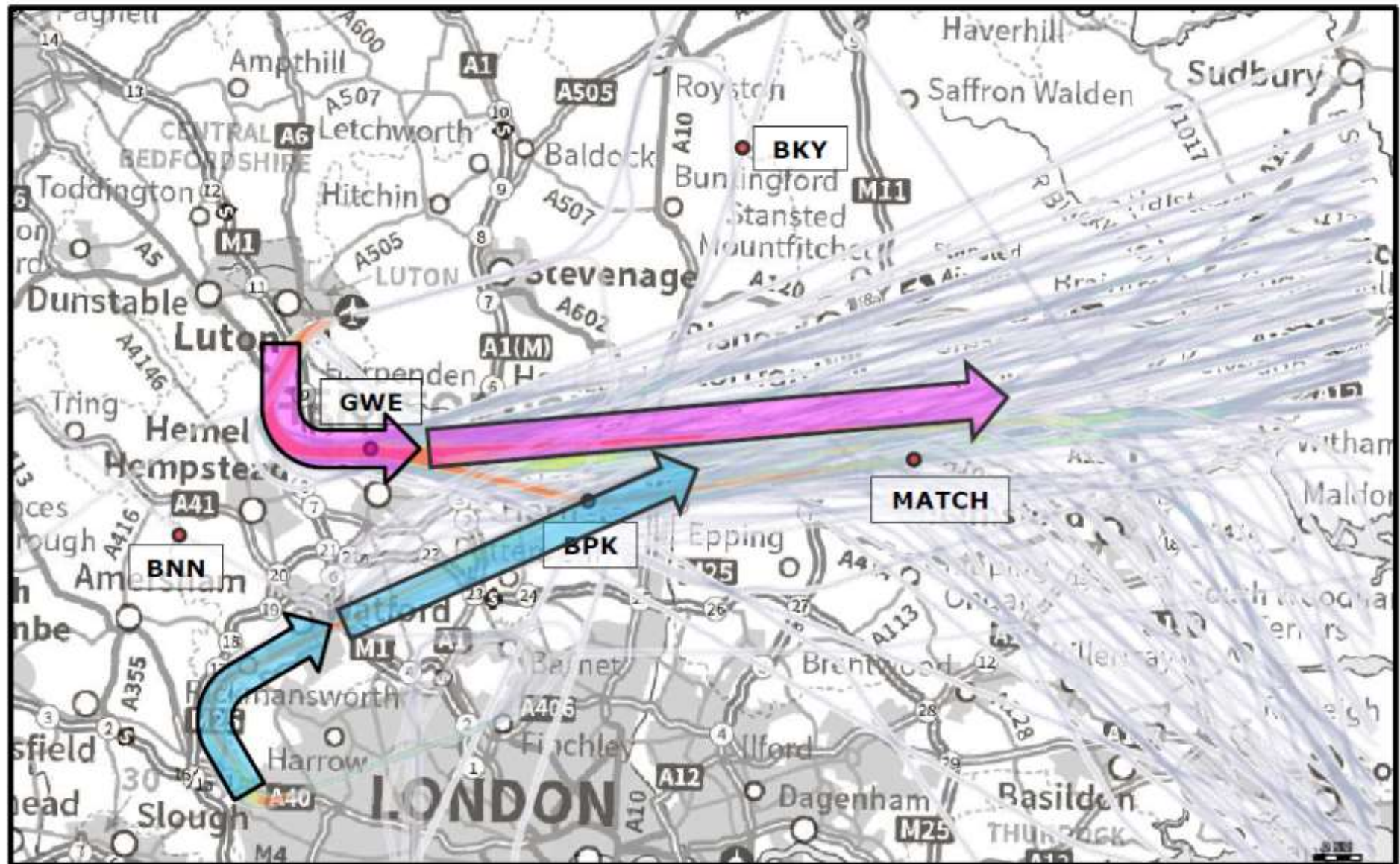
















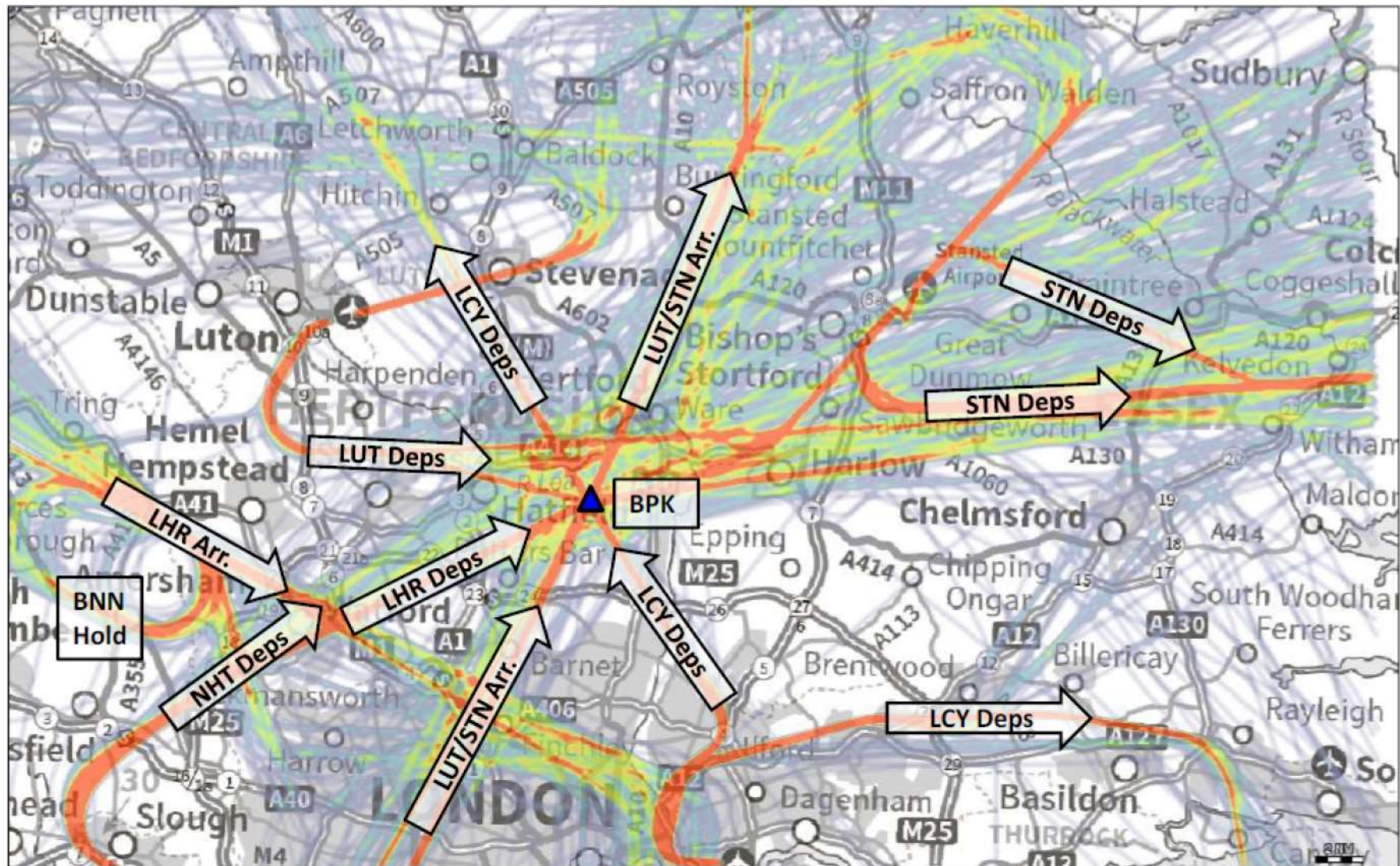








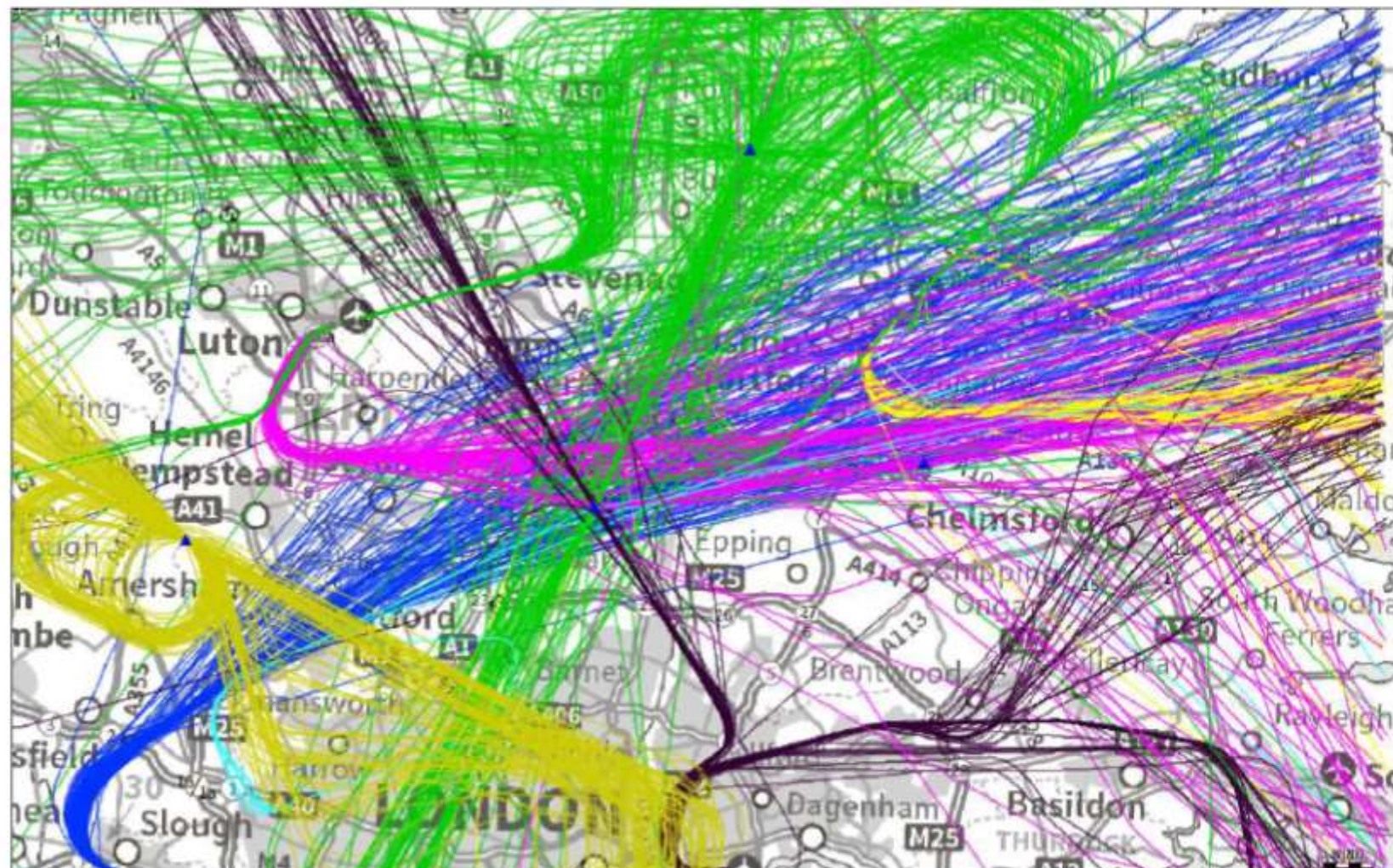






Luton Deps =		London City Deps =	
Luton/Stansted Arrivals =		Stansted Deps =	
Heathrow Deps =		Northolt Deps =	
Heathrow Arrivals =			

July 2017 >24hrs Data







**for a quieter life**

[info@ladacan.org](mailto:info@ladacan.org)

**L  
A  
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# View from the ground

Andrew Lambourne

LADACAN

(Luton And District Association for the Control of Aircraft Noise)

# Messages from the community:

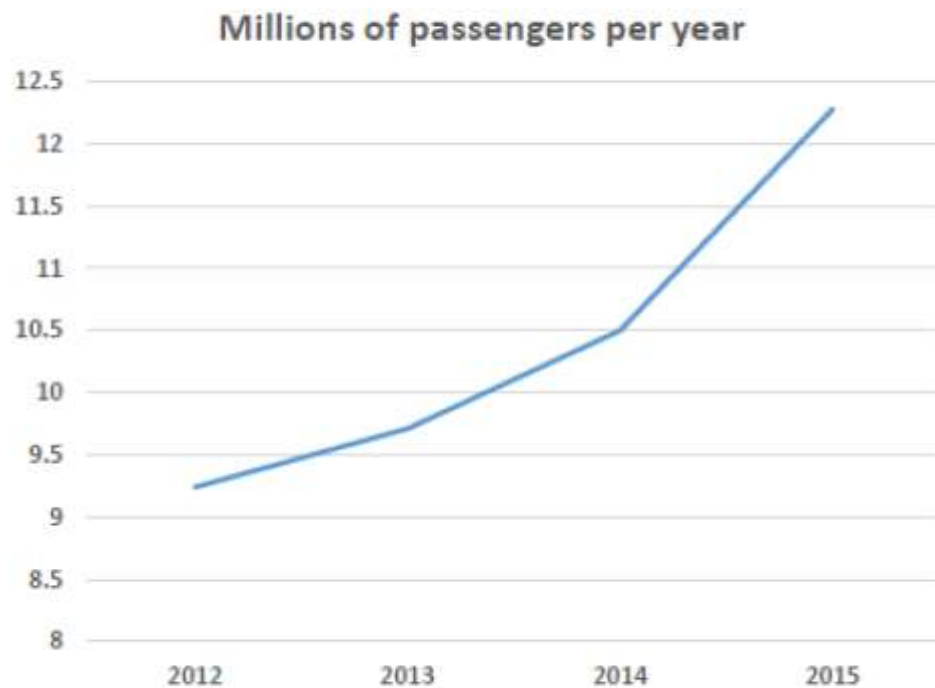
- *Much more aircraft traffic: have really started noticing planes now, not much aware of them before.*
- *Flights very frequent, noise increases as they throttle up to climb, flying closer than before.*
- *Being woken at night and early in the morning, planes lower than before and in a different place.*
- *Counted 14 in 40 minutes, interferes with watching television, cannot enjoy being in garden.*
- *Losing sleep due to being awoken by night flights, even thinking of moving from the area.*
- *Wizz is the worst, aware of Heathrow but not such a problem, hard to get answers from the airport.*
- *Did not know we were on a flight path before, dramatic change compared to previous years.*
- *Didn't used to have planes going over – have lived here for 20 years.*
- *I'm concerned that the noise of planes will be picked up by hearing aids at the school for deaf children.*
- *Councillors now routinely receiving lots of complaints about aircraft noise where previously none.*
- *Planes are more intrusive than before, big increase in low flights, getting wound up by night flights.*
- *Worried about the expectation of even more increase in numbers of flights and frequency.*
- *Felt the planes were going to be routed elsewhere – though appreciate people live there too.*
- *We as residents were not consulted on the changes involved with RNAV.*



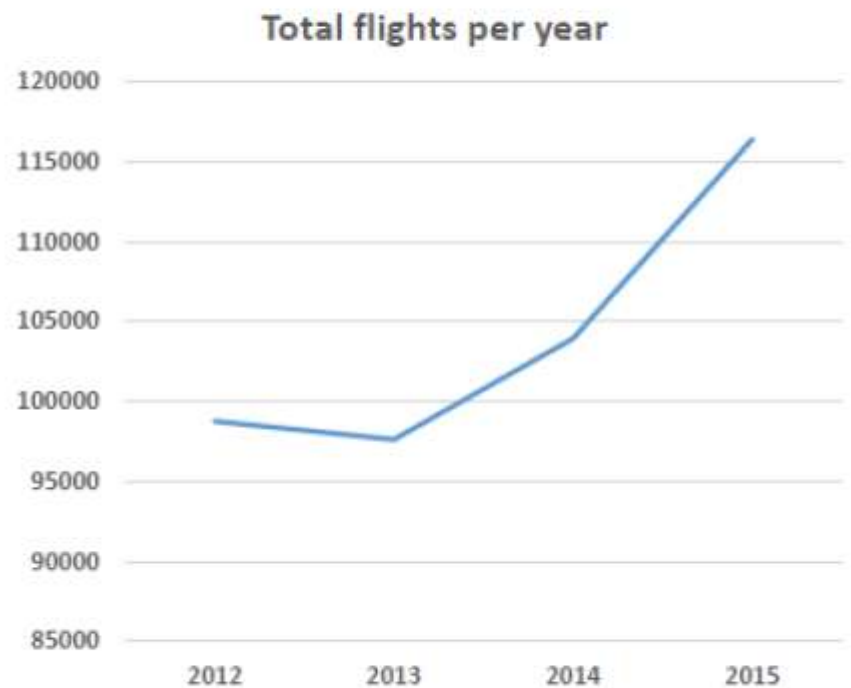
# What's changed?

- Numbers of flights
- Noisiness of aircraft mix
- More hours are “busy”
- RNAV concentration

# 18m pax & 160,000 flights p/a by 2028...



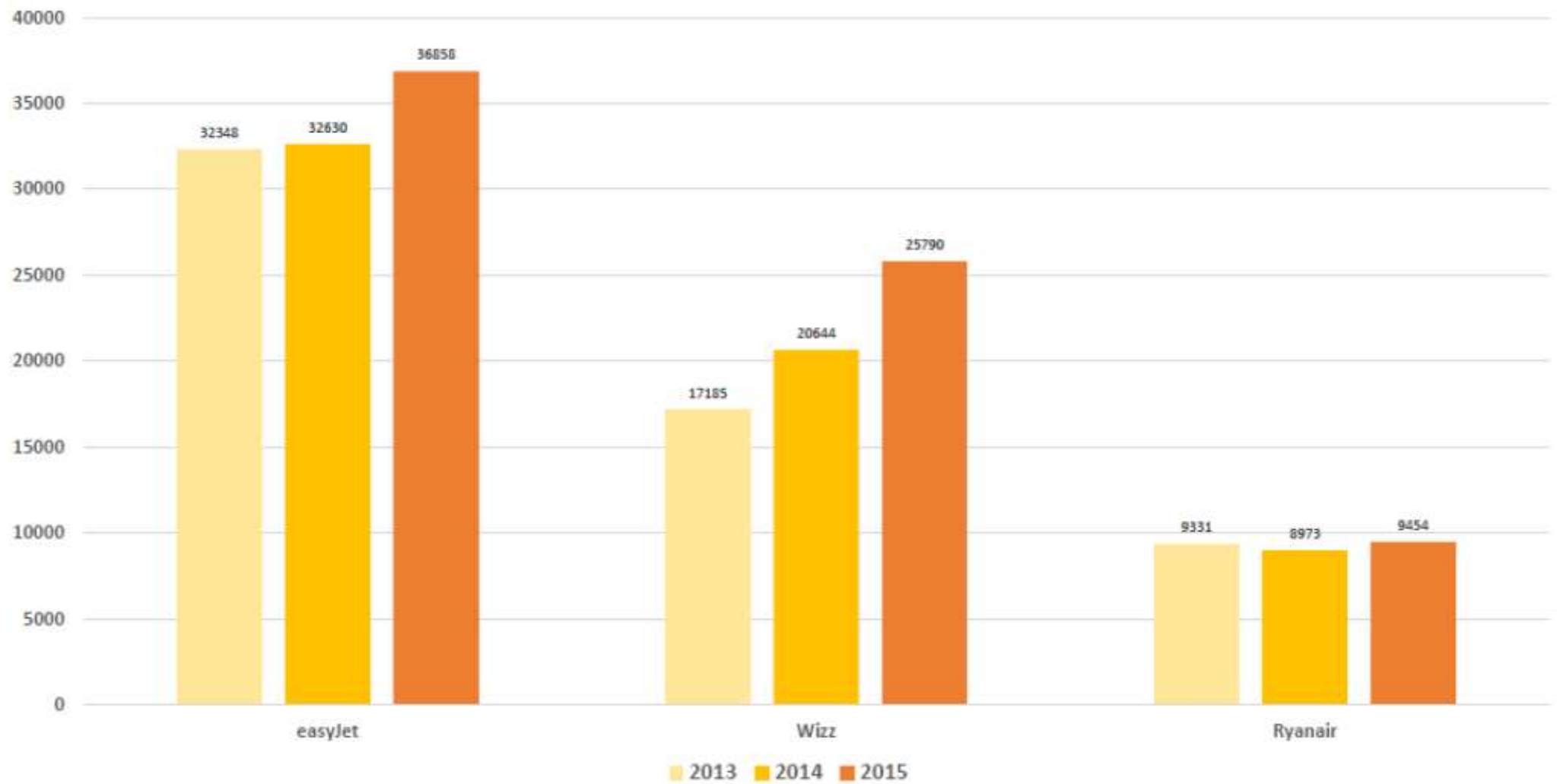
(18m by 2021 at this rate of increase)



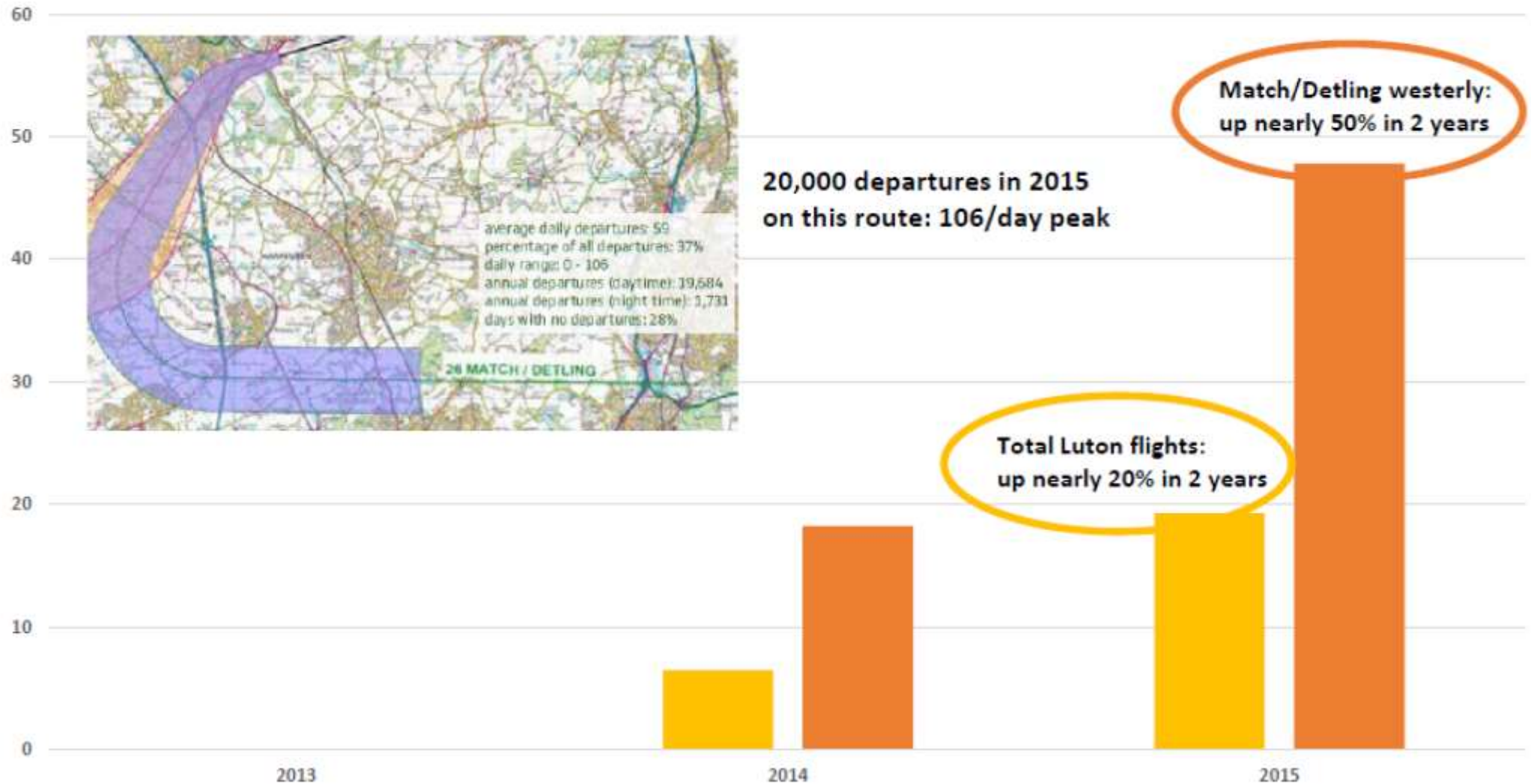
(160,000 by 2020 at this rate of increase)



Annual flights by airline from Luton 2013-15 (source: AMRs)

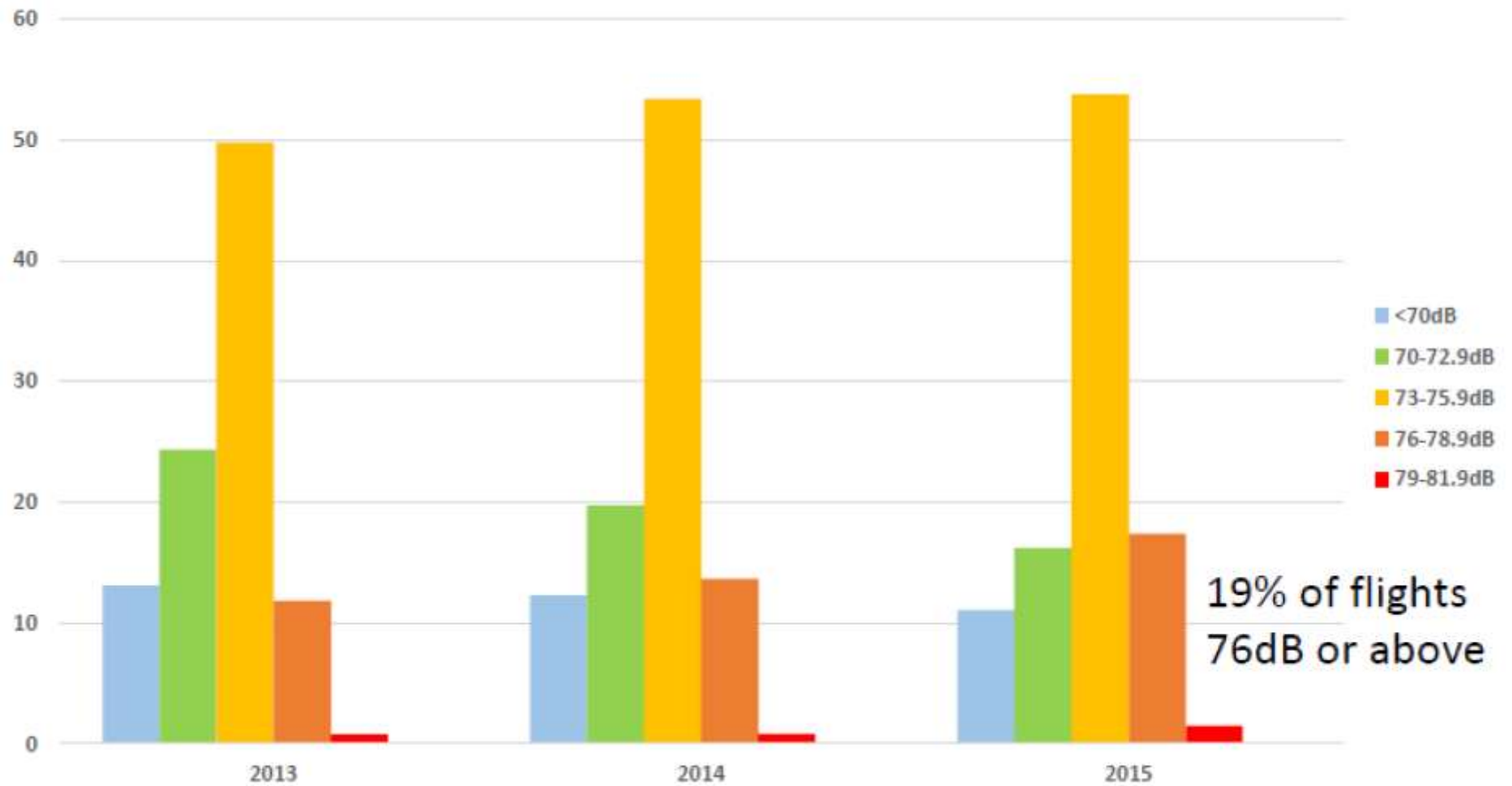


Percentage increase in annual flights since 2013 (source: AMRs)

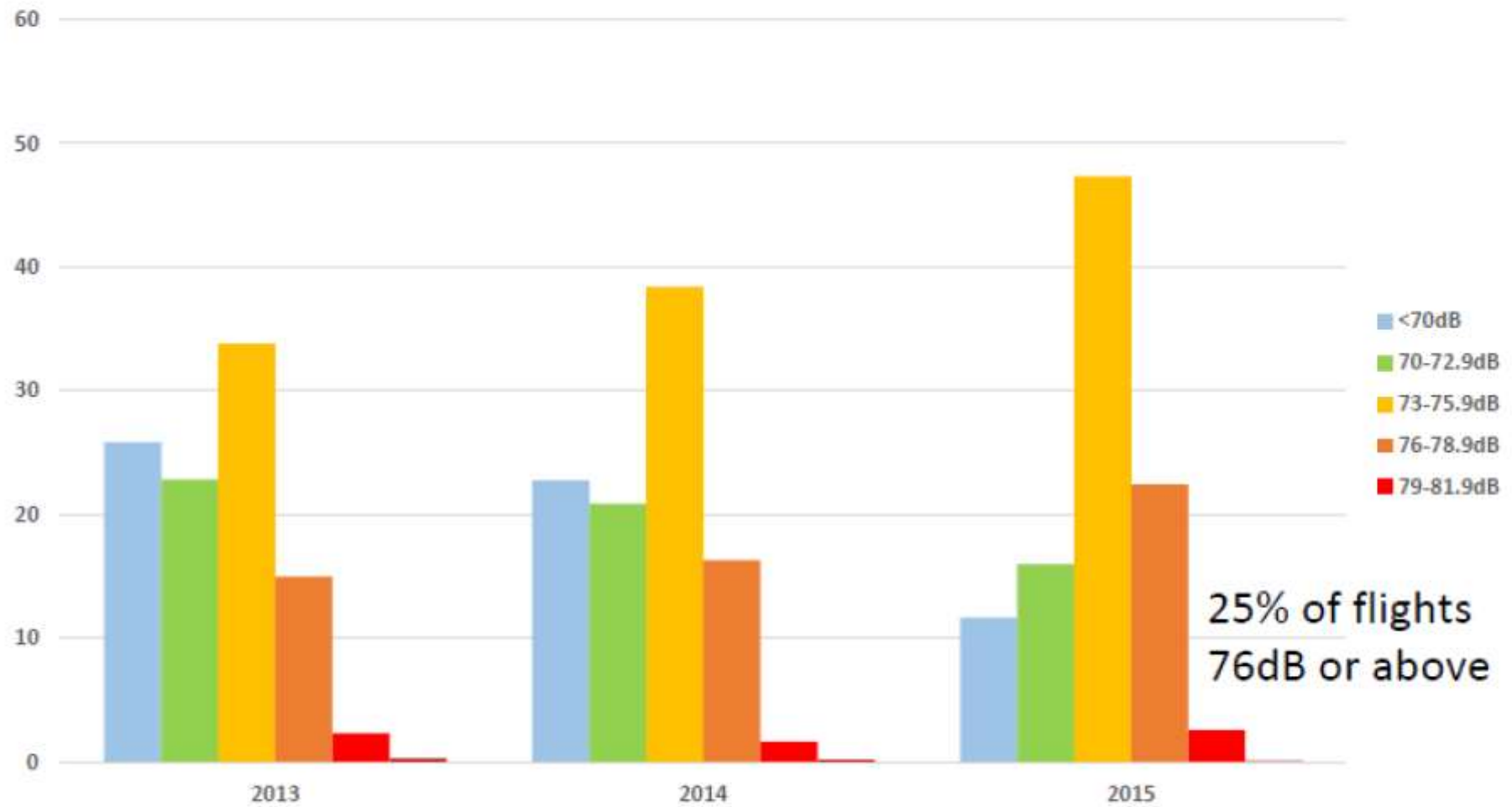




Day: % departures by noise band, 2013-2015

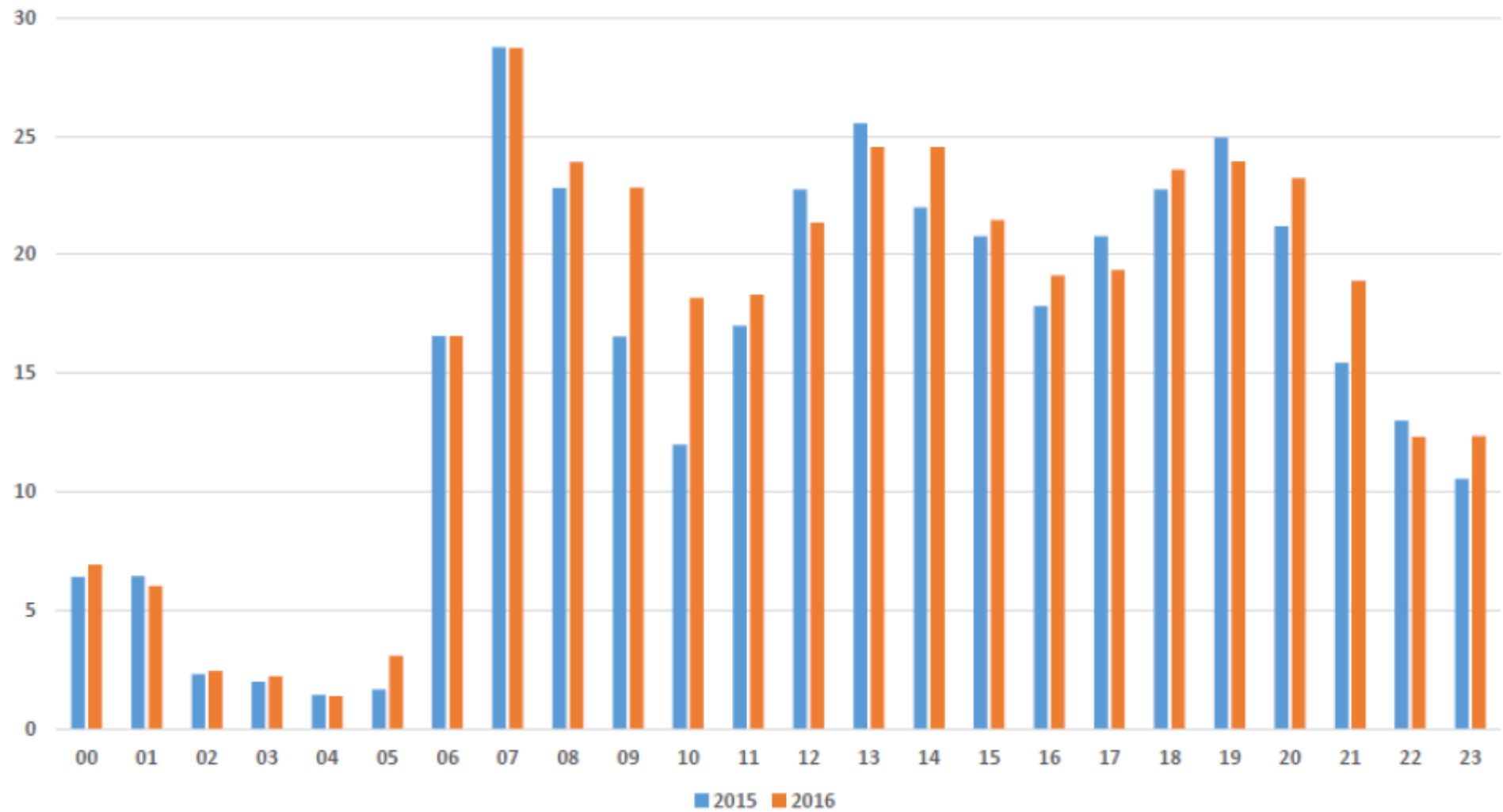


Night: % departures by noise band, 2013-2015

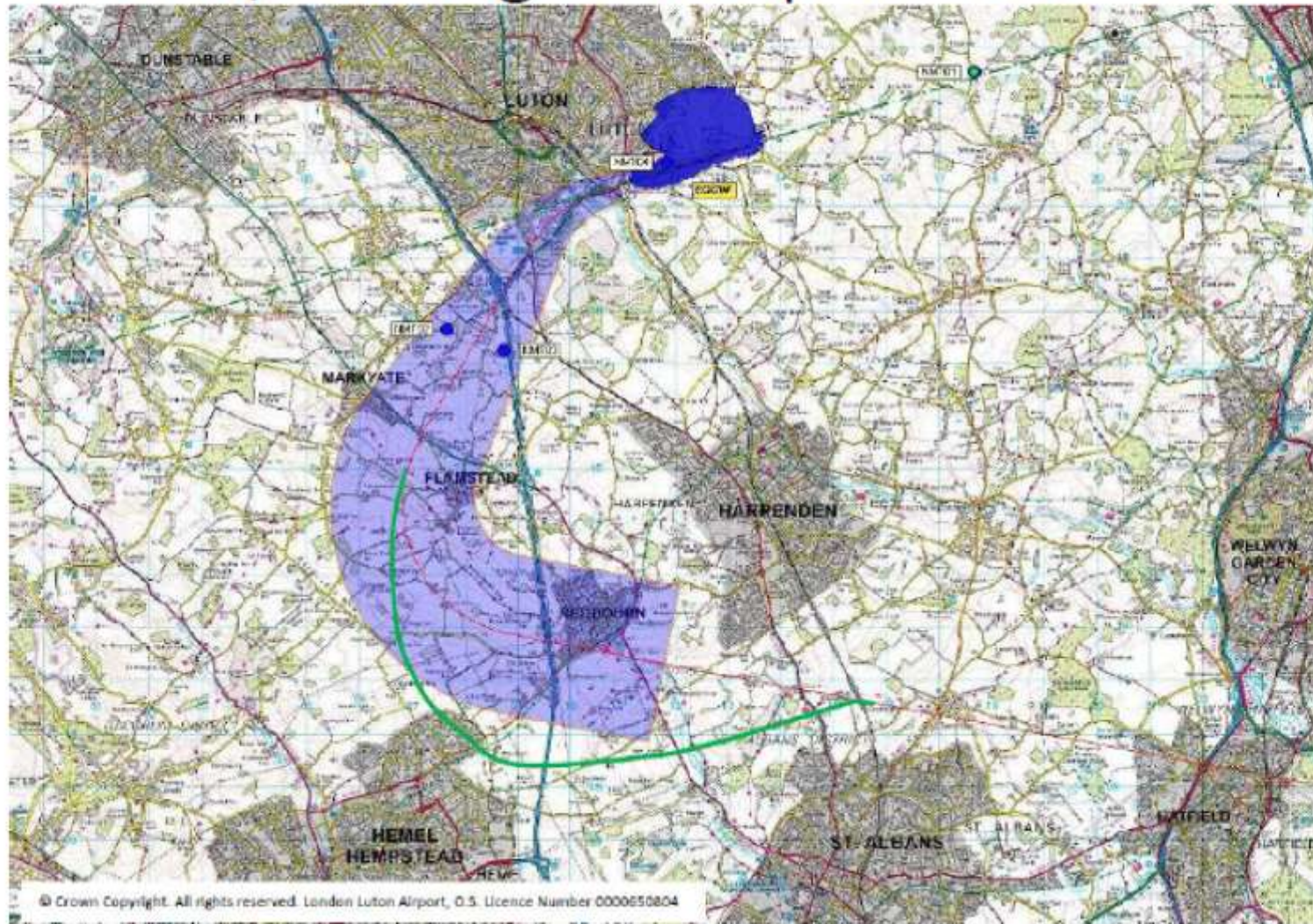




Approximate flights per hour in July, 2015-16

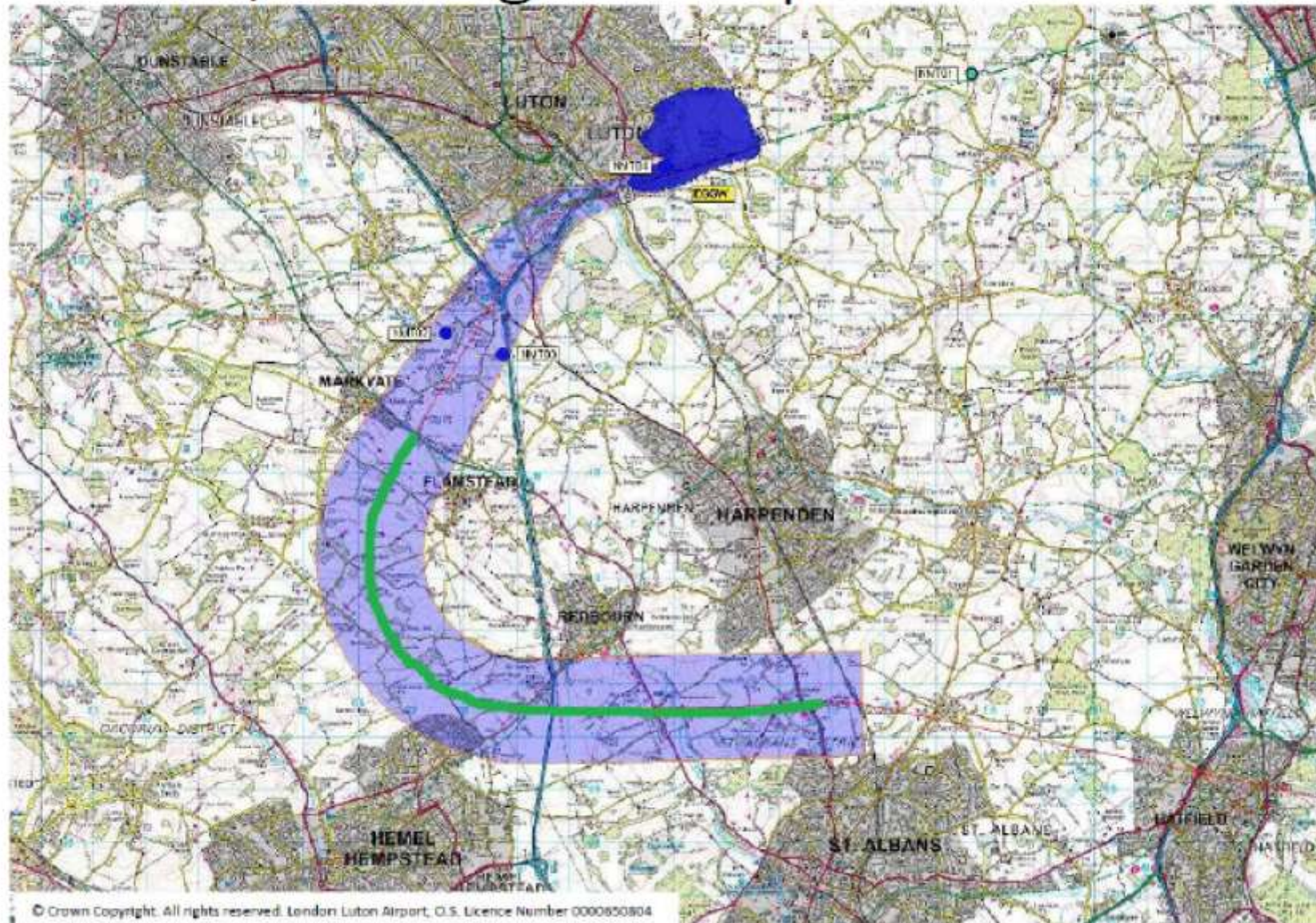


# The Match/Detling RNAV paradox - before...

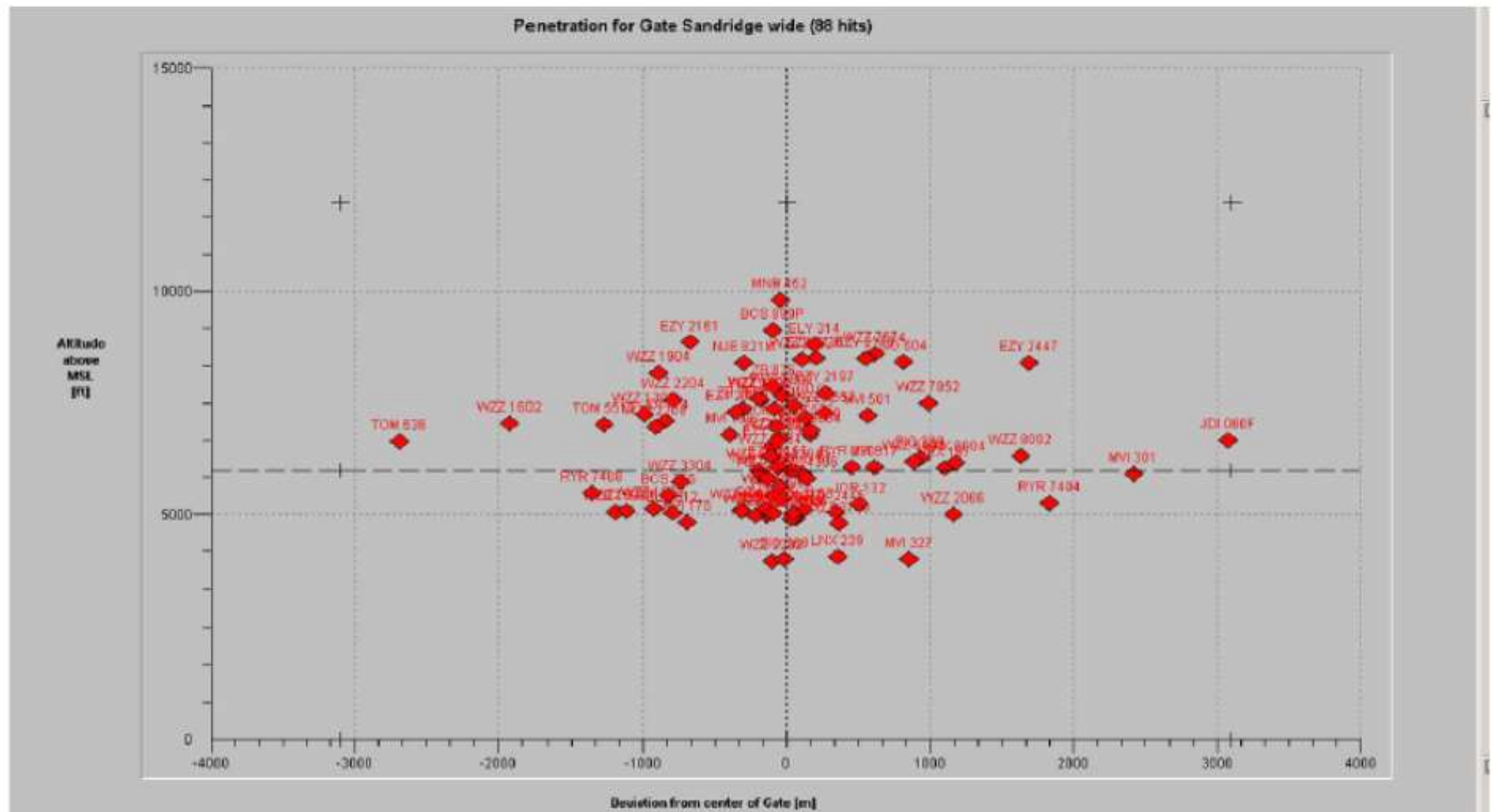




# The Match/Detling RNAV paradox - after...

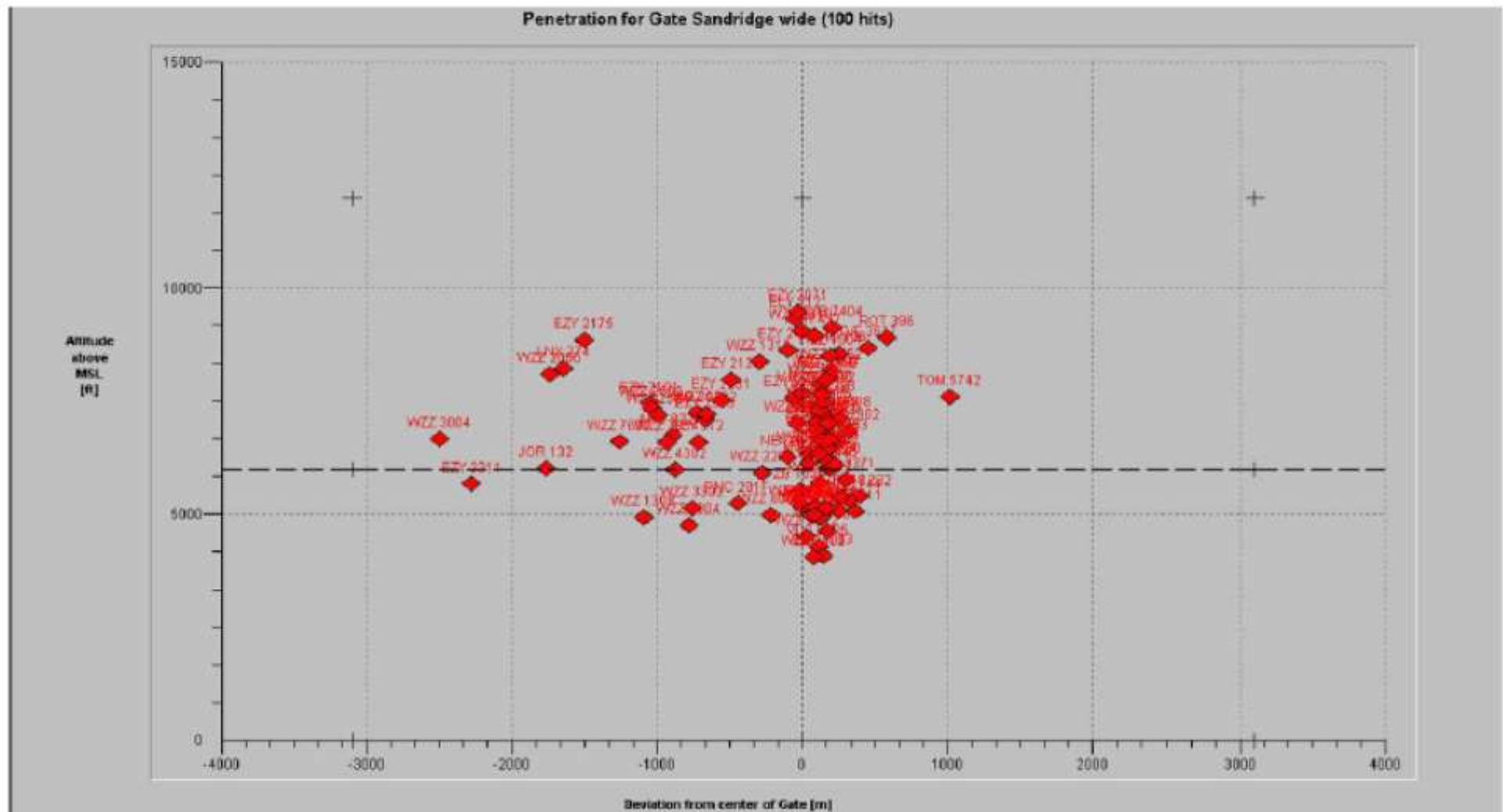


Concentration - before...



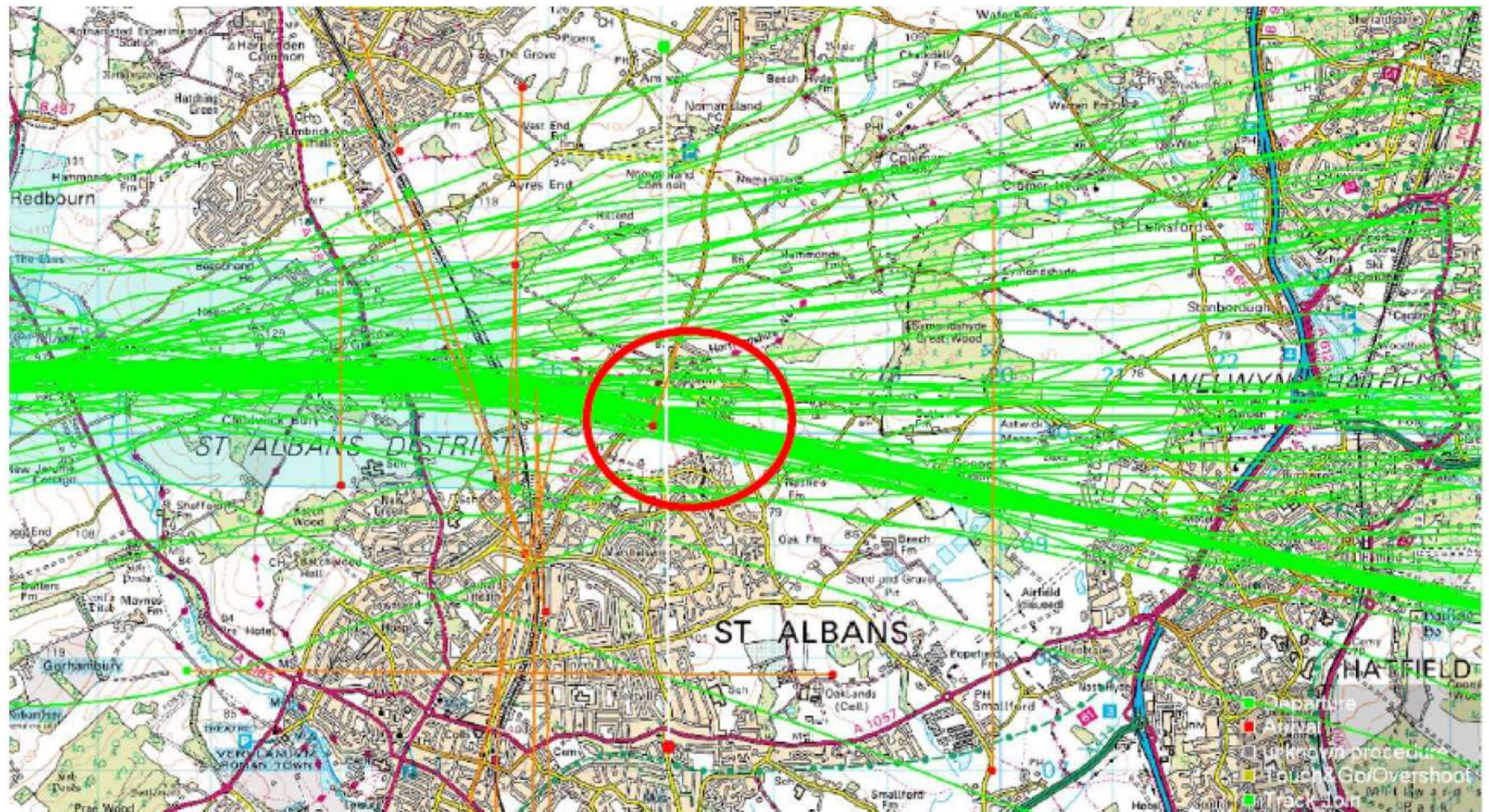


Concentration - after...





# RNAV design considerations

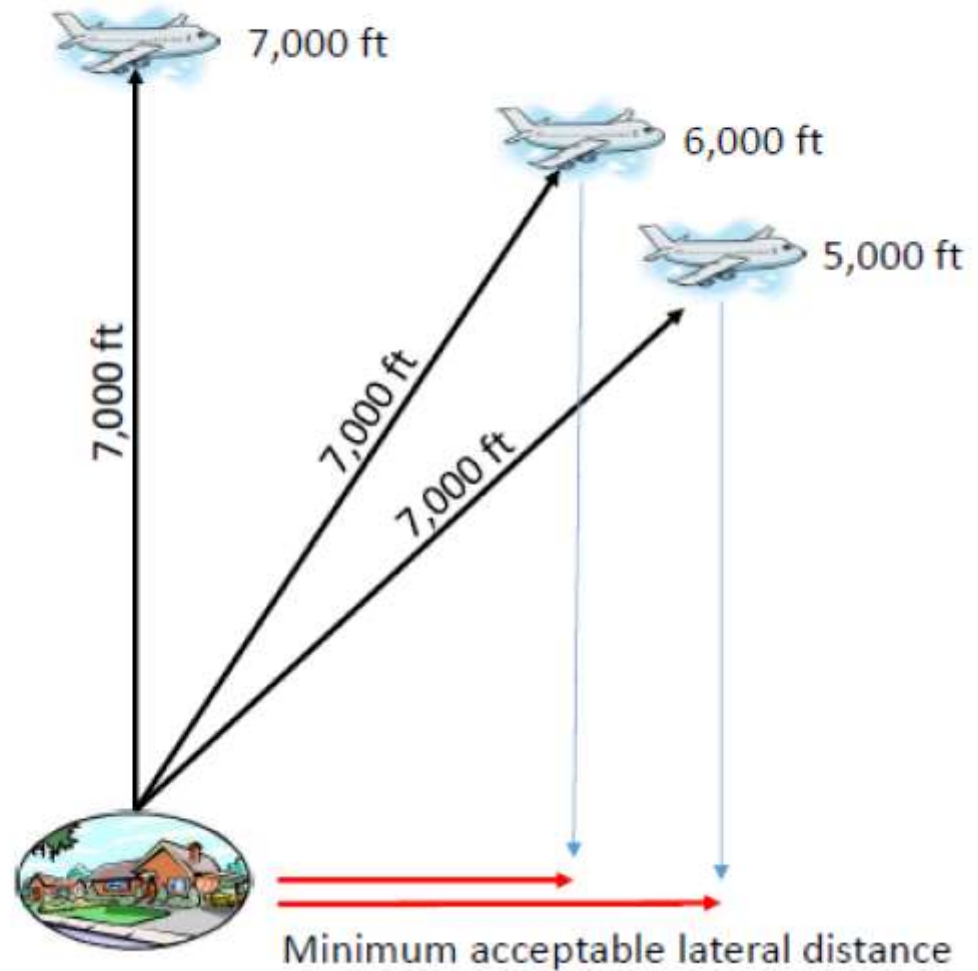




# View from the ground

*"Government policy will continue to focus on minimising the overflight of more densely populated areas below 7,000 feet..."*

*"..so keep them 7,000 feet away regardless of altitude!"*



## CAA ERCD discussion paper in CAP 1378

- *".. the CAA has also recognised that there is no internationally agreed definition of an aircraft 'over-flight'."*
- *"..a current working assumption that has been used previously is that an aircraft is overhead if it passes above 60° to the horizontal."*
- *"..an aircraft flying through the .. 60° region .. would give a noise level approximately 1.5 dB lower than if it had directly overflown the centre at the same height."*
- *"a 48.5 degree region .. would give a noise level approximately 3 dB lower than if it had directly overflown the centre at the same height."*



# 60 degree rule-of-thumb for being overflown

Aircraft height above ground	Distance from track to avoid “overflight”	“Exclusion zone” around centreline
4,000ft	0.44 miles	0.88 miles
5,000ft	0.54 miles	1.08 miles
6,000ft	0.66 miles	1.32 miles
7,000ft	0.77 miles	1.54 miles

In other words:

A 500m RNP swathe overflies a 1.54 mile wide area when it gets to 7000ft

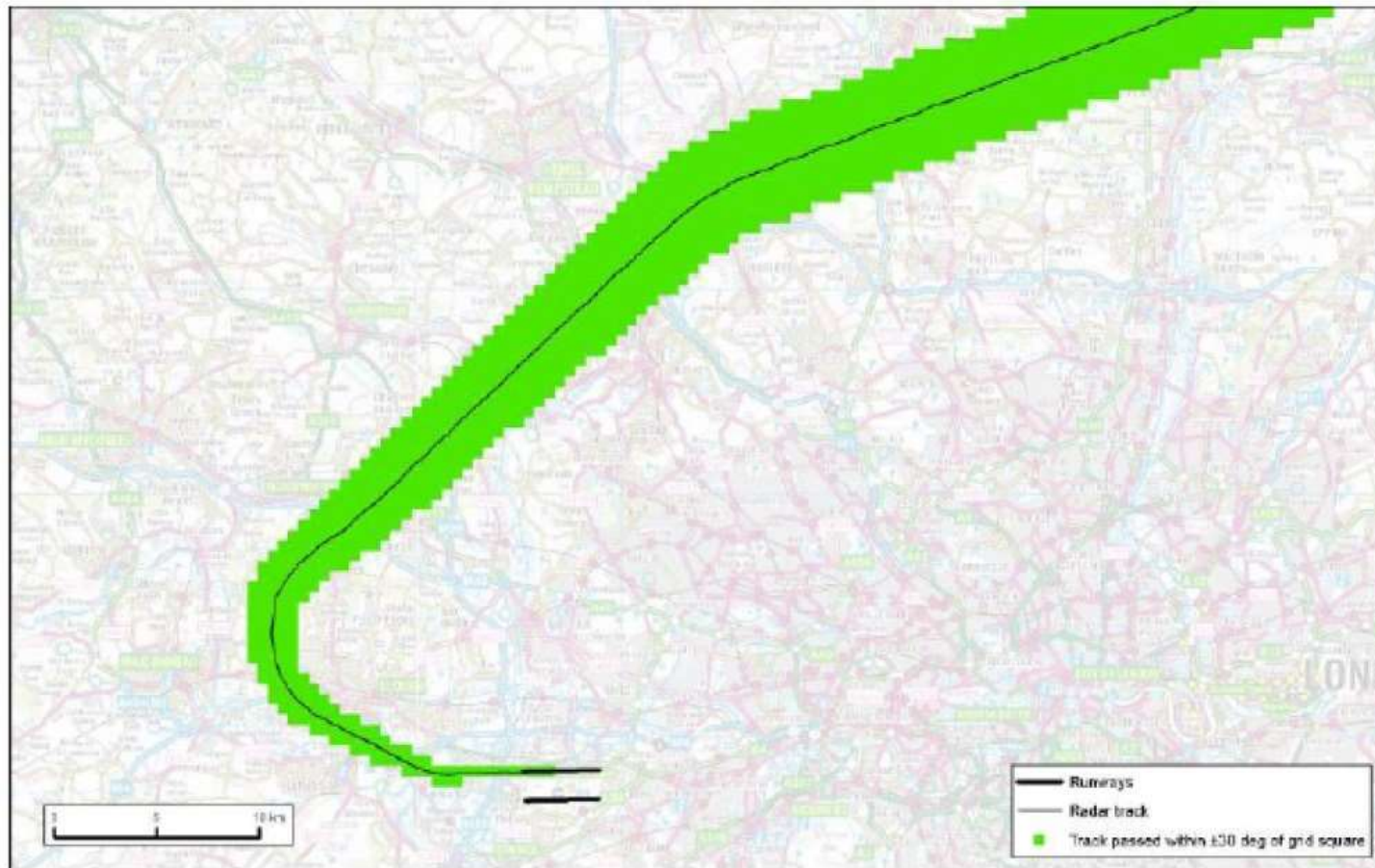
Area around centre line overflown at 7,000ft





# 60 degree Track Density Plot – for Christmas?

Figure B5: Heathrow 27R BPK departure track passing within 60° to the horizontal of grid squares (i.e. within  $\pm 30^\circ$  of vertical)



## Final thought

CAP 1378 specifically mentions stakeholder (community) involvement:

*“When designing noise mitigation routes it is important to understand the objective in terms of stakeholder expectations.”*

*“Halving the perceived noise will not be seen as a success if stakeholders had expected aircraft noise to be much quieter.”*

Going forwards, the communities around Luton Airport would benefit from more transparency and inclusiveness in any ACP consultation process with regards to objectives, expectations and outcomes.