

# Farnborough ACP Support GA Levels Analysis

February 2015



XXXX names  
redacted XXXX

XXXXX Redacted XXXXX

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# Introduction

Farnborough airport is undergoing an Airspace Change Proposal (ACP) to define blocks of controlled airspace around the airport.

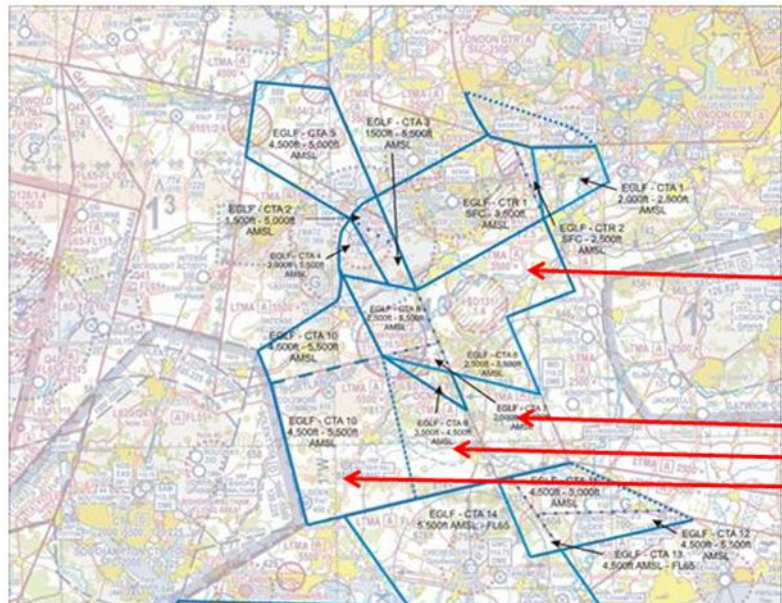
As part of the negotiations into what the base levels of that airspace should be work has been requested to examine a busy month from 2014 to understand:

## Part A

The current altitudes GA traffic transit specific areas, shown in the picture.

## Part B

The number of aircraft which transit the main CTR (CTR1) per day.



All this area bounded by the Blue solid line

This trapezoid

This trapezoid + small triangle

This square + odd shape above

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**Slides 22-26** - CTA 10 trapezoid – Region of interest, altitude distribution & ArcView plots

## **Part B:**

**Slides 27-30** – CTR 1 – Region of interest, number of aircraft by maximum altitude, day and hour of day

**Slide 31** - ArcView plot – Below 3,500ft for 01/06/2014

**Slide 32** – Summary

# Methodology

- Node L radar data was extracted from BI for **June 2014**, which had the largest number of total LARS movements in any month during 2014 (sourced from data provided by Farnborough airport).
- **Radar data for 28<sup>th</sup> June was unavailable and was excluded from this analysis.**
- Radar returns were extracted **below 6,000ft** and filtered for the following **squawks**: 7000, 0430-0446 (Farnborough LARS West), 0447 (Farnborough LARS West Blackbushe departures), 0450-0456 (Farnborough LARS West), 0457 (Farnborough LARS West Fair Oaks departures), 0460-0465 (Farnborough LARS West), 0466 (Farnborough LARS West Fair Oaks departures), 0467 (Farnborough LARS West), 1730-1746 (Farnborough LARS East), 1747 (Farnborough LARS East conspicuity), 5020-5036 (Farnborough LARS North), 5037 (Farnborough LARS North conspicuity), 4572 (Farnborough LARS West SSR monitoring code), 3767 (Redhill Approach conspicuity) and 7047 (Biggin Hill Airport conspicuity).
- METAR data for June 2014 was used in order to **QNH pressure-adjust** the Mode C heights recorded by radar using the formula:

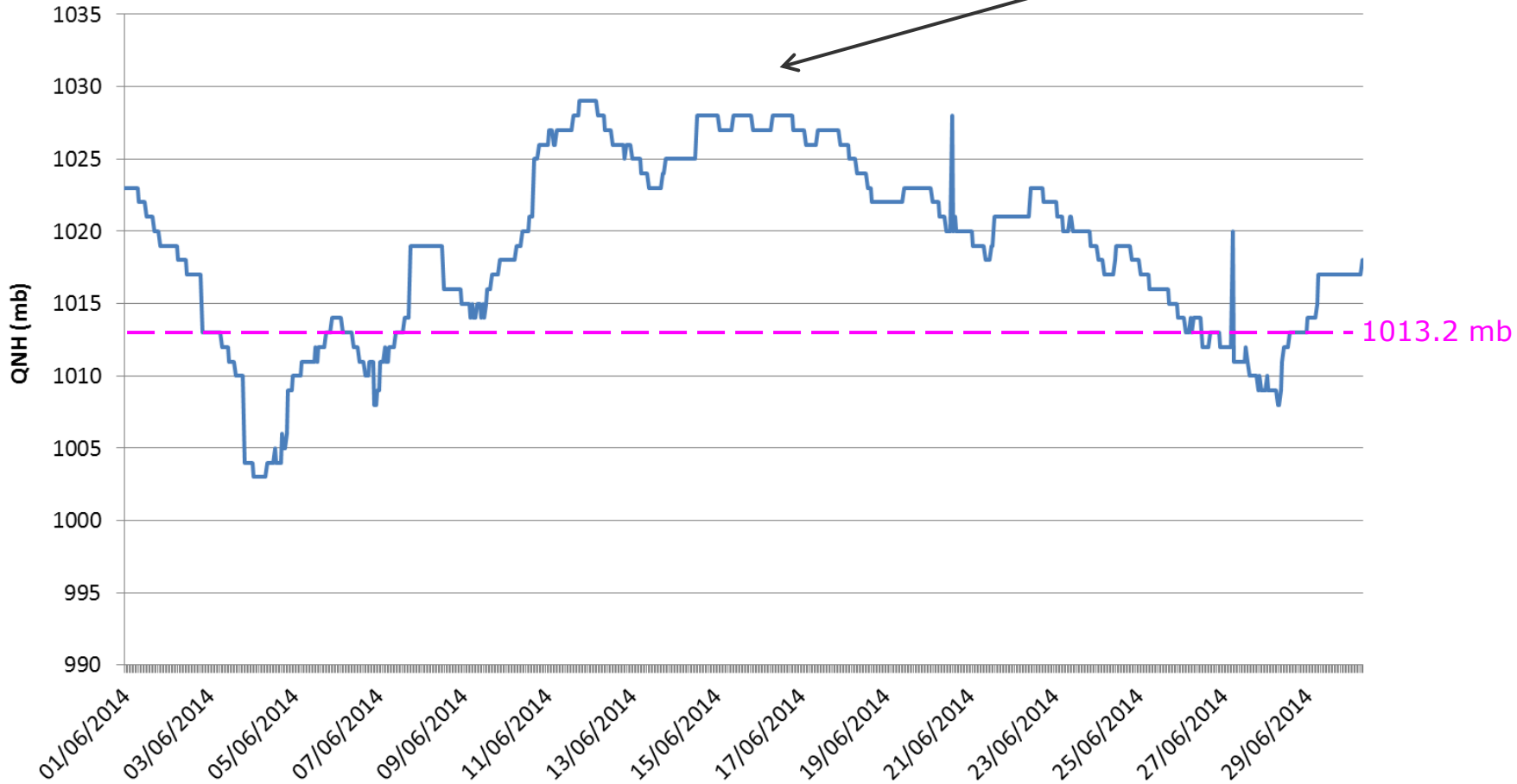
**Pressure altitude = Height + (pressure in mb – 1013.2)\*27.3**

- For Part B, unique aircraft were identified using Mode A, Index, Date, Address and Time. This enabled an **approximation** of the number of aircraft transiting the Farnborough CTR (CTR 1) to be calculated. Whilst two aircraft in the same area, at the same time, using the same squawk etc. is extremely unlikely, any such occurrence would result in two aircraft being identified as one and hence provide an underestimate of the total. This method therefore provides a reasonably reliable approximation of the total number of aircraft.

# Methodology

The majority of days in June 2014 were **'high' pressure** days. On these days, the height will be **increased** (using the formula on slide 5) to take into account the QNH.

**QNH Pressure from MET Data  
June 2014**

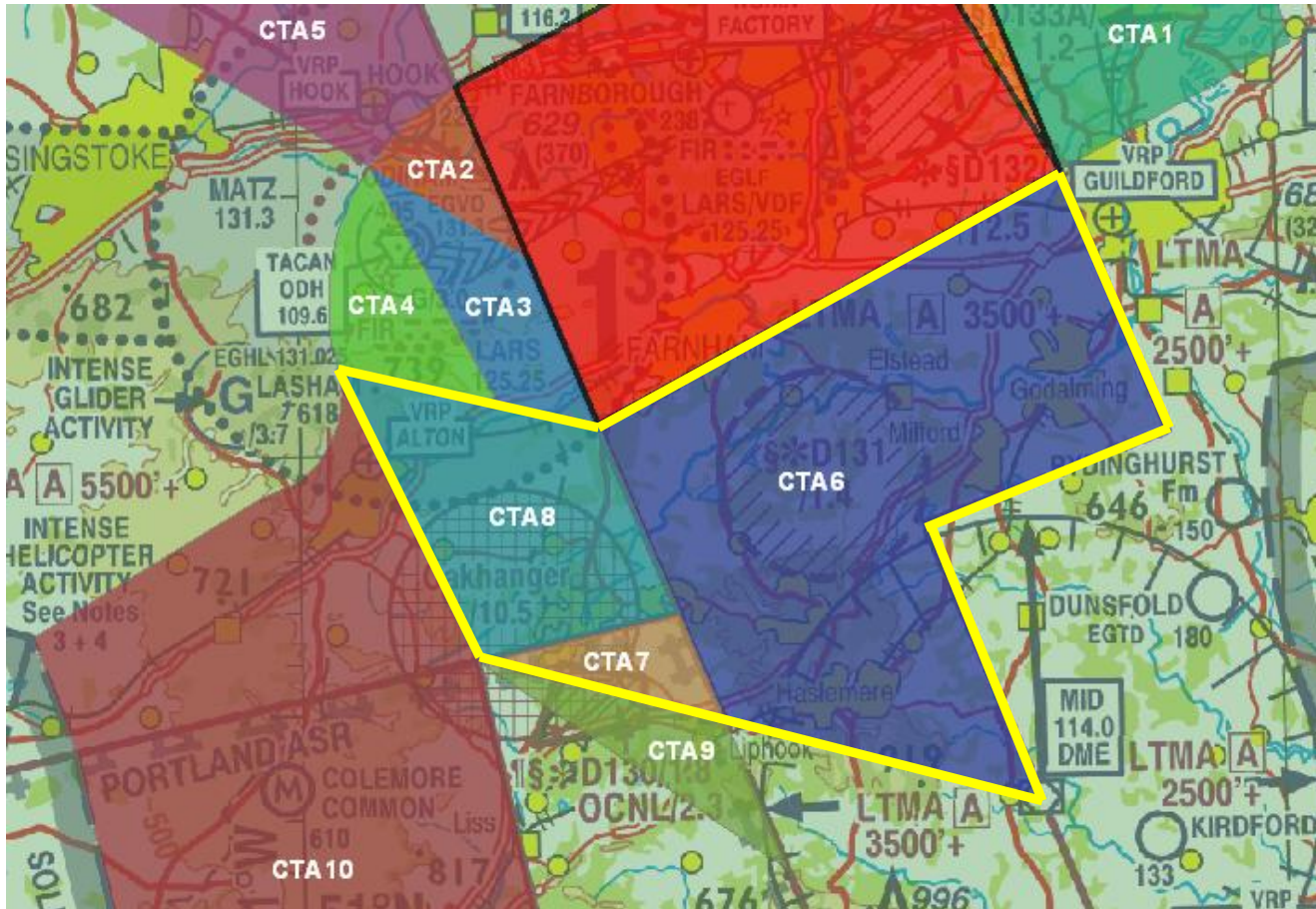


# Part A

## CTA 6,7,8 - Region of interest

Proposed airspace limits

CTA6: 2,500ft – 3,500ft    CTA7: 2,500ft – 4,500ft    CTA8: 2,500ft – 5,500ft



# CTA 6,7,8 – QNH Adjusted altitudes

Total radar returns: 153,322

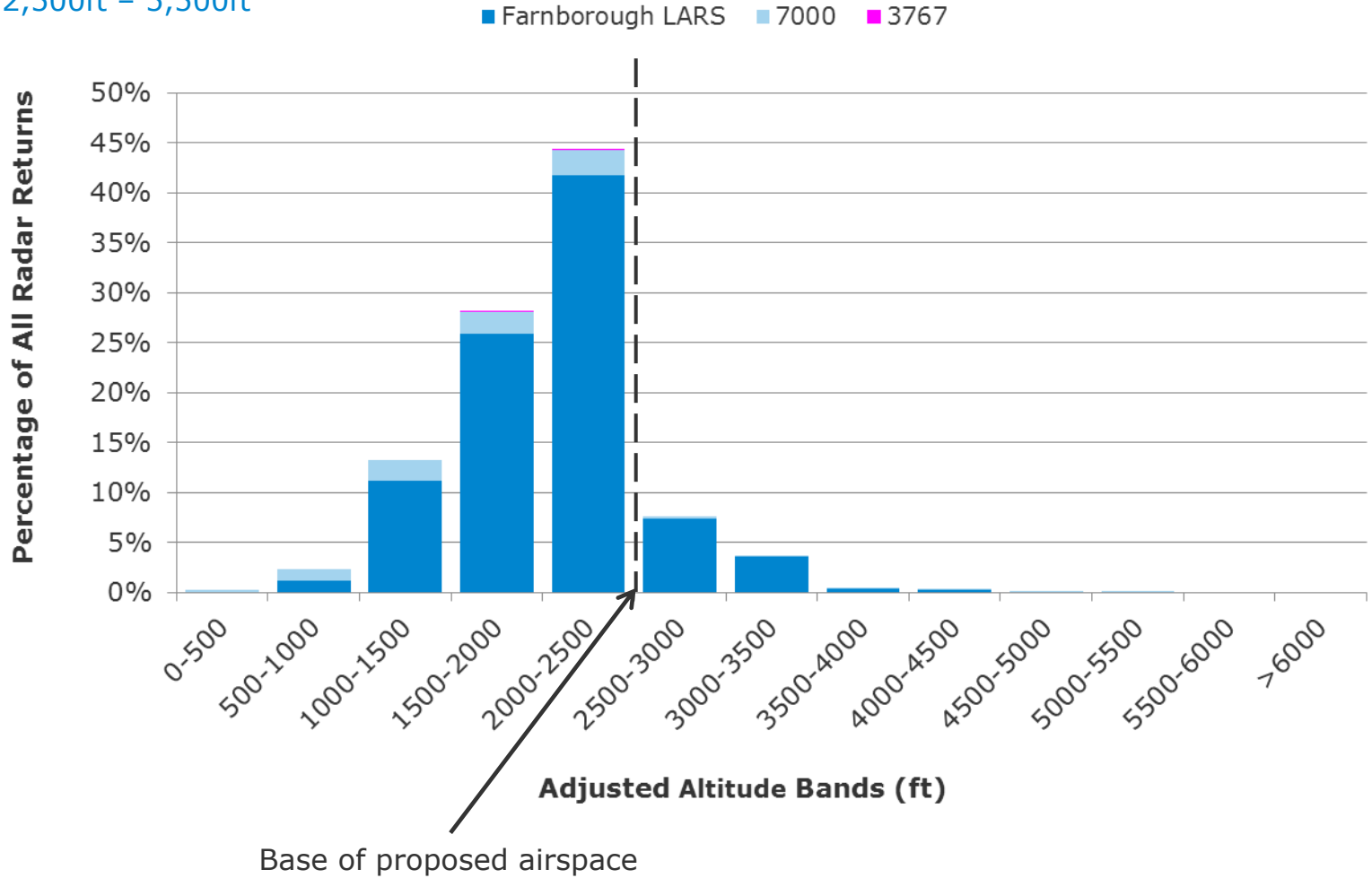
Proposed airspace limits

CTA6: 2,500ft – 3,500ft

CTA7: 2,500ft – 4,500ft

CTA8: 2,500ft – 5,500ft

## QNH Adjusted Altitude Distribution

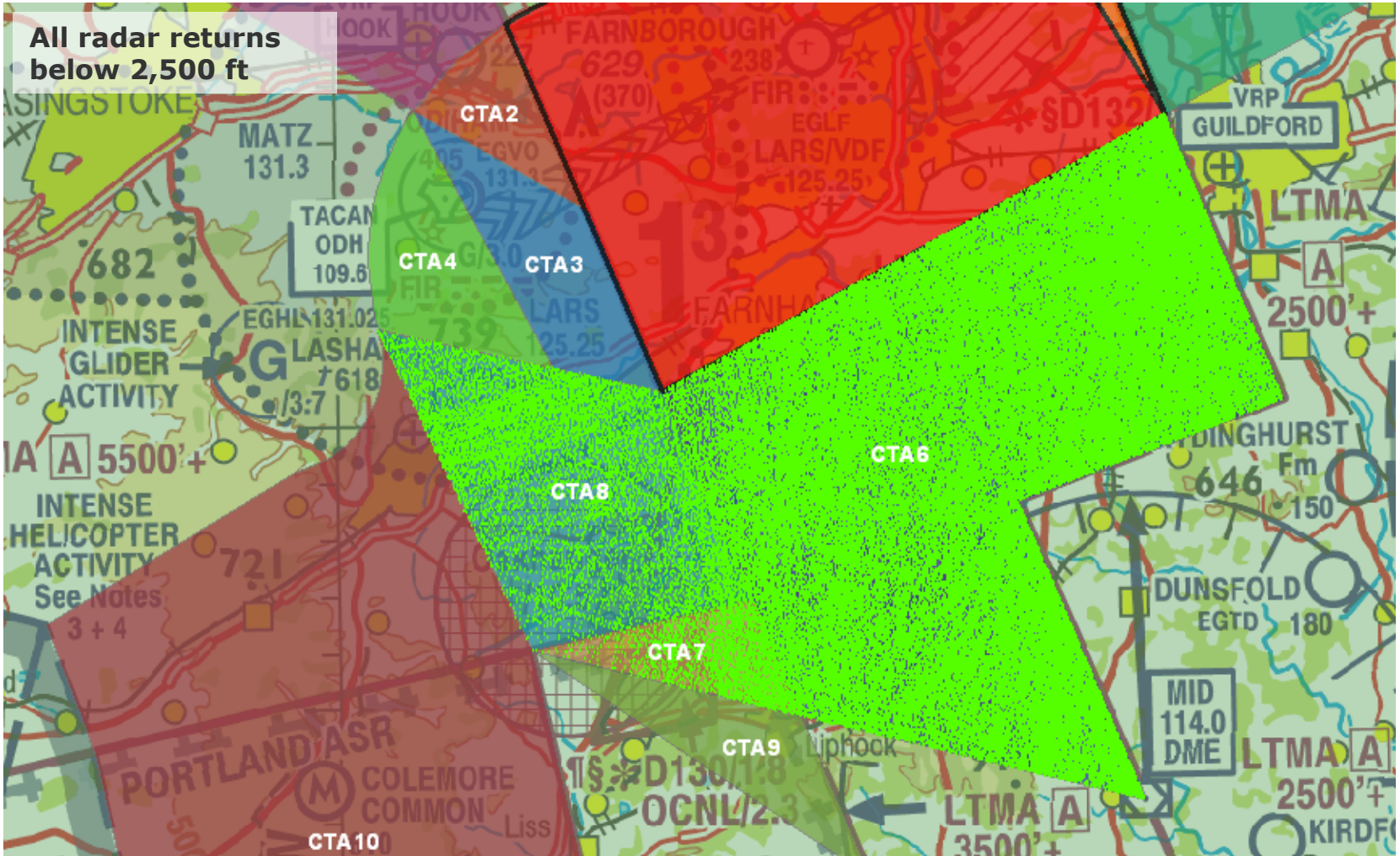




# CTA 6,7,8 – QNH Adjusted altitude plots (<2,500ft)

Proposed airspace limits

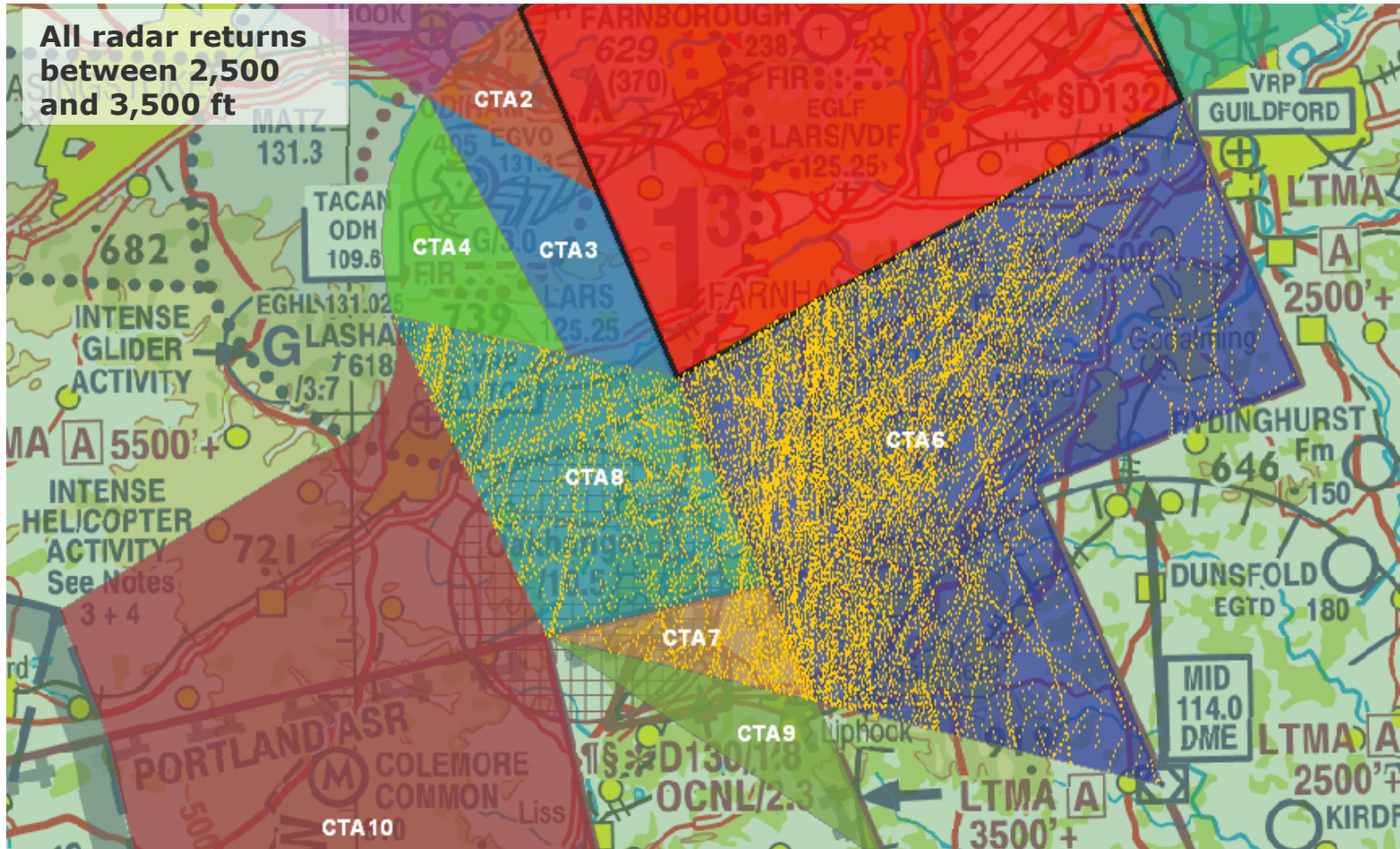
CTA6: 2,500ft – 3,500ft    CTA7: 2,500ft – 4,500ft    CTA8: 2,500ft – 5,500ft



# CTA 6,7,8 – QNH Adjusted altitude plots (2,500 – 3,500ft)

Proposed airspace limits

CTA6: 2,500ft – 3,500ft    CTA7: 2,500ft – 4,500ft    CTA8: 2,500ft – 5,500ft

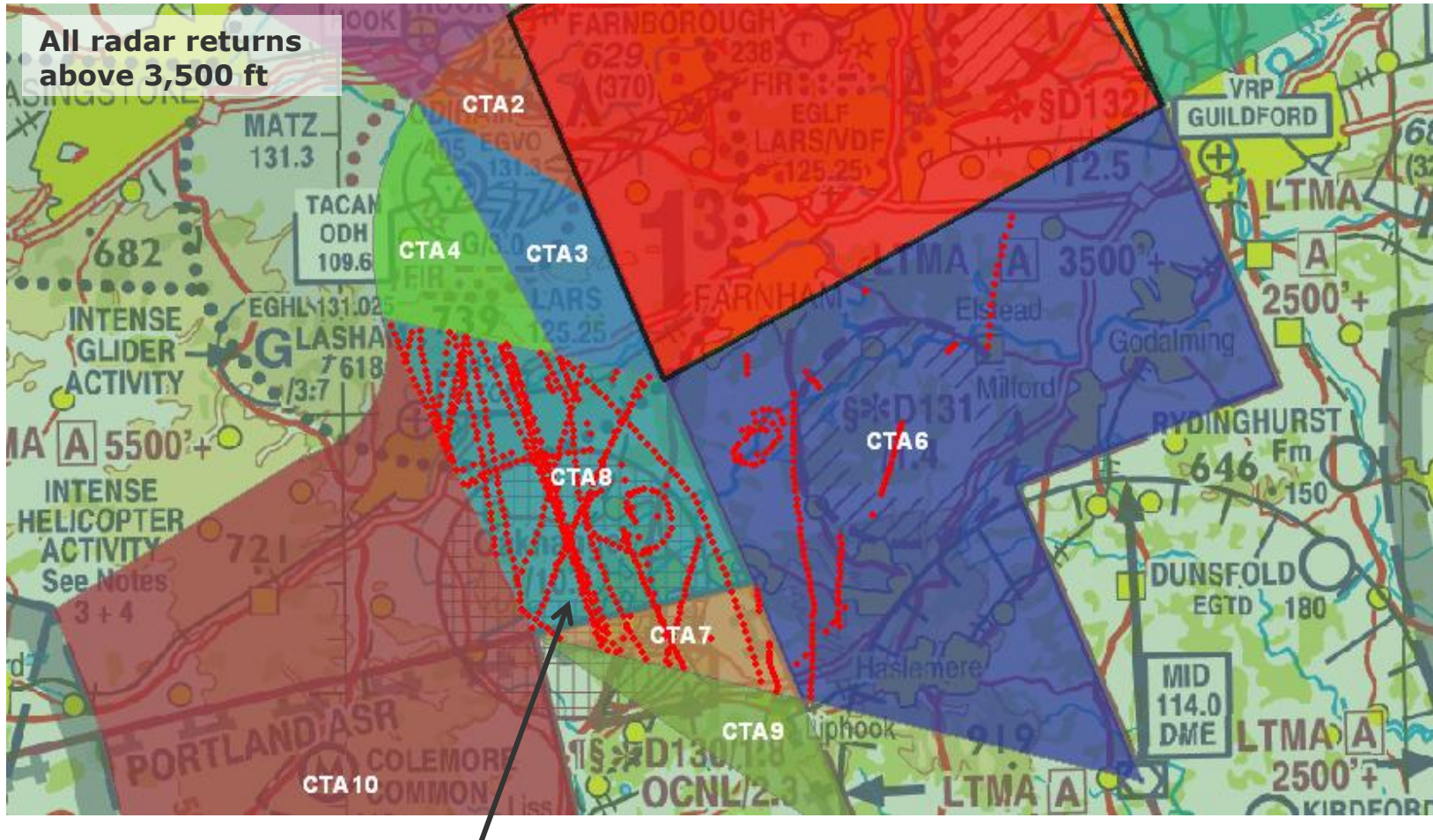


**Radar returns currently in uncontrolled airspace which fall within the proposed airspace.**

## CTA 6,7,8 – QNH Adjusted altitude plots (>3,500ft)

Proposed airspace limits

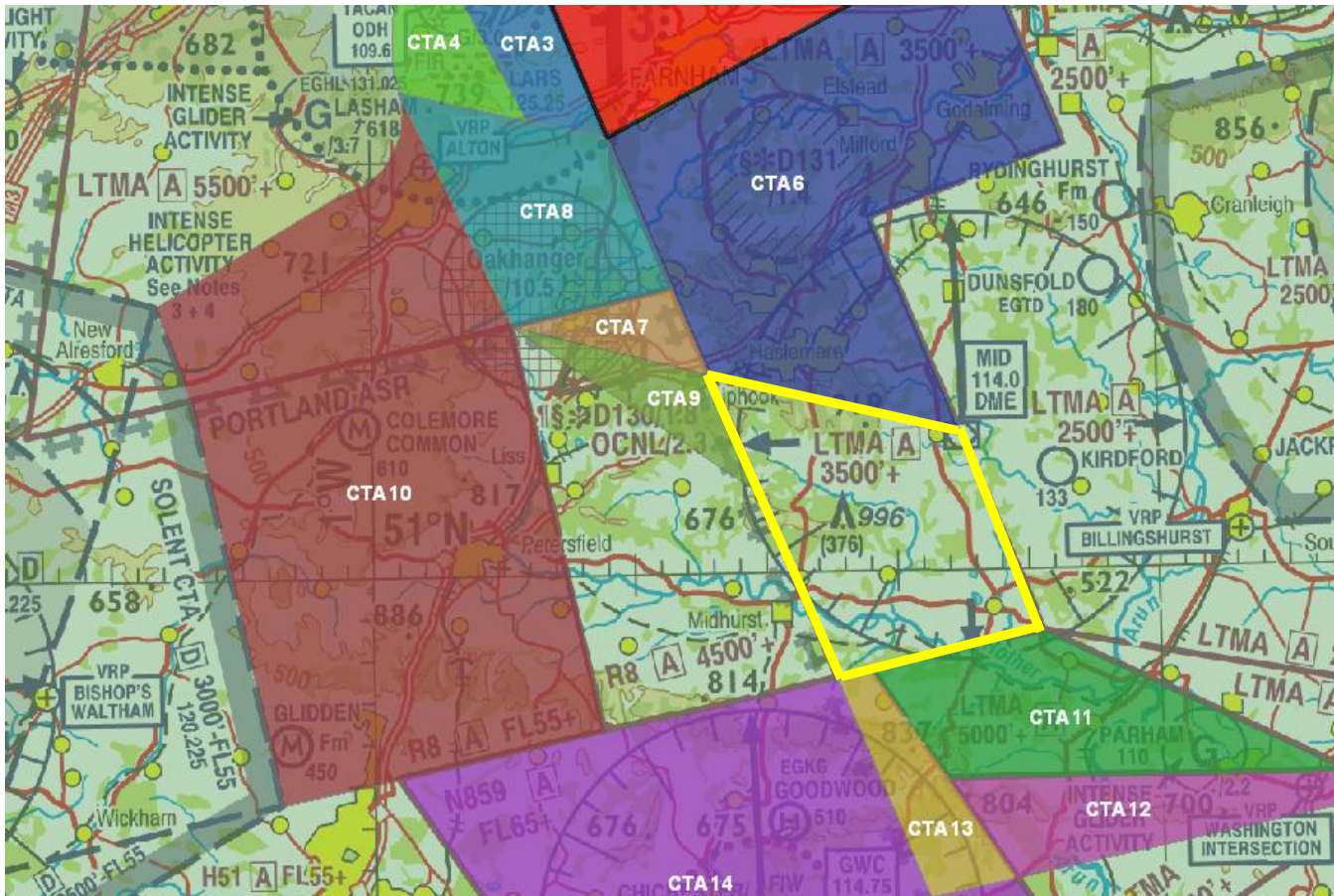
CTA6: 2,500ft – 3,500ft    CTA7: 2,500ft – 4,500ft    CTA8: 2,500ft – 5,500ft



**Most radar returns above 3,500ft occur in CTA 8, where the base of the LTMA is 5,500ft.**

# Trapezoid Region of interest

Base of LTMA above Trapezoid: 3,500ft

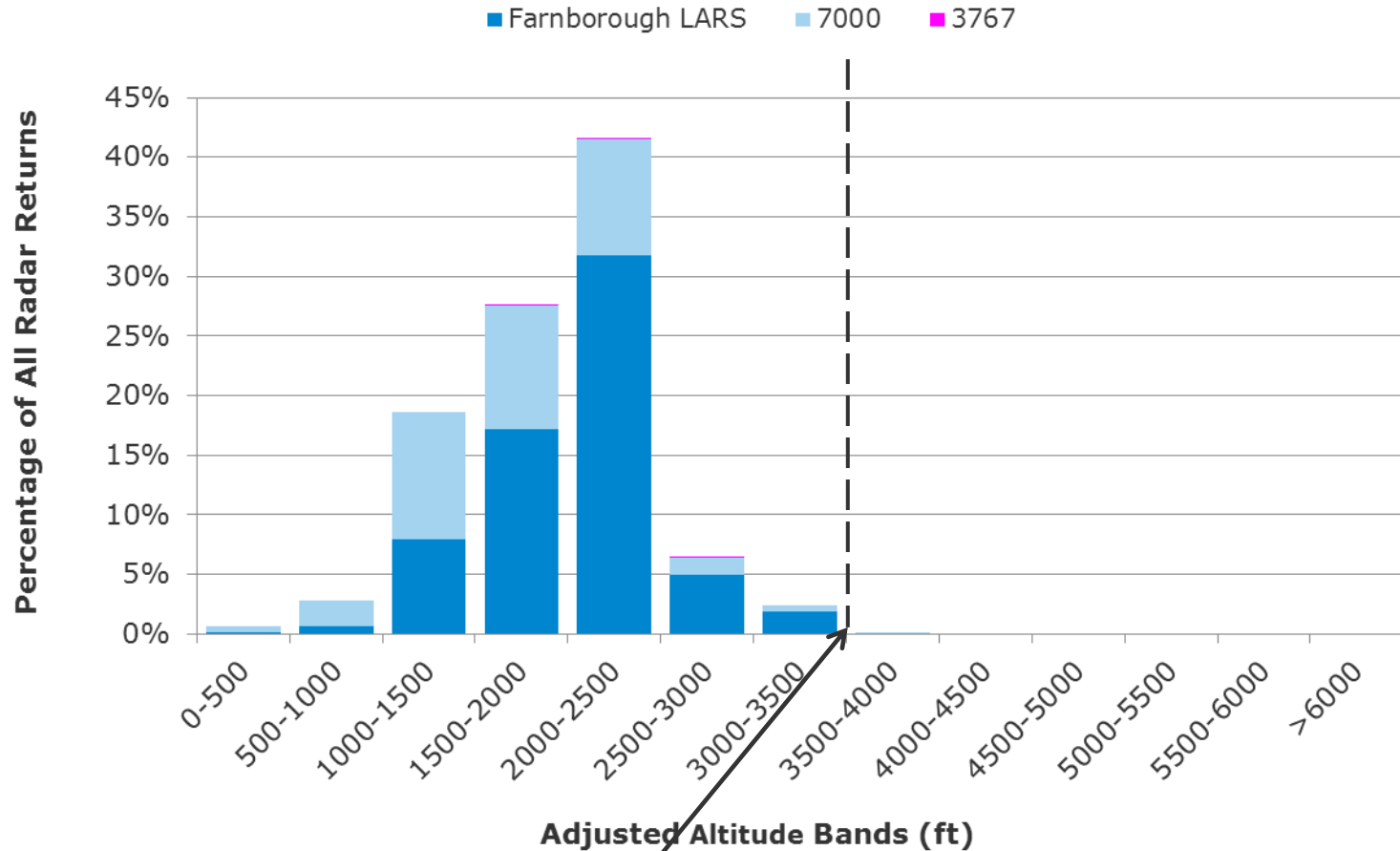


# Trapezoid – QNH Adjusted altitudes

Total radar returns: 57,022

Base of LTMA above Trapezoid: 3,500ft

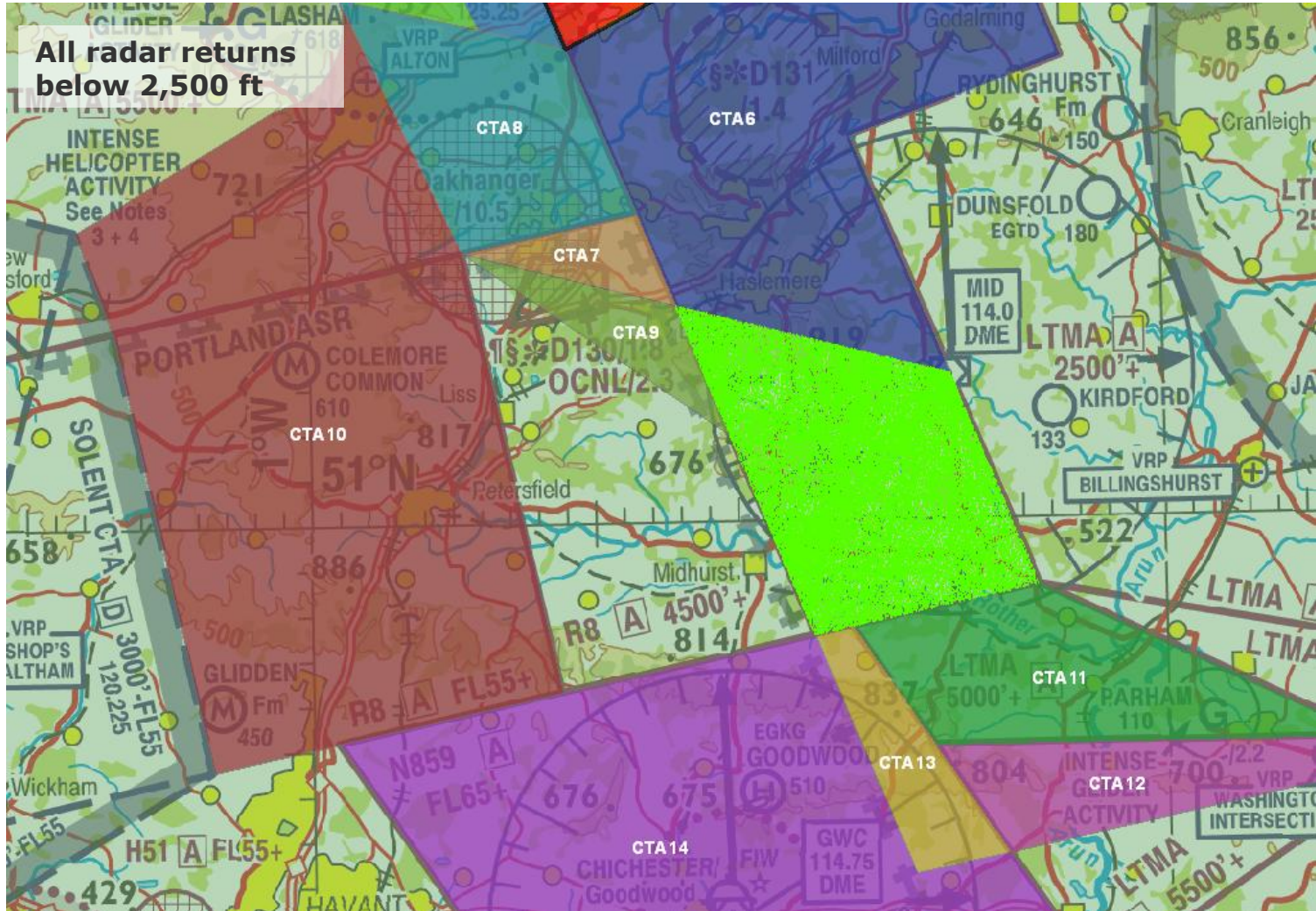
## QNH Adjusted Altitude Distribution



Base of LTMA (max altitude for Farnborough controlled airspace)

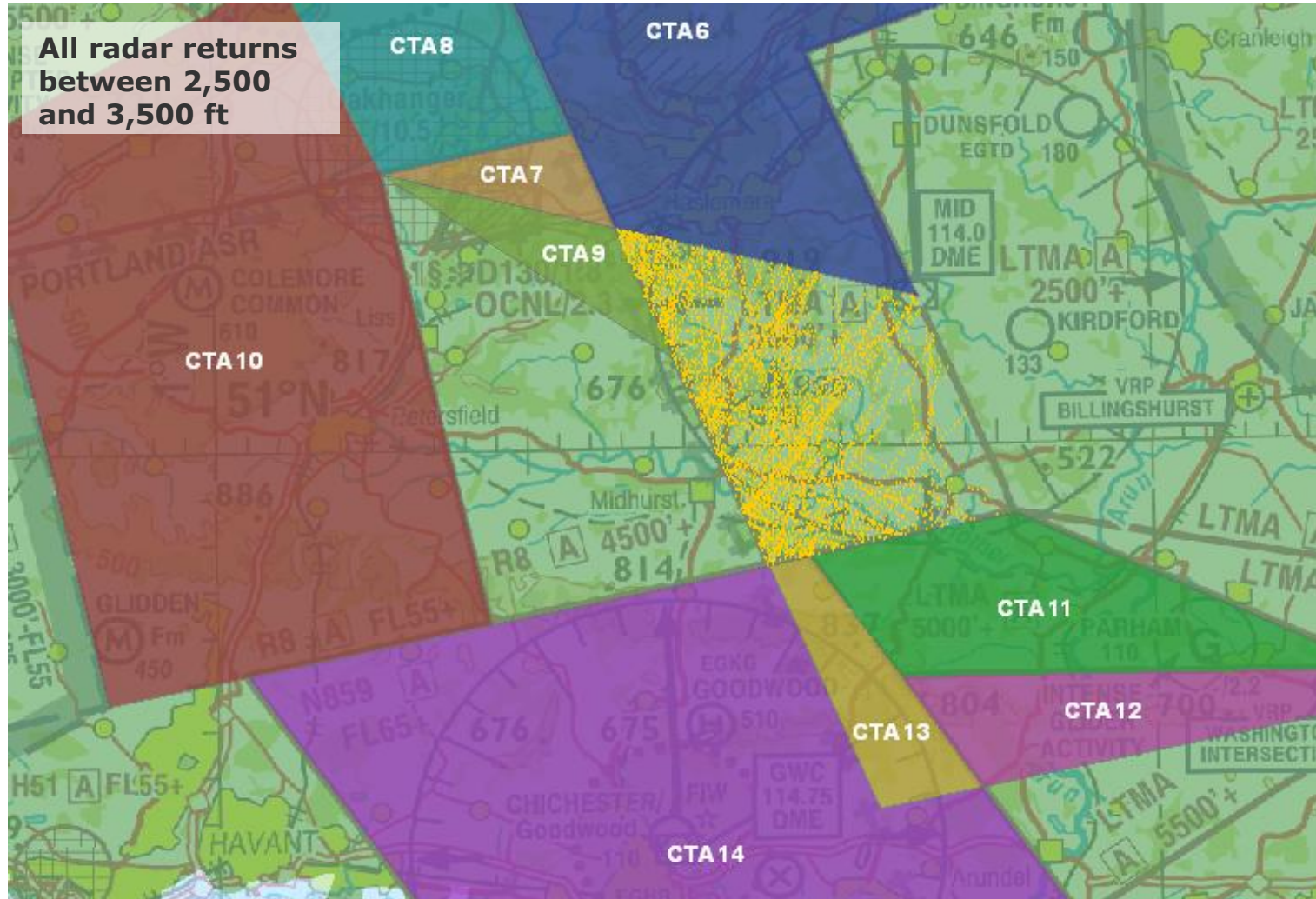
# Trapezoid – QNH Adjusted altitude plots (<2,500ft)

Base of LTMA above Trapezoid: 3,500ft



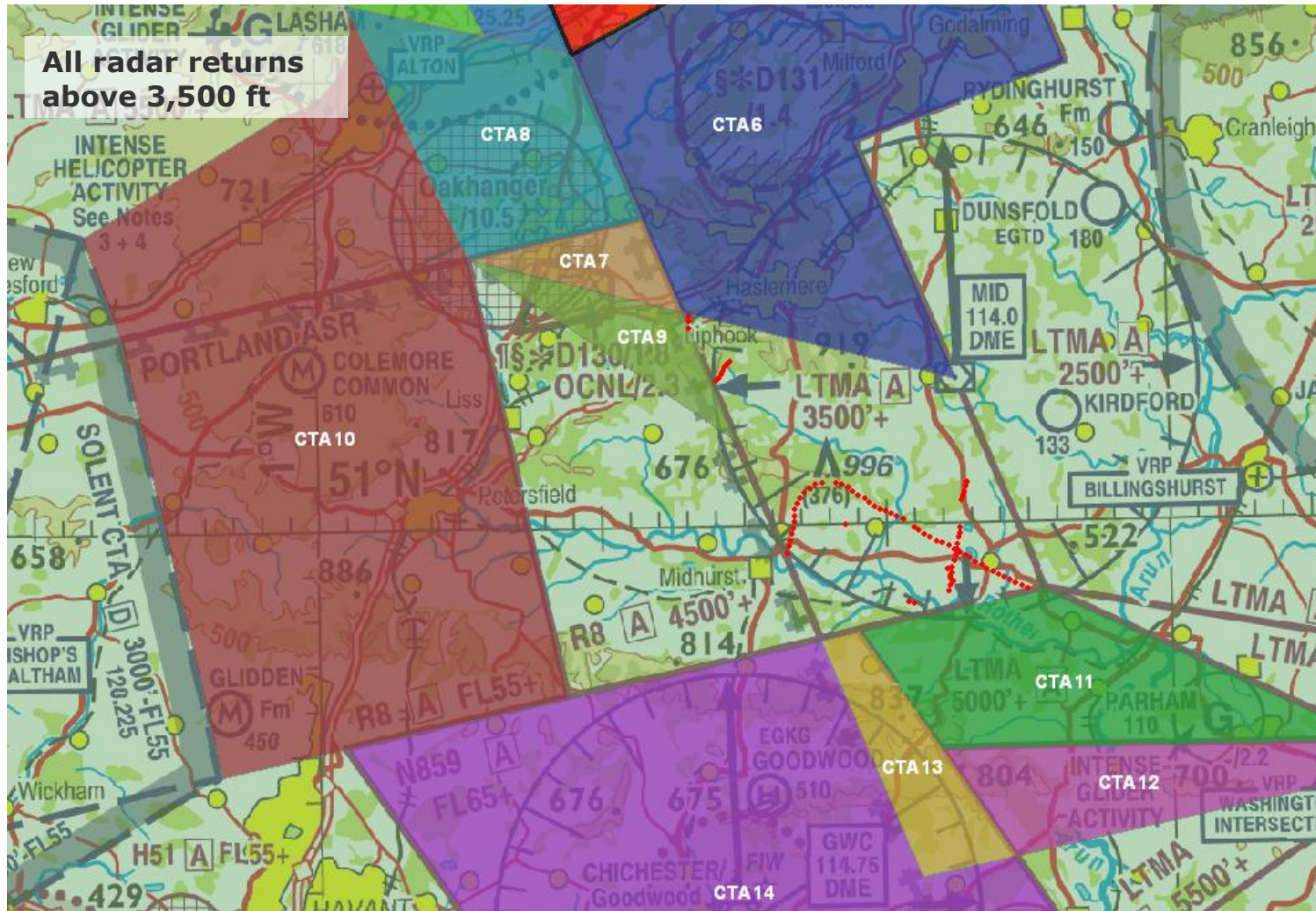
# Trapezoid – QNH Adjusted altitude plots (2,500 – 3,500ft)

Base of LTMA above Trapezoid: 3,500ft



# Trapezoid – QNH Adjusted altitude plots (>3,500ft)

Base of LTMA above Trapezoid: 3,500ft

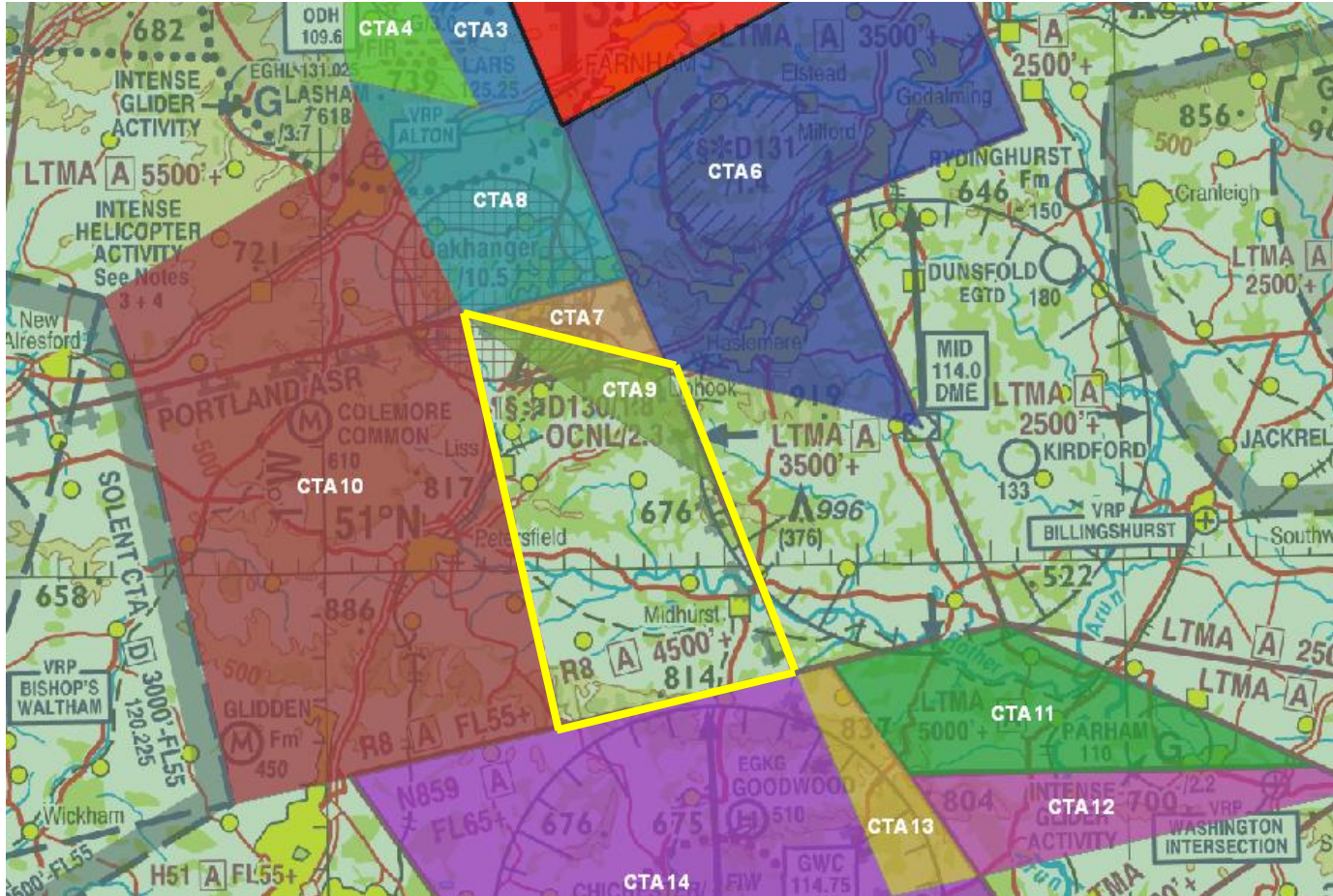




# CTA 9 & trapezoid Region of interest

Proposed airspace limits

CTA9: 3,500ft – 4,500ft    Base of LTMA above trapezoid – 4,500ft



# CTA 9 & trapezoid – QNH Adjusted altitudes

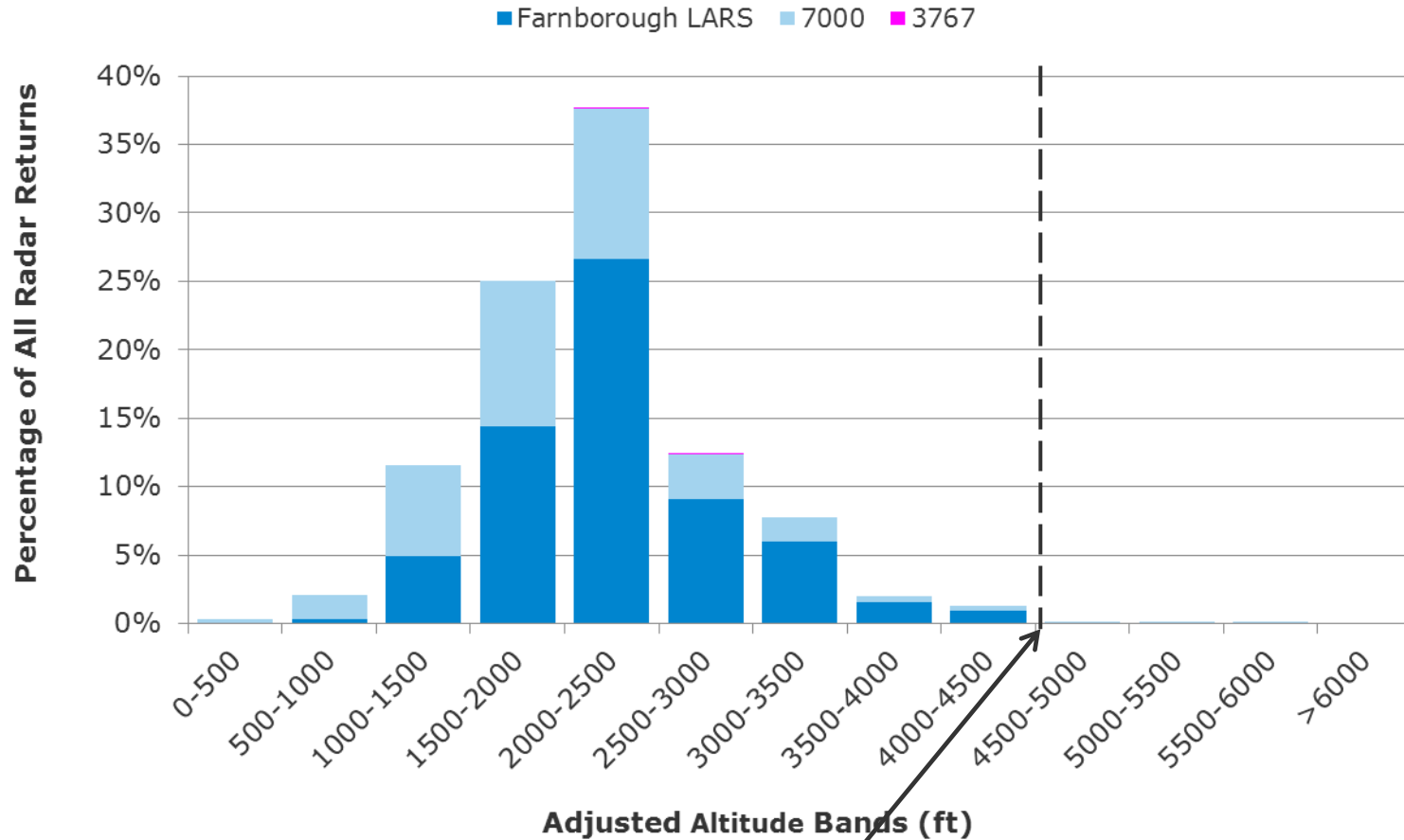
Proposed airspace limits

CTA9: 3,500ft – 4,500ft

Base of LTMA above trapezoid – 4,500ft

**Total radar returns: 76,296**

## QNH Adjusted Altitude Distribution

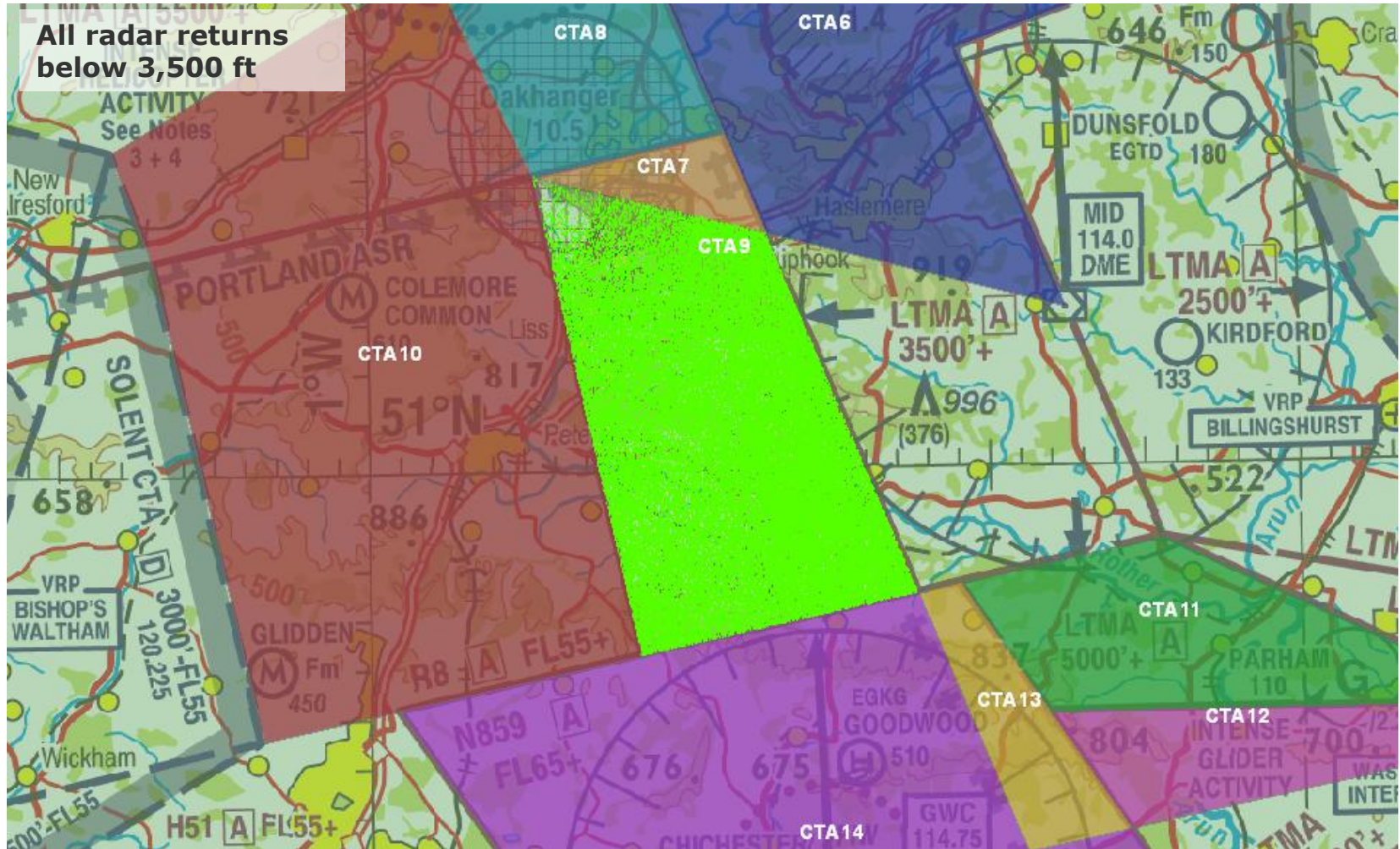


Base of LTMA (max altitude for Farnborough controlled airspace)

# CTA 9 & trapezoid – QNH Adjusted altitude plots (<3,500ft)

Proposed airspace limits

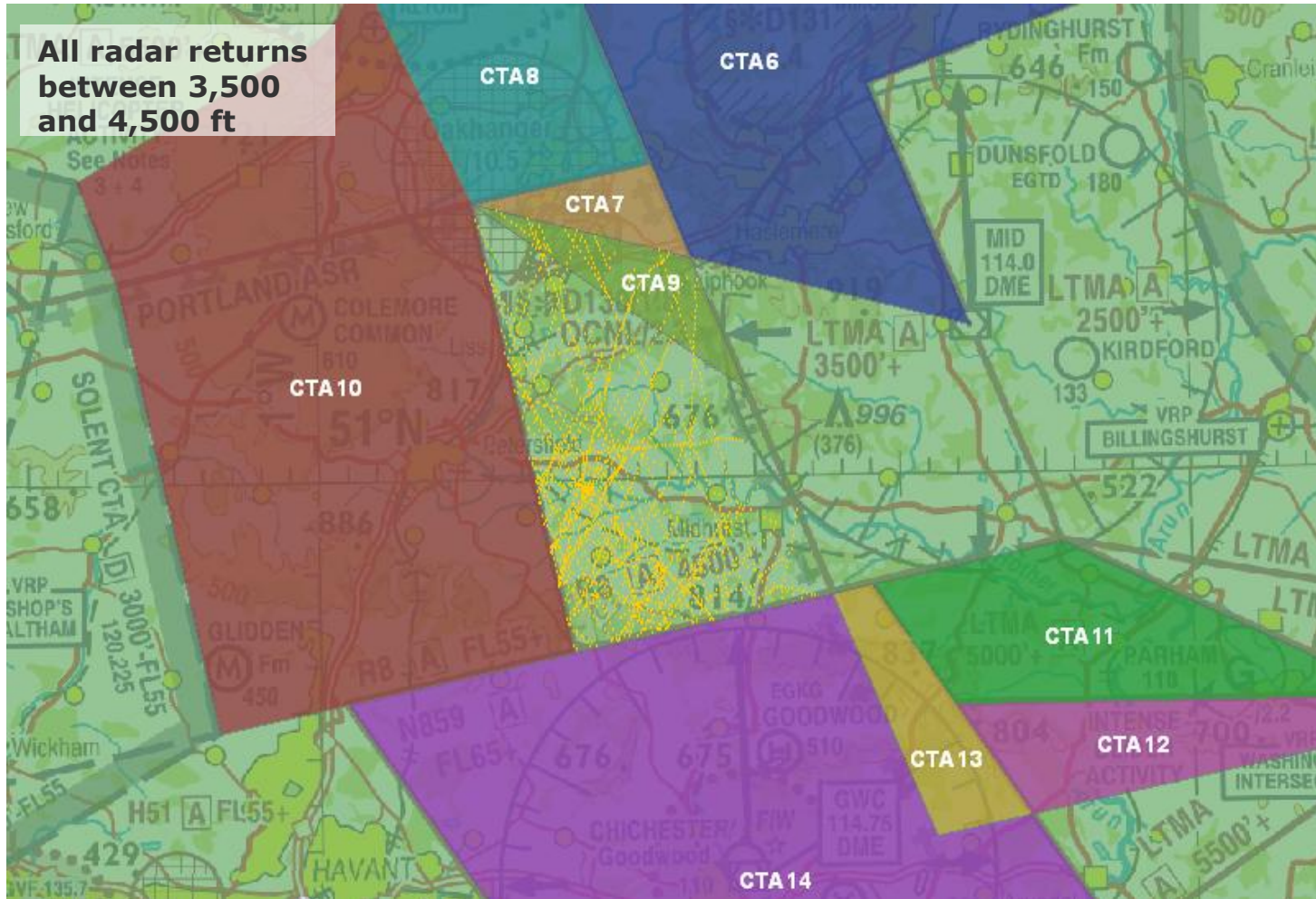
CTA9: 3,500ft – 4,500ft Base of LTMA above trapezoid – 4,500ft



# CTA 9 & trapezoid – QNH Adjusted altitude plots (3,500 – 4,500ft)

Proposed airspace limits

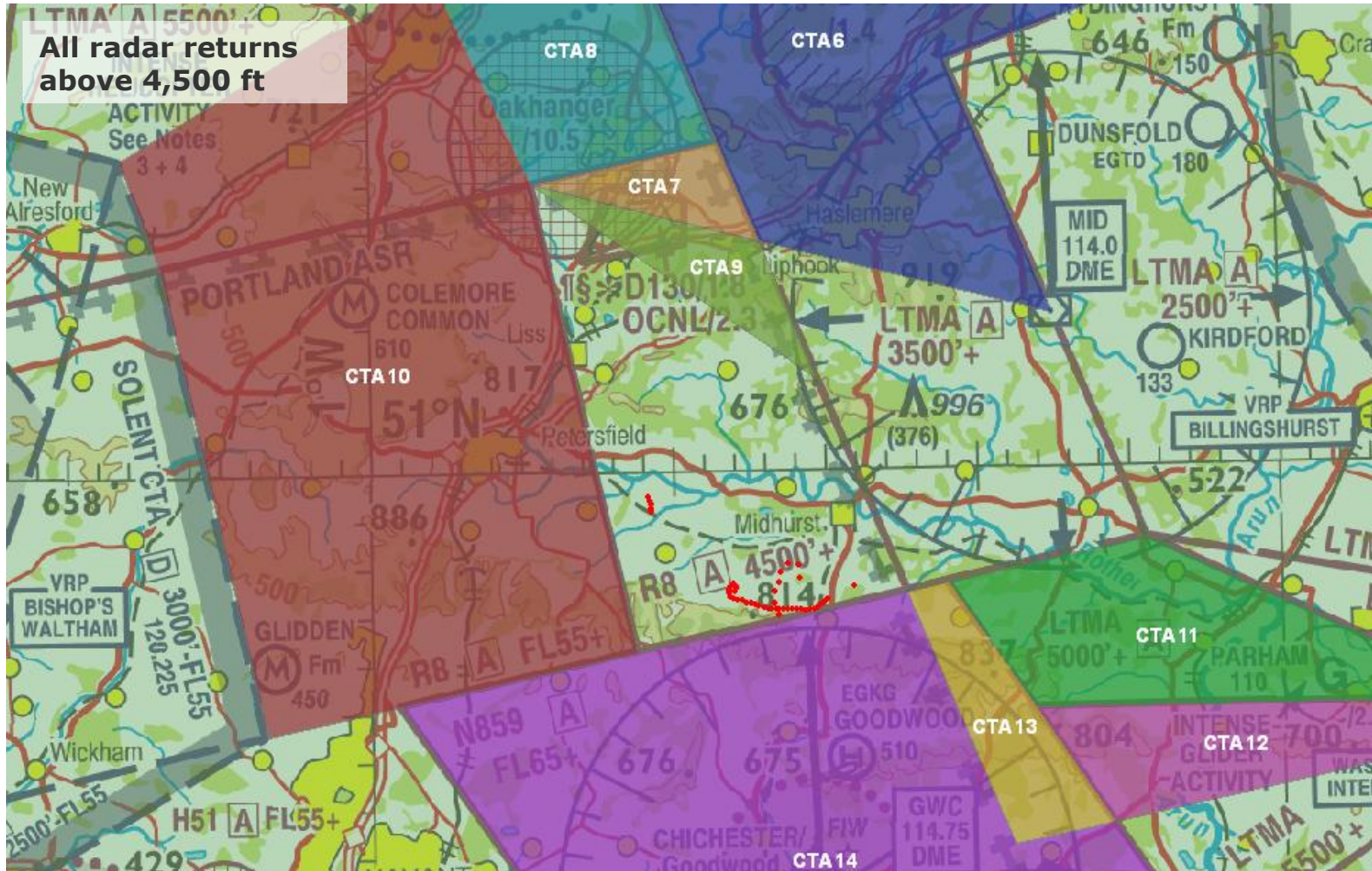
CTA9: 3,500ft – 4,500ft Base of LTMA above trapezoid – 4,500ft



# CTA 9 & trapezoid – QNH Adjusted altitude plots (>4,500ft)

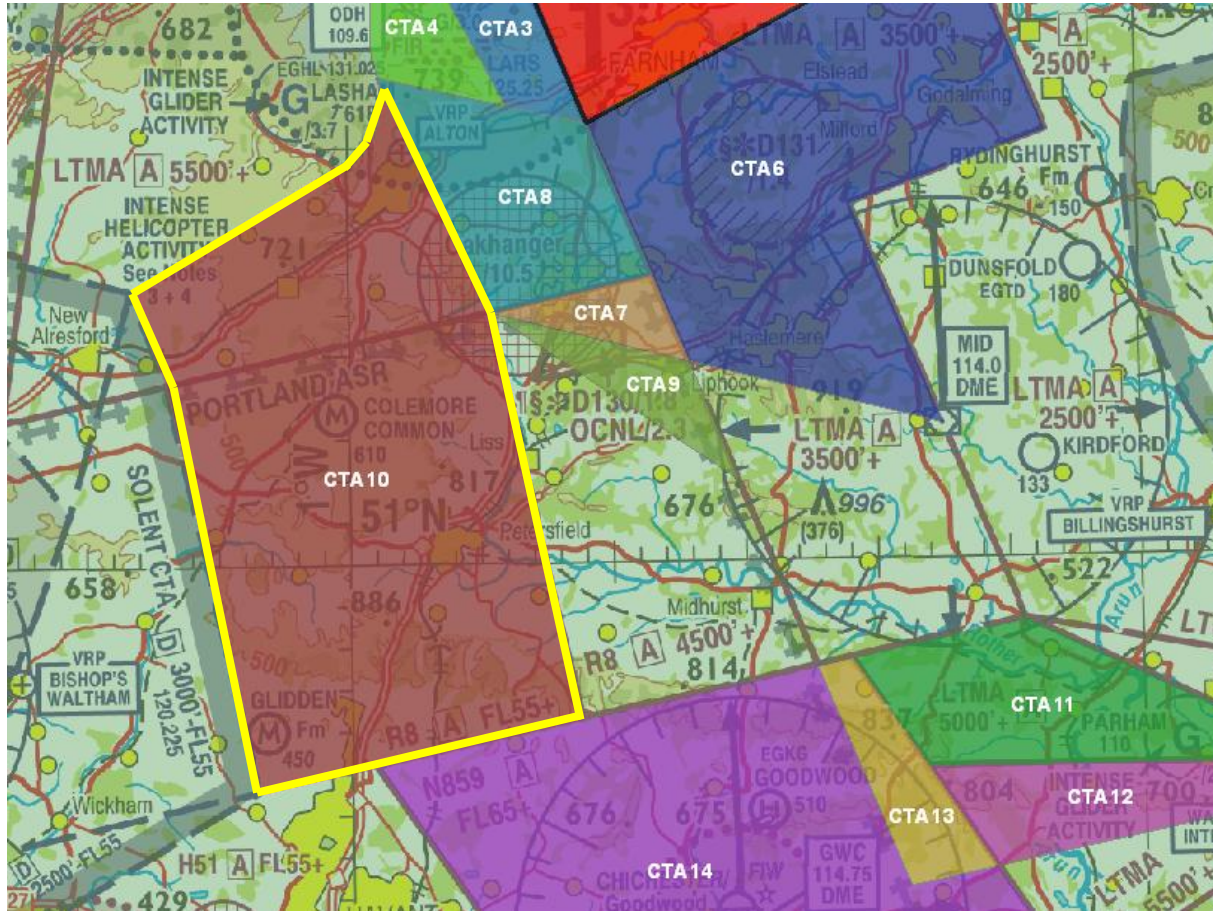
Proposed airspace limits

CTA9: 3,500ft – 4,500ft    Base of LTMA above trapezoid – 4,500ft



# CTA 10 trapezoid Region of interest

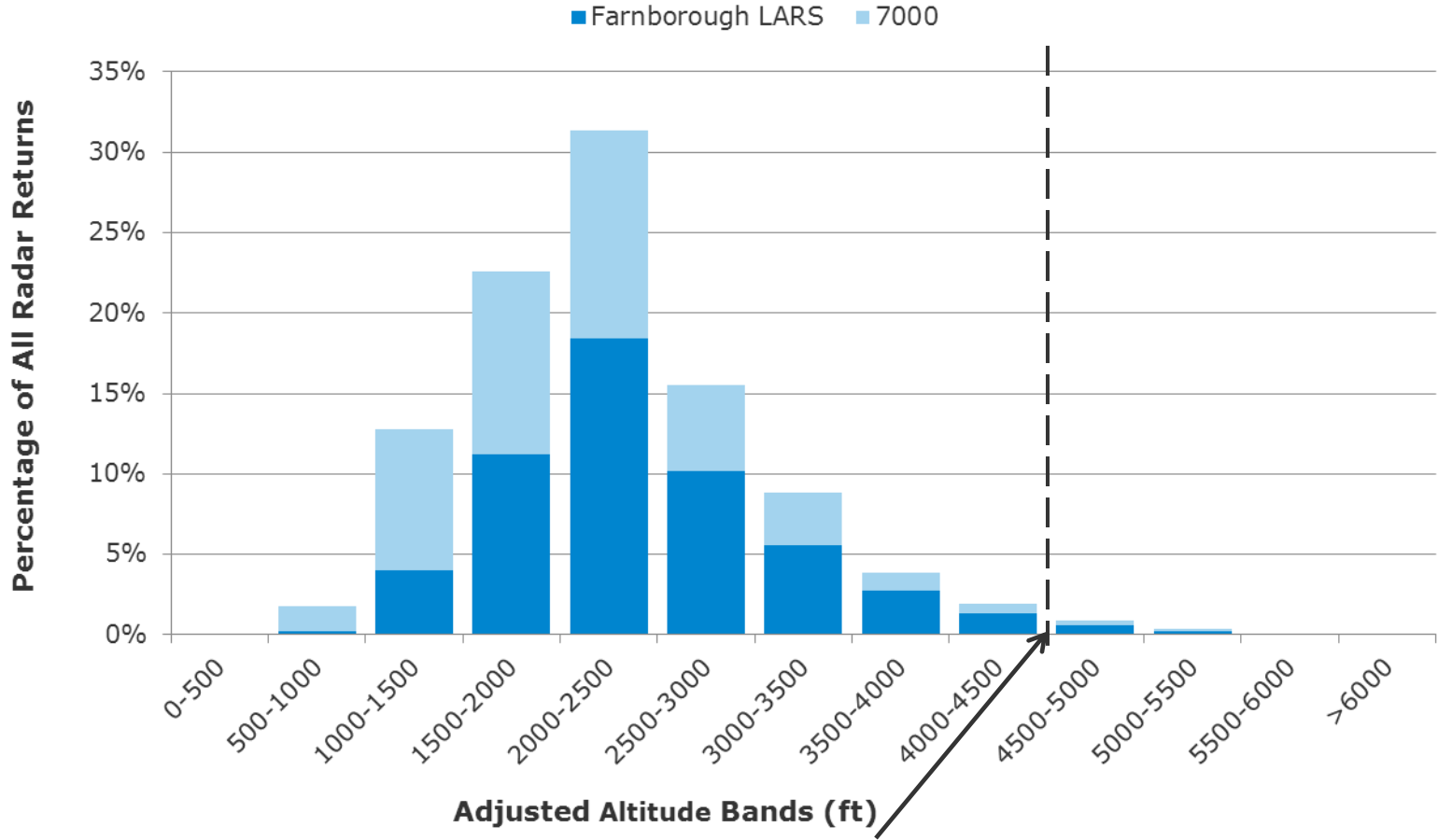
Proposed airspace limits  
CTA10: 4,500ft – 5,500ft



CTA 10 trapezoid- QNH Adjusted altitudes **Total radar returns: 144,668**

Proposed airspace limits  
CTA10: 4,500ft – 5,500ft

QNH Adjusted Altitude Distribution

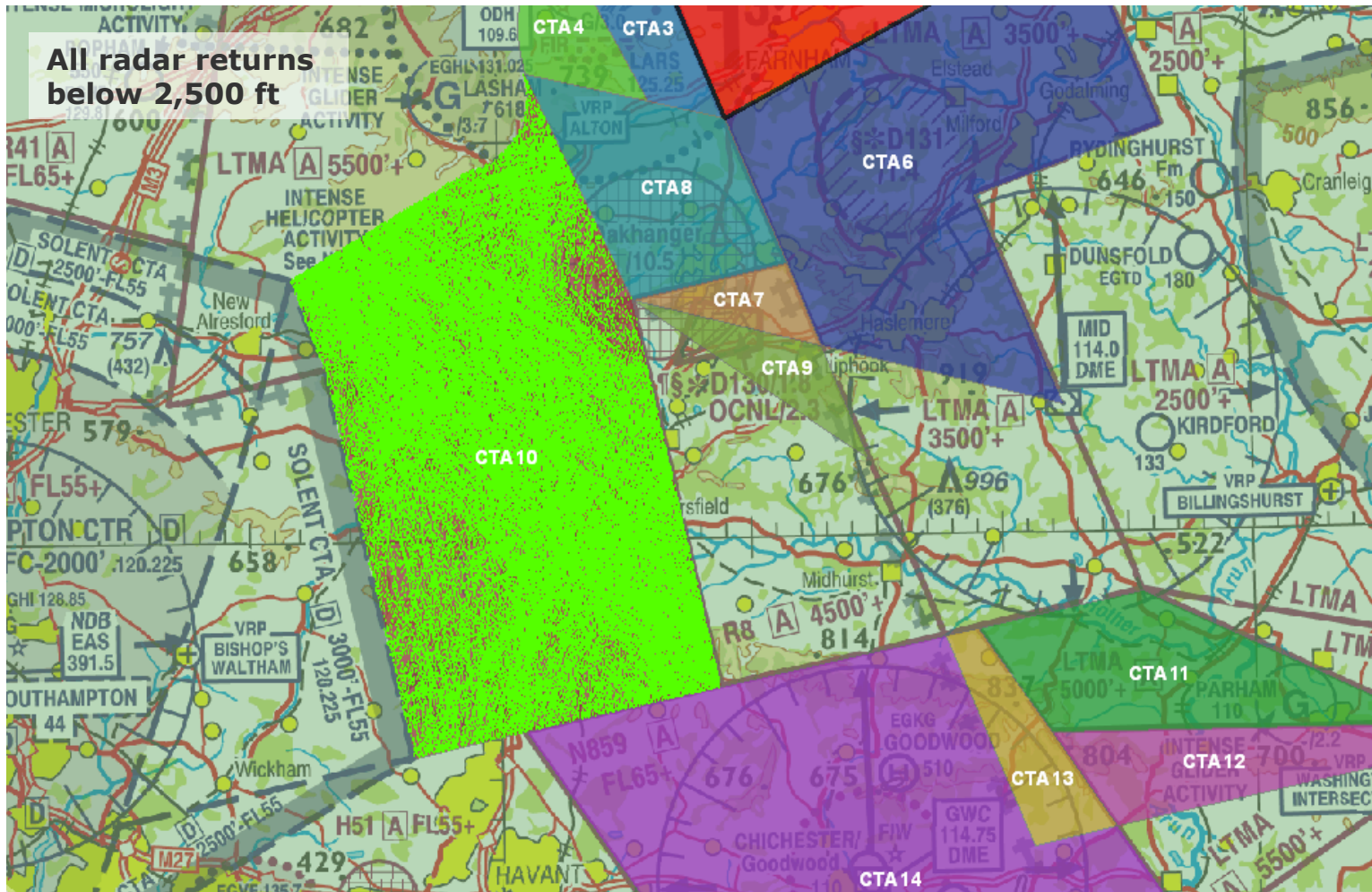


Base of proposed airspace

# CTA 10 trapezoid – QNH Adjusted altitude plots (<2,500ft)

Proposed airspace limits

CTA10: 4,500ft – 5,500ft

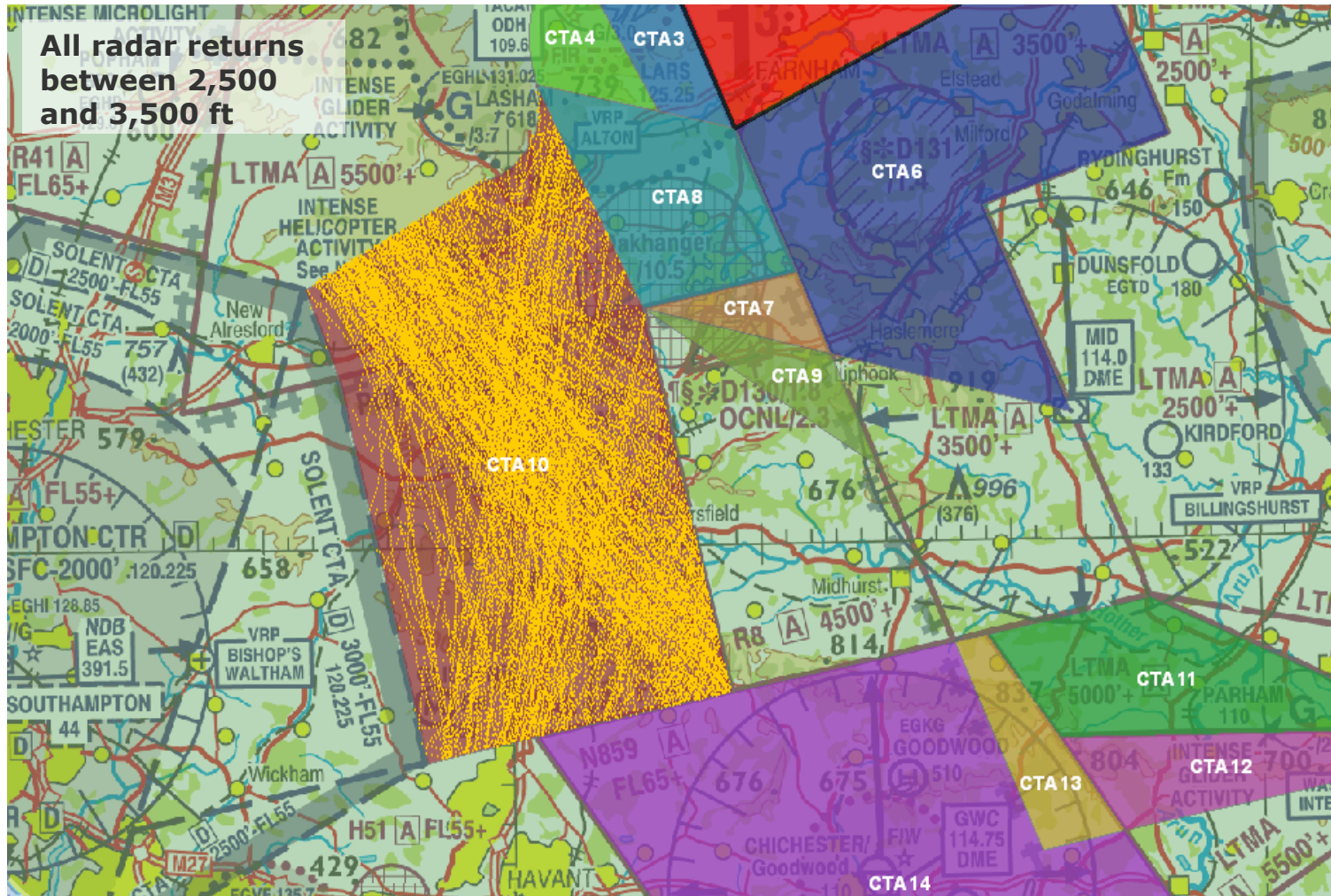




# CTA 10 trapezoid – QNH Adjusted altitude plots (2,500 – 3,500ft)

Proposed airspace limits

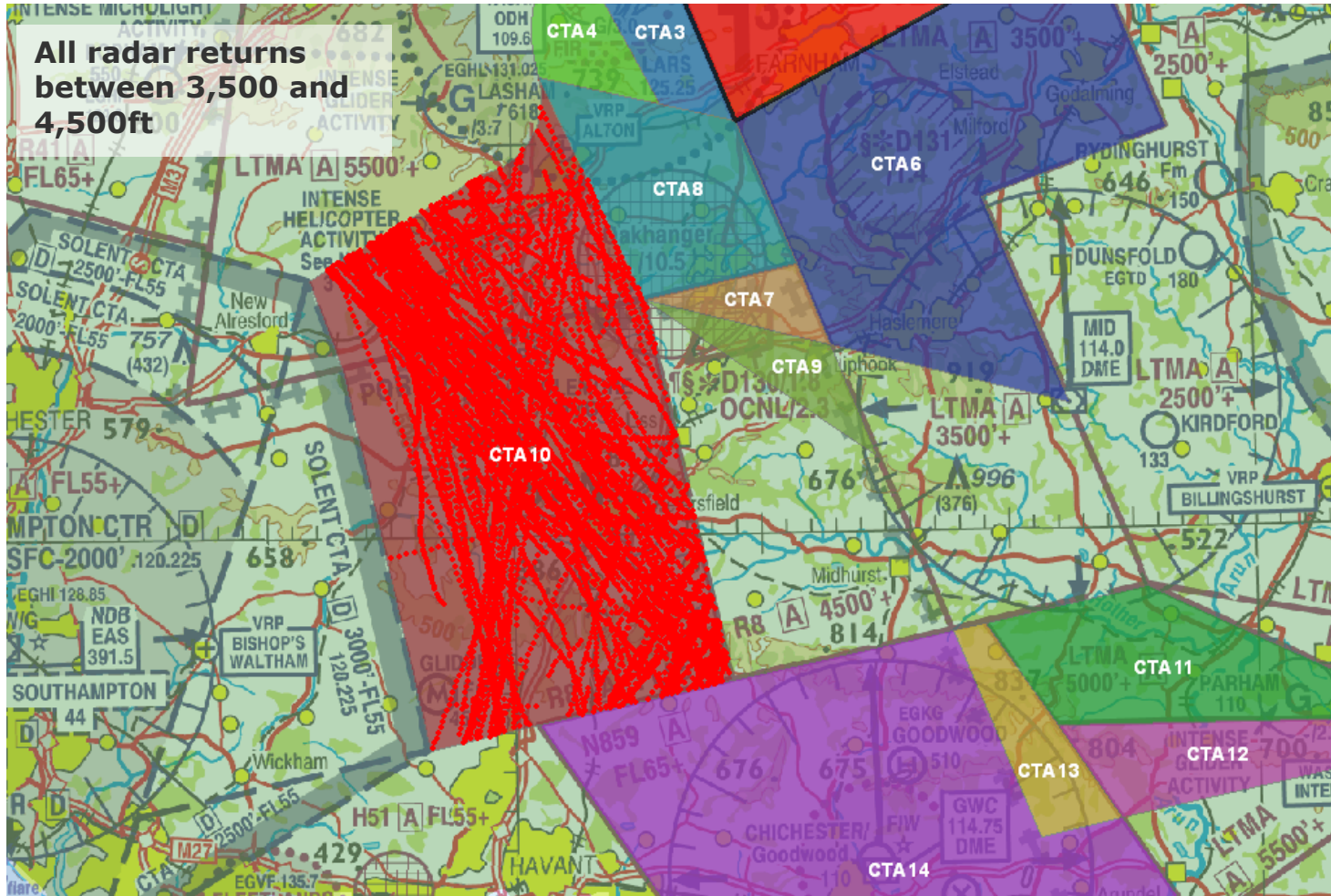
CTA10: 4,500ft – 5,500ft



# CTA 10 trapezoid – QNH Adjusted altitude plots (3,500 - 4,500ft)

Proposed airspace limits

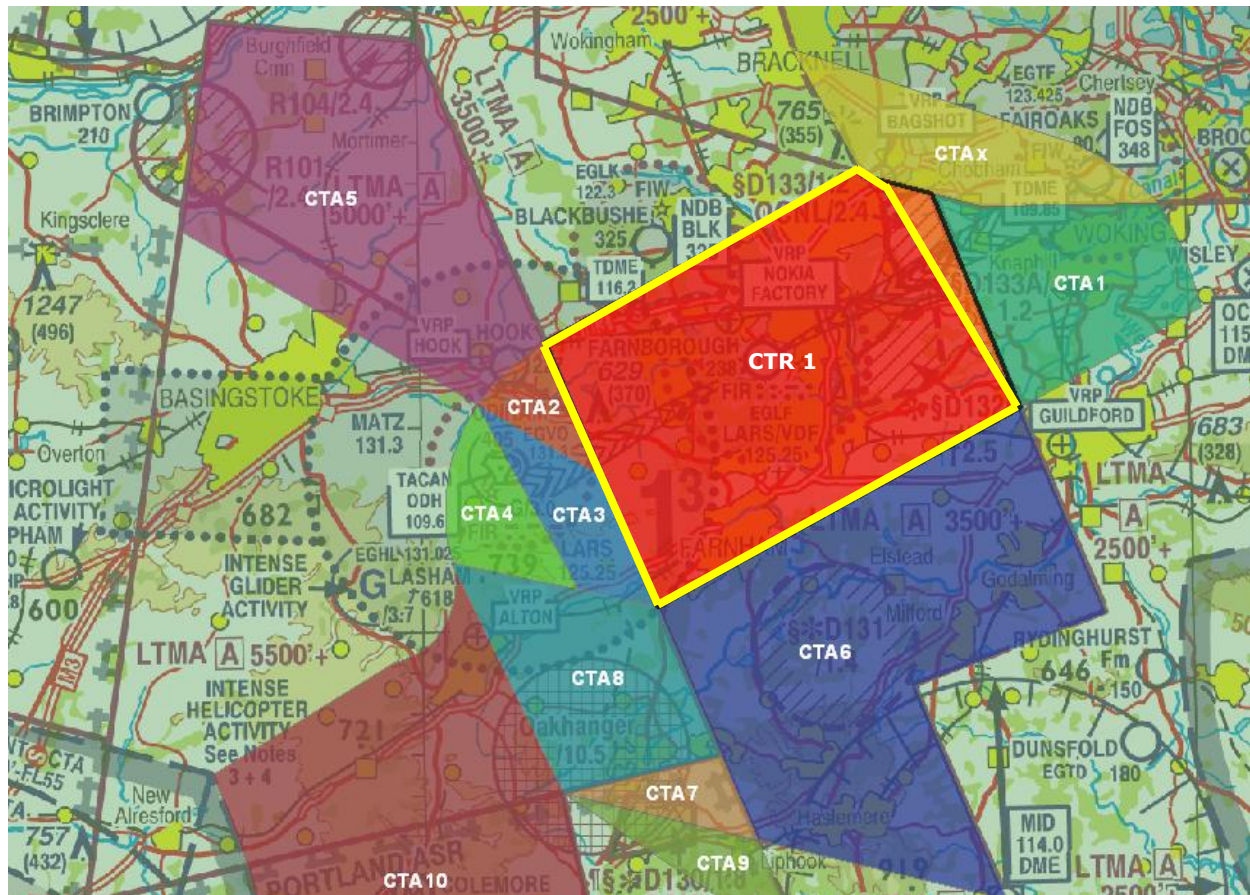
CTA10: 4,500ft – 5,500ft



# Part B

## CTR 1 - Region of interest

Proposed airspace limits  
CTR1: 0ft - 3,500ft



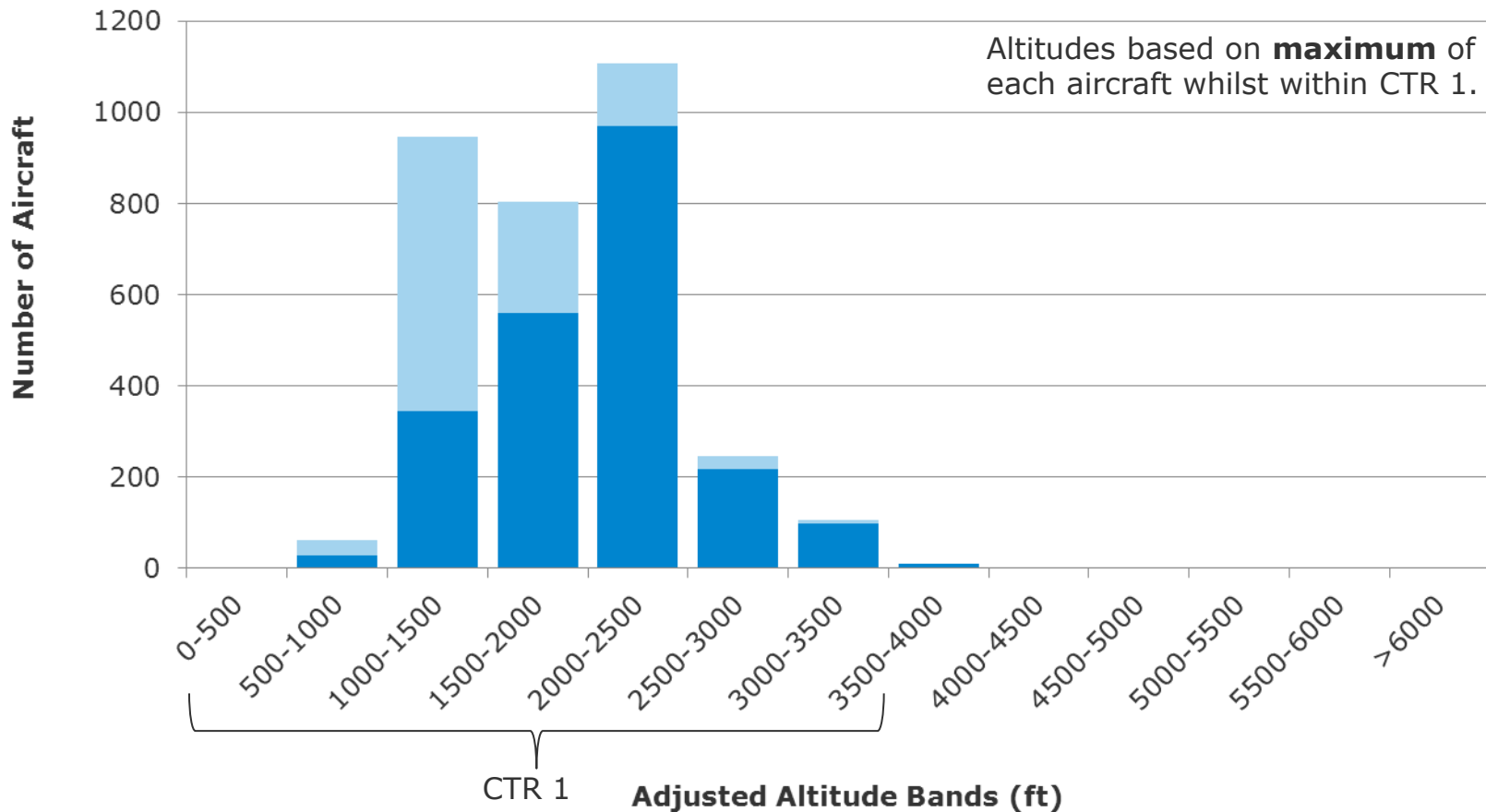
# CTR 1 – No. Aircraft by Altitude

**Total Aircraft: 3,286**  
**Total ≤ 3,500ft: 3,274**

Proposed airspace limits  
 CTR1: 0ft – 3,500ft

## QNH Adjusted Max Altitude Distribution

■ Farnborough LARS   ■ 7000

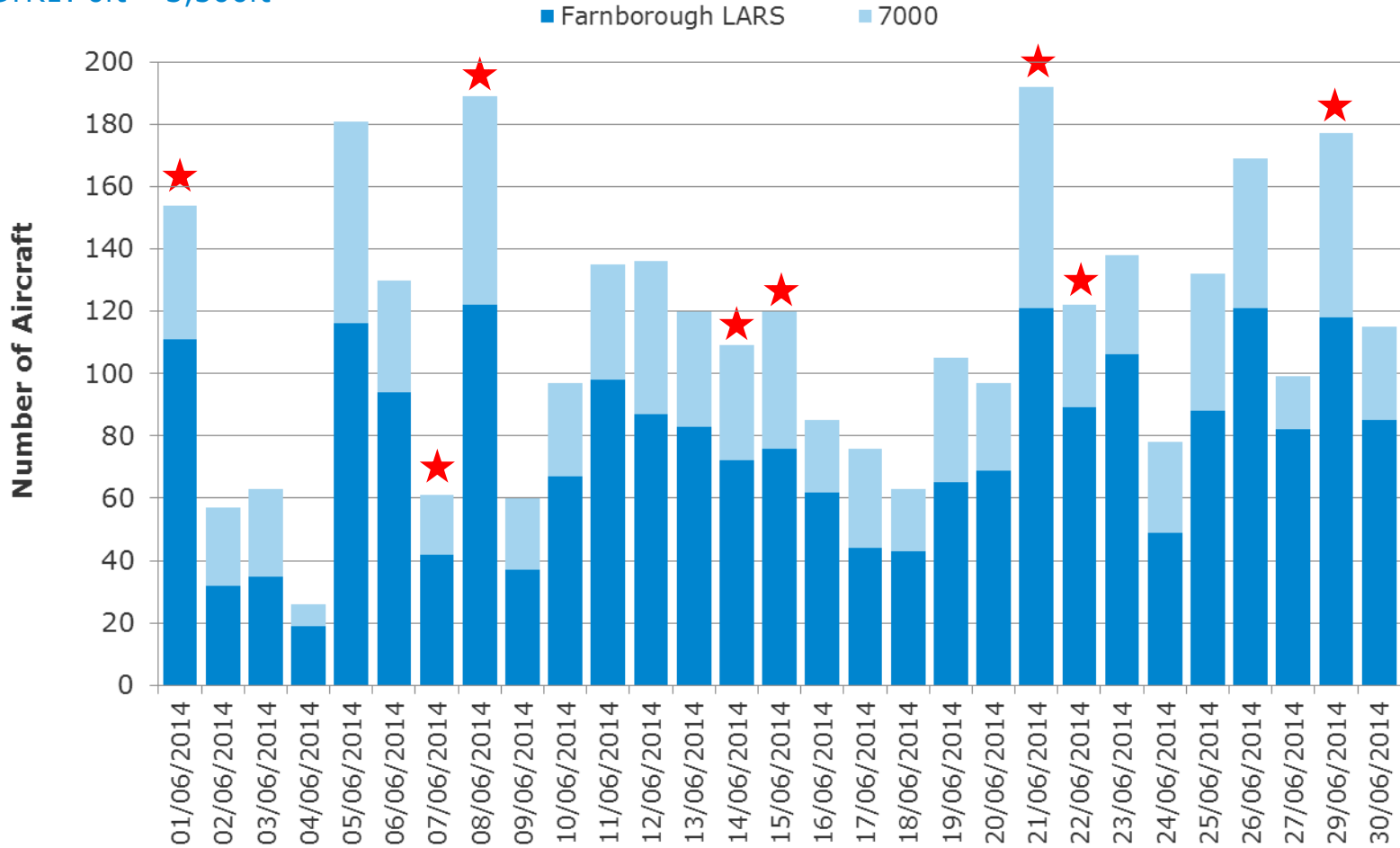


# CTR 1 – No. Aircraft by Day

**Total Aircraft: 3,286**

Proposed airspace limits  
CTR1: 0ft – 3,500ft

**Average per day: 113**



↑  
Lowest pressure day of the month (see slide 6)

★ indicates a weekend day.

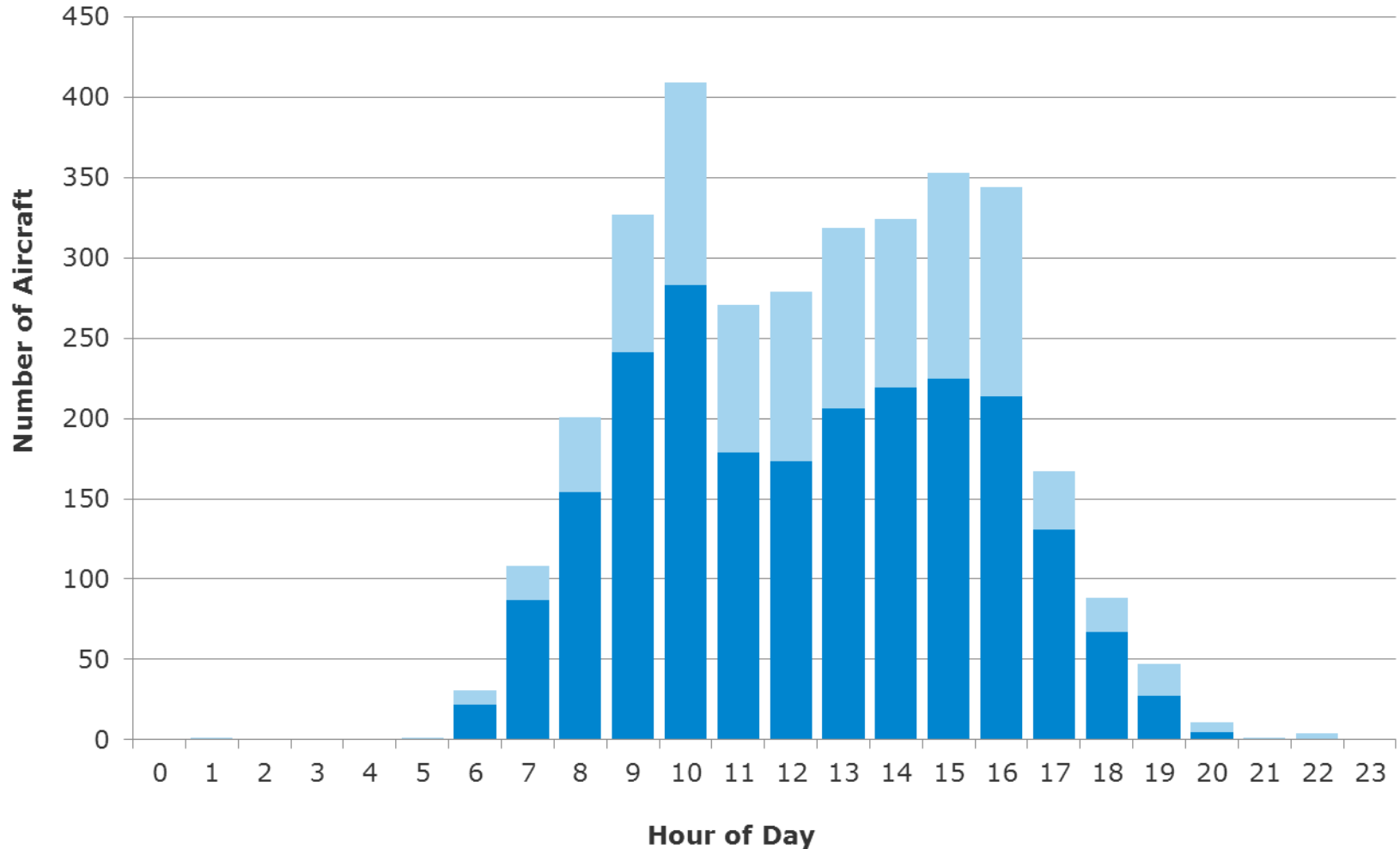
↑  
Note: Missing day (see slide 5)

# CTR 1 – No. Aircraft by Hour of Day

**Total Aircraft: 3,286**

Proposed airspace limits  
CTR1: 0ft – 3,500ft

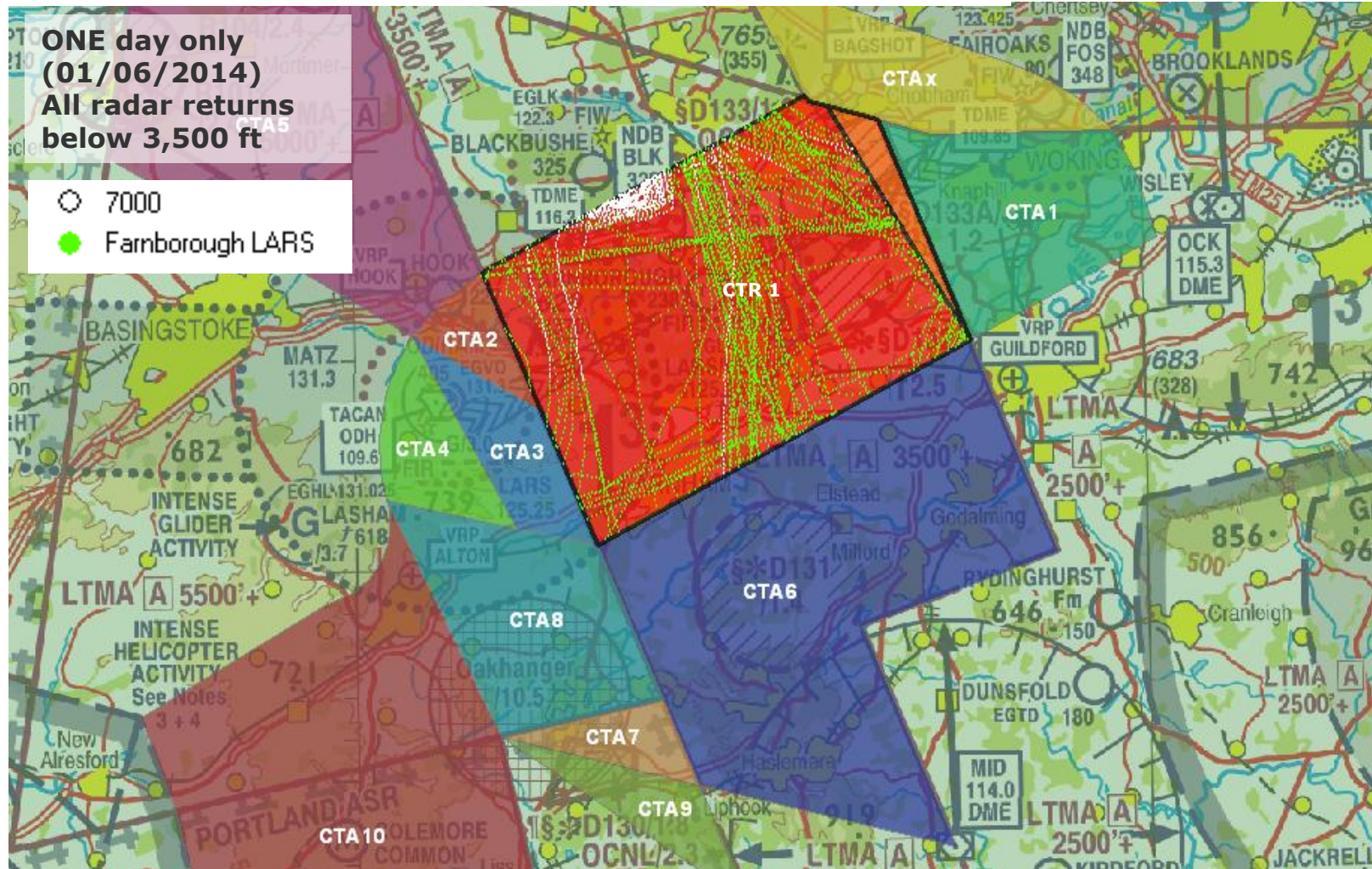
■ Farnborough LARS ■ 7000



# CTR 1 - QNH Adjusted altitude plot (01/06/2014) <3,500ft

Proposed airspace limits: CTR1: 0ft - 3,500ft

**Total Aircraft: 153**



# Summary

- Node L Radar data for GA traffic around Farnborough in June 2014 (excluding 28<sup>th</sup> for which no data was available) was analysed to understand levels of aircraft as they transit specified areas and the number of aircraft in CTR1.

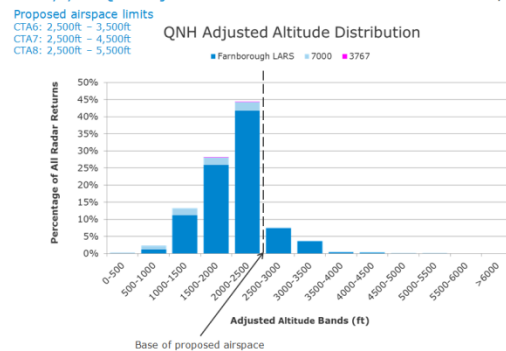
## PART A

- In all of the areas examined there was a peak of radar returns with QNH adjusted altitudes between 2,000ft and 2,500ft.
- Significantly fewer radar returns recorded QNH adjusted altitudes above 2,500ft.

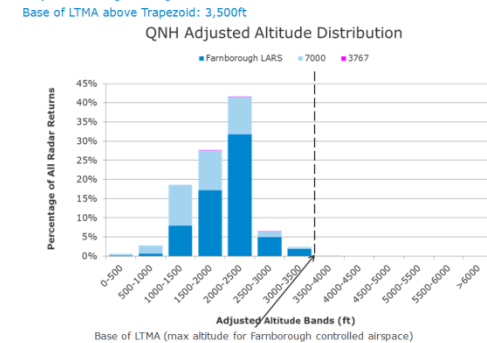
## PART B

- There were 3,286 aircraft in CTR1 across June 2014 (excluding 28<sup>th</sup> for which no radar data was available), an average of 113 per day. 2,233 (an average of 77 per day) were on Farnborough LARS squawks with 1,053 squawking 7,000.
- Examining the tracks of one day it appears the majority of the 7000 squawks in CTR1 are in the Blackbushe area.

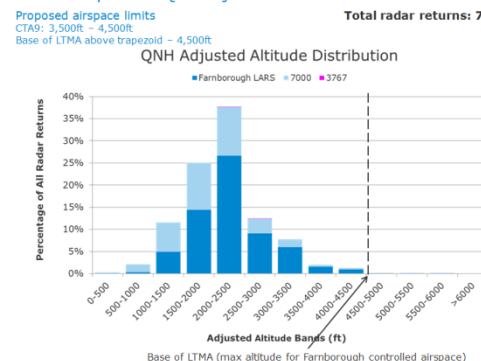
CTA 6,7,8 – QNH Adjusted altitudes Total radar returns: 153,322



Trapezoid – QNH Adjusted altitudes Total radar returns: 57,022



CTA 9 & trapezoid – QNH Adjusted altitudes Total radar returns: 76,296



CTA 10 trapezoid – QNH Adjusted altitudes Total radar returns: 144,668

