GATWICK RNAV-1 SIDS – CAA PIR ROUTE ANALYSIS REPORT

This section explains the track distribution of conventional SIDs and the RNAV SID replications using a selection of traffic samples since RNAV-1 SID replications were introduced on a permanent basis from November 2013. The samples compared are selected from data provided by Gatwick to try to give as close as possible, like for like samples in terms of the numbers of departures during the given period..This is so we can isolate, so far as possible, the impact of introducing the RNAV-1 SIDs; in some cases there are slightly more conventional SIDs than RNAV-1 SIDs, and likewise, in other cases, there are more RNAV-1 SIDs than conventional SIDs. The difference in samples is indicated within the tables of this report. In some comparisons of track distribution diagrams and track density plots, the CAA has analysed more than 1 sample as shown in the table.

We have also included our observations on the incidence and impacts of tactical radar vectoring. This is a response to feedback which the CAA has received from some groups and individuals located near to Gatwick.

GUIDE TO TRACK DISPERSION AND DENSITY DIAGRAMS

To fully understand this document, readers will have to view the track dispersion diagrams which are associated with the SID route numbers and the descriptions of track dispersion, track density and associated impacts.

At the beginning of each route analysis, the CAA initially refers to Gatwick's consultation diagrams and forecast impacts of RNAV-1 SID replication implementation and describes the forecast impact. This forecast by Gatwick is cross referred to the diagram figure numbers portrayed in the Gatwick Consultation and Airspace Change Proposal (see http://www.caa.co.uk/default.aspx?catid=2111&pagetype=90&pageid=16983) for ease of reference. The analysis then compares the impact of the RNAV-1 SID replications with the conventional SIDs using a number of traffic samples provided since the implementation of RNAV-1 SIDs in November 2013 and indicates where departures are more concentrated as a result of the RNAV-1 SID replications and whether the anticipated impact, has been realised. Notes relating to the details provided in the table are highlighted below. Any sections in the table where details would not be relevant are shaded out.

The explanations of track distribution are described using references to locations shown on the diagrams to help to describe impacts of the RNAV-1 SID replications. Periods of traffic samples, together with numbers of departures are shown in the tables. For traffic samples used to illustrate impacts in 3 altitude bands (4-5000ft, 5-6000ft, and 6-7000ft), different traffic samples from those shown in the track dispersion and density plots are used for comparison purposes. These altitude plots illustrate when aircraft reach the relevant altitude band and are used to illustrate the flight paths flown by both the conventional departures and RNAV-1 departures when they are at and above 4000ft and illustrate the dispersion of traffic, where they are remaining on the SID and where aircraft are being vectored. In the tables where percentages are used to describe dispersions, these are estimated by visual interpretation of the density against the width of the NPR swathe as shown in the diagrams.

A variety of track dispersion plots have been presented to the CAA for PIR analysis. These comprise:

- Track density plots of Trial SIDs used for consultation purposes, and diagrams from the consultation which were used to describe forecast impacts of the RNAV-1 SIDs.
- Track dispersion plots up to 3900 ft for Route 4 (an explanation is shown at the bottom of each diagram).
- Track dispersion plots for all routes up to 4000 ft (an explanation is shown at the bottom of each diagram).
- Track density plots (an explanation is shown at the bottom of each diagram).
- Altitude Slice Diagrams in the altitude bands: 4-5000ft, 5-6000ft, 6-7000ft.

Track dispersion diagrams portray each aircraft track on a map, based on radar data. Tracks are overlaid upon each other, such that if many tracks are overlaid on top of each other, individual tracks may no longer be visible. They are useful for illustrating the dispersion of the traffic pattern, but are not as useful for determining the density/concentration of tracks.

Track density diagrams = these portray the concentration of flight tracks using a colour code to indicate differing concentrations of flight tracks. They are sometimes referred to as “heat plot” diagrams. Whilst they can be used to illustrate traffic dispersion, they are most useful for illustrating if traffic is concentrated along a route or over a geographic location. Depending on the key used for portraying track concentration, individual tracks towards the outer limits of the dispersion may not be visible on the diagram.

NOTES RELATING TO THE DATA IN THE TABLES

Col 2 Note 1. Reference to Consultation Document (Con Doc) and ACP diagrams. Month period analysed in the PIRand number of conventional SIDs flown is inserted. Comments provided on conventional SID track dispersion.

Col 3 Note 2. Reference to Consultation Document (Con Doc) and ACP diagrams. Month period analysed in the PIRand number of RNAV-1 SIDs flown inserted. Comments provided on RNAV-1 SID track dispersion.

Col 4 Note 3. Comments provided on impact of change compared with that portrayed in Gatwick’s consultation and ACP submission.

Col 5 Note 4. Observations on any discernible variance with tactical radar vectoring by ATC post RNAV-1 SID replication implementation. The altitude when vectoring is permitted by Air Traffic Control is illustrated at the top of the column. The following information was included in the consultation document.:

The altitude of 4000ft applies to:

- All routes during the night - period 2330-0600 local time;
- Rwy 26 Routes 4,7,8,9 during the day period 0600-2330 local time.
- Rwy 08 Route 2 during the day period 0600-2330 local time.

The altitude of 3000ft applies during the day period 0600-2330 local time to:

- Rwy 26 Route 1 and to Rwy 08 Routes 3, 5 and 6.

Col 6 Note 5. Any remarks of significance.

Abbreviations used in the PIR Assessment Route Report Form below.:

NPR	Noise Preferential Route.
CL	Centreline. (Note, in SID design terminology this is referred to as ‘nominal track’; for the purposes of this report CL and Nominal Track are deemed to have the same meaning and mean the flight path we anticipate the aircraft will follow when flying the SID unless and until vectored of the SID by air traffic control. However, aircraft may be either side of the RNAV-1 CL or Nominal Track by up to one nautical mile for 95% of the flight time which is within the navigation tolerance of RNAV-1 1 SID design parameters).
Deps	Departing aircraft on the SID.
SID	Standard Instrument Departure.
AC	Aircraft.
ACP	Airspace Change Proposal (V 1.1 submitted in January 2013).
Con Doc	Consultation Document (19 July 2012).

Deg	Degree (as in the size of any turn).
Approx	Approximately.
NT	Nominal Track (see comments above regarding CL and NT).
Conv	Conventional (meaning the SIDs predicated on conventional navigation techniques in operation prior to the introduction of RNAV-1 SIDs)

Terminology:

Swathe.	This refers to the 3 km wide NPR compliance monitoring swathe .
Vectoring.	This is an extensive ATC tactical radar vectoring operational practice to provide aircraft with an expeditious route to destination and safe separation against other aircraft.

ROUTE 1 – RWY 26 SAM / KENET – SAMPLE 1 Comparing Jul 13 (Conv) v Jun 14 (RNAV)

LINKS	SID Sample Of Relevant Track Dispersion Diagram Col 1	Conventional SID Comments Col 2 (Note 1)	RNAV 1 SID Comments Col 3 (Note2)	Impact of RNAV SID Replication Col 4 (Note 3)	Observations on Vectoring Col 5 (Note 4)	Remarks Col 6 (Note 5)
	Consultation Ref / Diagram	Fig 5 in Con Doc 100A Fig 2 in ACP 101A	Fig 6 in Con Doc 100B Fig 3 in ACP 101B	The forecast impact was as shown in Con Doc Fig 6 & ACP Fig 3. This was considered to be negligible given the nature of a 'straight ahead' departure and the lack of significant track changes after departure.		
	Diagram **SAM** **KENET**	**Month** **Number** **Jul 13** **1550**	**Month** **Number** **Jun 14** **1577**		Day: 3000 Night: 4000	
102	At 4000 ft Compare: GAL Slides 8 v 3 CAA Slides 2 v 3	Deps using approx 20-25% of the width of NPR swathe spread, across the NPR CL. Vectoring obvious after passing the A24, but also evident before deps reach a position north of Rusper.	In the main, the dispersion of deps is approx 15% of the width of the NPR swathe, spread evenly across the NPR CL. Vectoring obvious after passing the A24, but also evident before deps reach a position north of Rusper.	The RNAV SID dispersion has reduced compared with the width of the conv SID departure track dispersion in the early stages of departure by approx 50%; then, as ac progress towards Ellens Green, the RNAV dispersion increases but is still narrower than the dispersion of the conv deps. Until vectoring has been initiated, the RNAV deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication. This is in line with data shown by GAL in consultation and the ACP.	No significant change on vectoring.	RNAV track dispersion as expected. RNAV sample is + 27 more.
103	Density Plot Compare: CON DOC RTE 1 & GAL Slides 8 v 3 CAA Slides 2 v 3	Deps occupy approx 20-25% of the width of the NPR swathe spread across the NPR CL. Vectoring obvious after passing the A24, but also evident before deps reach a position north of Rusper.	In the main, the dispersion of deps is approx 10-15% of the width of the NPR swathe spread evenly across the NPR CL until the A29. Vectoring obvious after passing the A29.	The RNAV SID dispersion has reduced compared with the width of the conv SID departure track dispersion by approx 30-40%. The picture shows a steady concentration beyond Plaistow, although deps are dispersed by vectoring. Although vectoring remains evident, the RNAV deps are more concentrated than the conventional SID dispersion. The concentration at and below 4000ft is in line with data shown by GAL in consultation and the ACP.	No significant change on dispersion (i.e. the spread) of vectored deps. However, there is an increased concentration of traffic between Ellens Green and Plaistow.	RNAV track dispersion up to 4000ft as expected. Above 4000ft, traffic appears more concentrated on the RNAV SID than was the case on the conventional SID. RNAV sample is + 27 more. Based on the RNAV SID track distribution, this appears to be a successful design.
	Alt Slice Diagrams (Note 7)	Period Number **1-7 Mar 14 359**	Period Number **1-7 Sep 14 357**			
104	Alt 4-5000ft GAL Slides:2-5 CAA Slides 2-5	Deps using approx 20% of the width of the NPR swathe spread across the NPR CL; however, vectoring occurring after passing north of Rusper.	Deps using approx 15% of the width of the NPR swathe spread across the NPR CL; however, vectoring occurring after passing the A24.	The RNAV SID dispersion is slightly reduced in width compared with the conv SID departure track dispersion in this alt band. After crossing the A24, the RNAV SID spread of dispersion is comparable to the spread of the conv SID departure track dispersion due to vectoring.	No significant change on dispersion (i.e. the spread) of vectored deps. However, there is an increased concentration of traffic between Ellens Green and Plaistow in this alt band.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is – 2 less.
105	Alt 5-6000ft GAL Slides 6-9 CAA Slides 2-5	Majority of deps at 5000ft + after passing the A24, Vectoring thereafter evident.	Majority of deps at 5000ft + after passing the A29. Vectoring evident after passing the A24.	The RNAV SID dispersion is slightly reduced in width compared with the conv SID departure track dispersion in this alt band. However, ac appear to be reaching 5000ft slightly later (halfway between A24 and A29). As the RNAV sample is from Sep, it is possible that summer temperatures may be a factor.	Vectoring slightly later compared with conv sample. No significant change on dispersion (i.e. the spread) of vectored deps. However, there is an increased concentration of traffic between Ellens Green and Plaistow in this alt band.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is – 2 less. Ac climb performance can be reduced in high temperatures.
106	Alt 6-7000ft GAL Slides10-13 CAA Slides 2-5	Majority of deps at 6000ft + after passing the A29. Vectoring occurring after passing Rusper.	Majority of deps at 6000ft + slightly later, after passing the A29. Vectoring occurring after passing A24	The RNAV SID dispersion is slightly reduced in width compared with the conv SID departure track dispersion in this alt band. However, ac appear to be reaching 6000ft slightly later. As the RNAV sample is from Sep, it is possible that summer temperatures may be a factor.	Vectoring slightly later compared with conv sample. No significant change on dispersion (i.e. the spread) of vectored deps. However, there is an increased concentration of traffic between Ellens Green and Plaistow in this alt band.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is – 2 less Ac climb performance can be reduced in high temperatures.

ROUTE 1 – RWY 26 SAM / KENET – SAMPLE 2 Comparing Aug 13 (Conv) v Jul 14 (RNAV)

LINKS	SID Sample Of Relevant Track Dispersion Diagram	Conventional SID Comments (Note 1)		RNAV 1 SID Comments (Note2)		Impact of RNAV SID Replication (Note 3)	Observations on Vectoring (Note 4)	Remarks (Note 5)
	Diagram SAM KENET	Month Aug 13	Number 2401	Month Jul 14	Number 2257		Day: 3000 Night: 4000	
107	At 4000 ft GAL Slides 12 v 7 CAA Slides 2v3	Deps using approx 30% of the width of the NPR swathe spread across the NPR CL. Vectoring obvious after passing the A24, but also evident before deps reach a position north abeam Rusper. Almost identical to July 2013 (sample 1).		In the main, the dispersion of deps is approx 15% of the width of the NPR swathe spread evenly across the NPR CL. Vectoring obvious after passing the A24, but also evident before deps reach a position north abeam Rusper.		The RNAV SID dispersion has reduced compared with the width of the conv SID departure track dispersion in the early stages by approx 40-50%; then as ac progress towards Ellens Green, the RNAV dispersion increases but is still narrower than the conv deps. Until vectoring has been initiated, the RNAV deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication. This is in line with data shown by GAL in consultation and the ACP.	No significant change on vectoring.	RNAV track dispersion as expected. RNAV sample is – 174 less.
108	Density Plot CON DOC RTE 1 Slides 12 v 7 CAA Slides 2v3	Deps occupy approx. 20-25% of the width of the NPR swathe spread across the NPR CL. Vectoring obvious after passing the A24.		In the main, the dispersion of deps is approx 10-15% of the width of the NPR swathe spread evenly across the NPR CL. Vectoring obvious after passing the A29.		The RNAV SID dispersion has reduced compared with the width of the conv SID departure dispersion by approx 30-40%. The picture shows a steady concentration beyond Plaistow, although deps are naturally dispersed by vectoring. Although vectoring remains evident, the RNAV deps are more concentrated than the conventional SID dispersion. The concentration at and below 4000ft is in line with data shown by GAL in consultation and the ACP.	No significant change on dispersion (i.e. the spread) of vectored deps. However, there is an increased concentration of traffic between Ellens Green and Plaistow.	RNAV track dispersion as expected. Above 4000ft, traffic appears more concentrated on the RNAV SID than was the case on the conventional SID. RNAV sample is -174 less.

ROUTE 1 – RWY 26 SAM / KENET – SAMPLE 3 Comparing Aug 13 (Conv) v Aug 14 (RNAV)

LINKS	SID Sample Of Relevant Track Dispersion Diagram	Conventional SID Comments (Note 1)		RNAV 1 SID Comments (Note2)		Impact of RNAV SID Replication (Note 3)	Observations on Vectoring (Note 4)	Remarks (Note 5)
	Diagram SAM KENET	Month Aug 13	Number 2401	Month Aug 14	Number 3006		Day: 3000 Night: 4000	
109	At 4000 ft GAL Slides 12 v 11 CAA Slides 2v3	Deps using 20-25% ot the width of the NPR swathe spread across the NPR CL. Vectoring obvious after passing the A24 but also evident before deps reach a position north abeam Rusper. Almost identical to July 2013		In the main, the dispersion of deps is approx 15% of the width of the NPR swathe spread evenly across the NPR CL. Vectoring obvious well before the A24. Reasons for this unknown.		The RNAV SID dispersion has reduced compared with the width of the conv SID departure track dispersion in the early stages by approx 40-50%; then as ac progress towards Ellens Green, the RNAV dispersion increases but is still narrower than the conv deps. Until vectoring has been initiated, the RNAV deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication. This is in line with data shown by GAL in consultation and the ACP.	Vectoring occurring earlier than Samples 1 & 2.	RNAV track dispersion as expected. RNAV sample is + 749 more.
110	Density Plot CON DOC RTE 1 GAL Slides 12 v 11 CAA Slides 2v3	Deps occupy approx. 20-25% of the width of the NPR swathe spread across the NPR CL. Vectoring obvious after passing the A24.		In the main, the dispersion of deps is approx 10-15% of the width of the NPR swathe spread evenly across the NPR CL. Vectoring obvious after passing the A24.		The RNAV SID dispersion has reduced the width of the conv SID departure track dispersion by approx 30-40%. The picture shows a steady concentration beyond Plaistow, although deps are naturally dispersed by vectoring. Although vectoring remains evident, the RNAV deps are more concentrated than the conventional SID dispersion. The concentration at and below 4000ft is in line with data shown by GAL in consultation and the ACP.	Vectoring occurring earlier than in samples 1 & 2.	RNAV track dispersion as expected. Above 4000ft, traffic appears more concentrated on the RNAV SID than was the case on the conventional SID. RNAV sample is + 749 more.

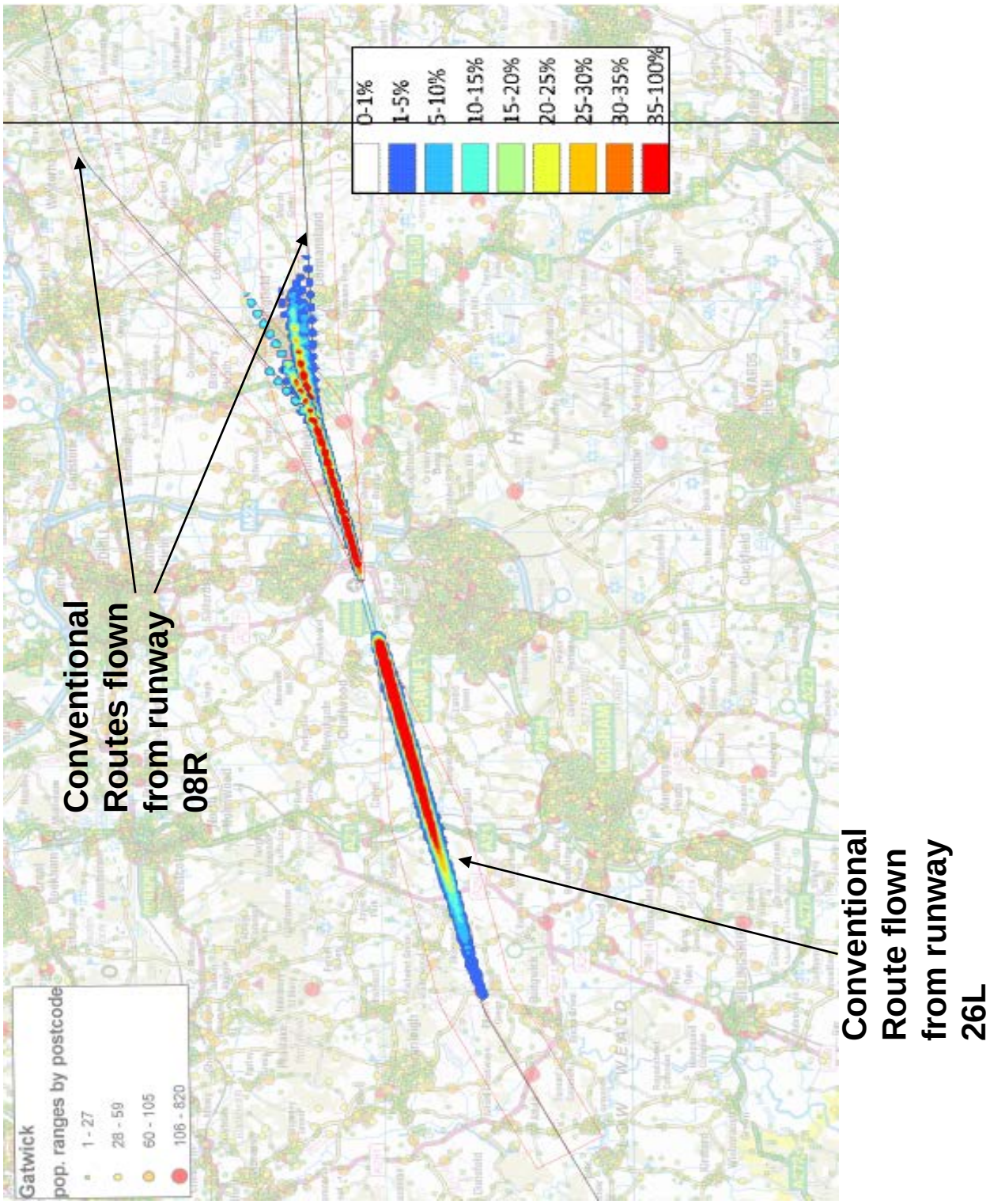

Figure5) Density plots of aircraft tracks (up to 4000 feet AMSL) following the **conventional departure SID** from Runway 26L and conventional (DVR/LAM) departure SID routes from runway 08R

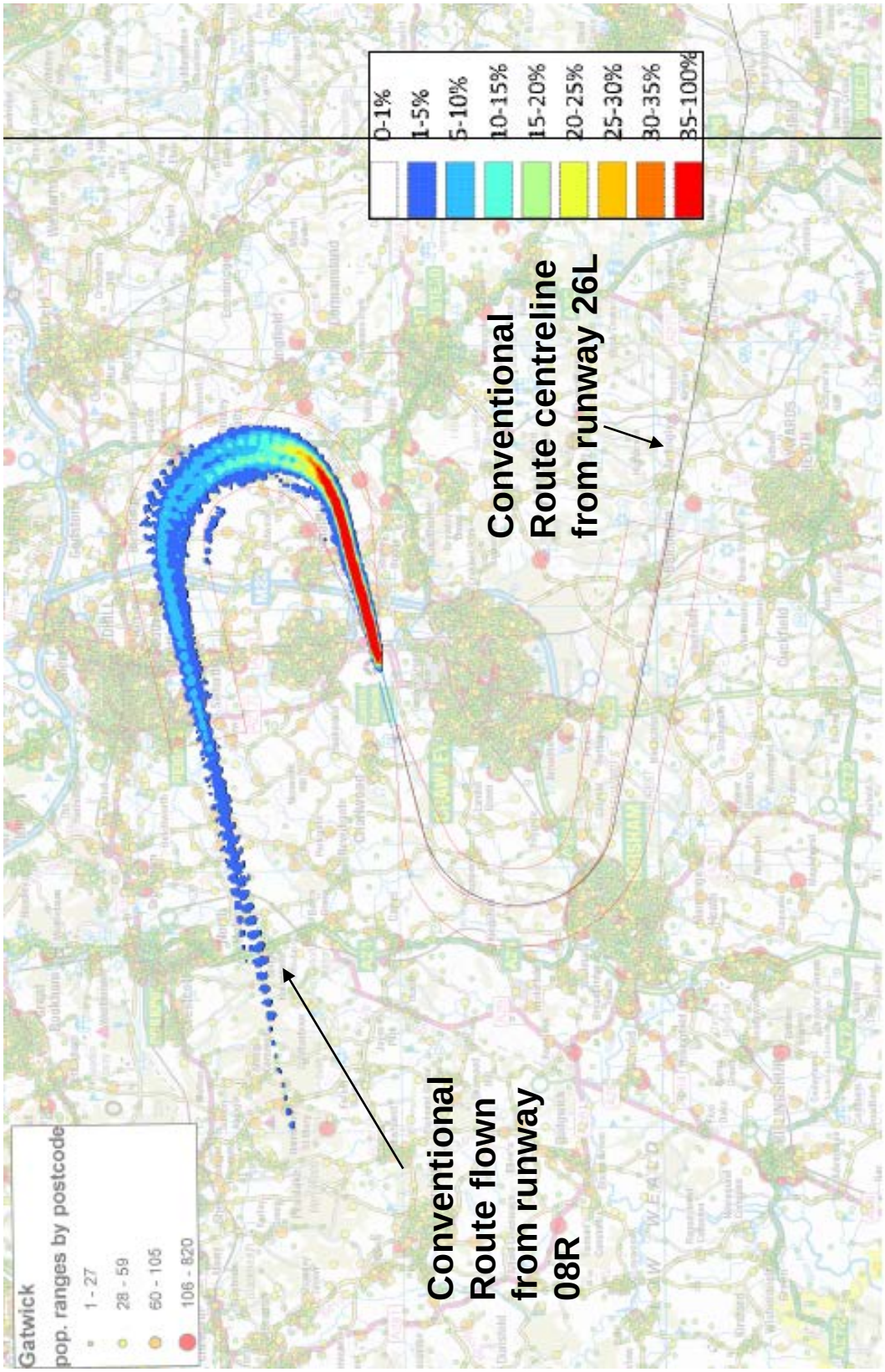

Figure 2) Density of aircraft tracks (up to 4000 feet AMSL) following **Conventional SID departure** from runway 08R (no track density plots are available for SIDs turning left (between Crawley and Horsham) from runway 26L as there was insufficient radar track data available)

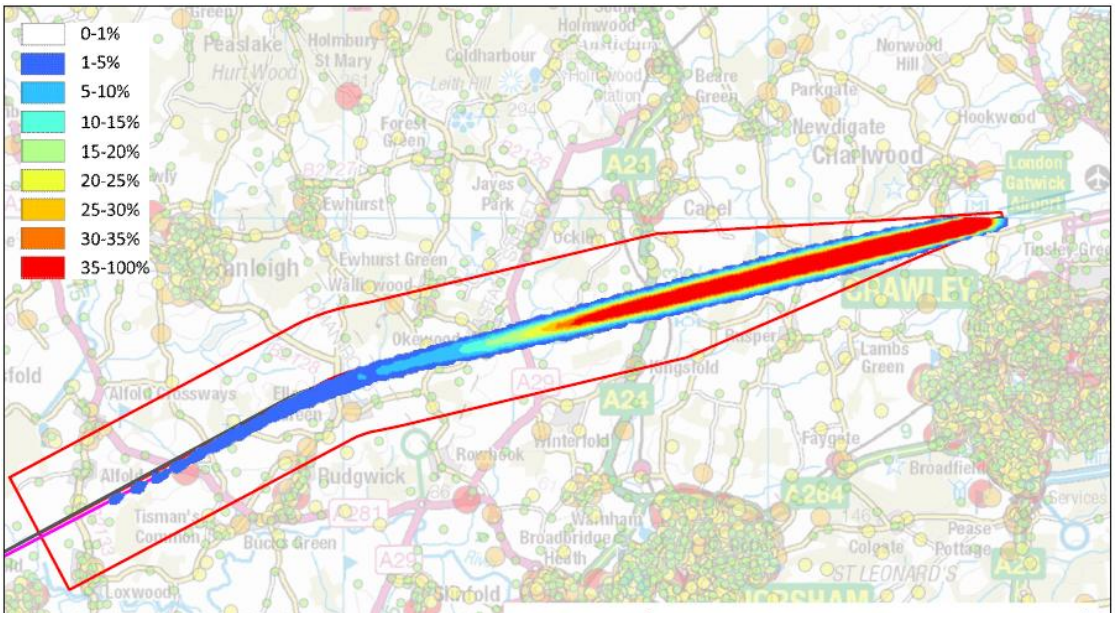

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Figure 2 Route 1 Conventional Navigation

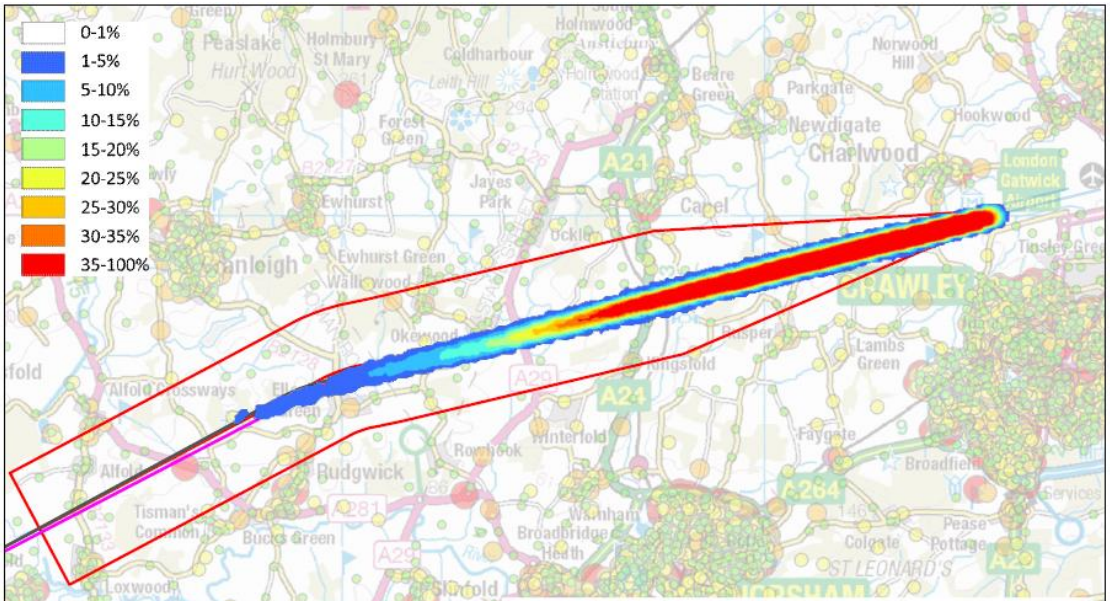

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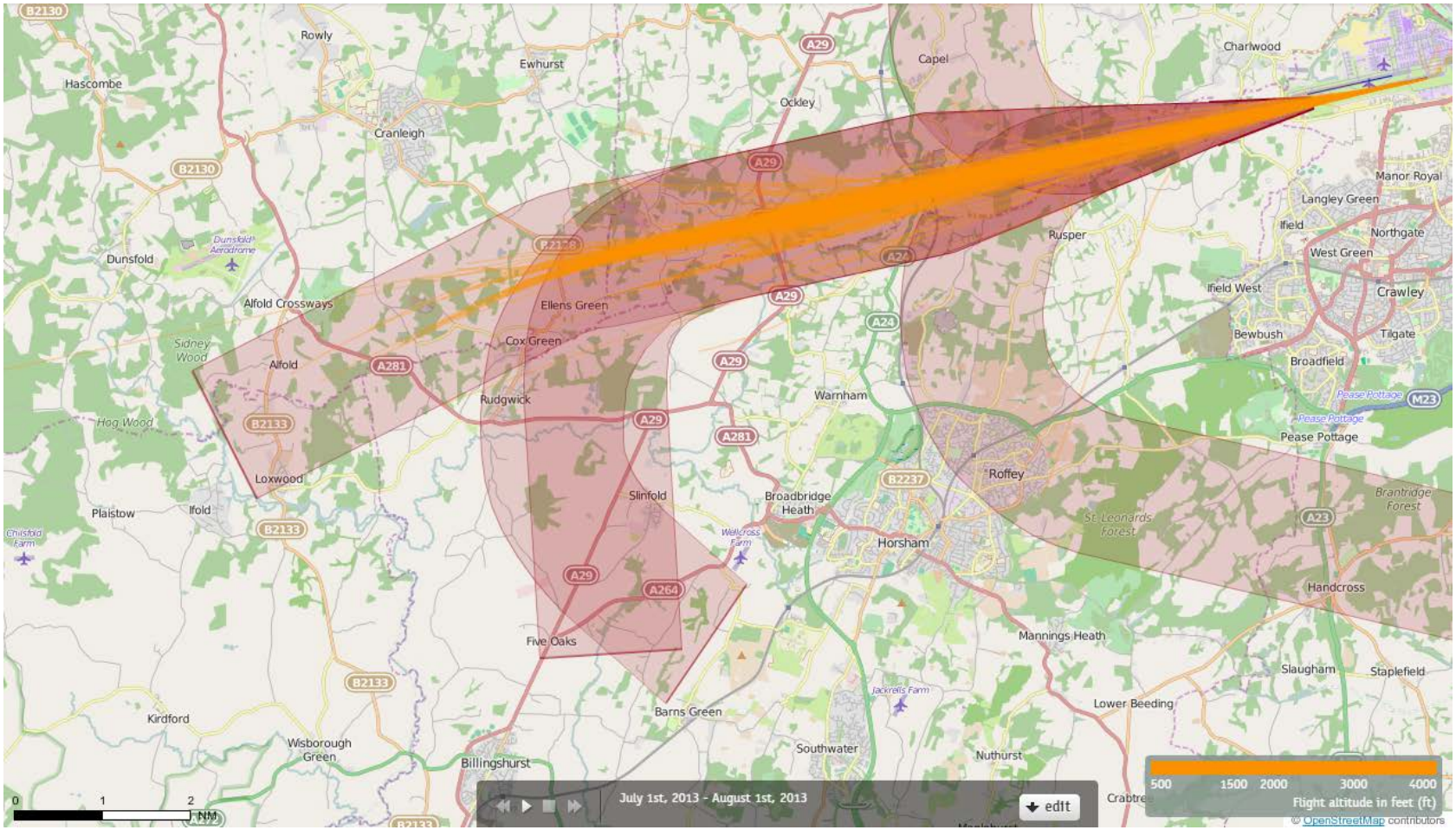
Figure 3 Route 1 PRNAV Navigation

NOTE: The densities illustrated in Figures 2-14 were constructed by calculating the proportion of radar returns within a defined grid square, and colouring according to the relative density of the returns compared to the square with the highest observed density (for example yellow shading indicates radar return density is 20 – 25% of the highest density square). As such the colour coding cannot be related easily to the number of aircraft in a particular defined grid square. However, the number of radar returns in each sample has been taken into account in this calculation, and therefore the plots are all directly comparable.

26 SOUTHAMPTON Route 1

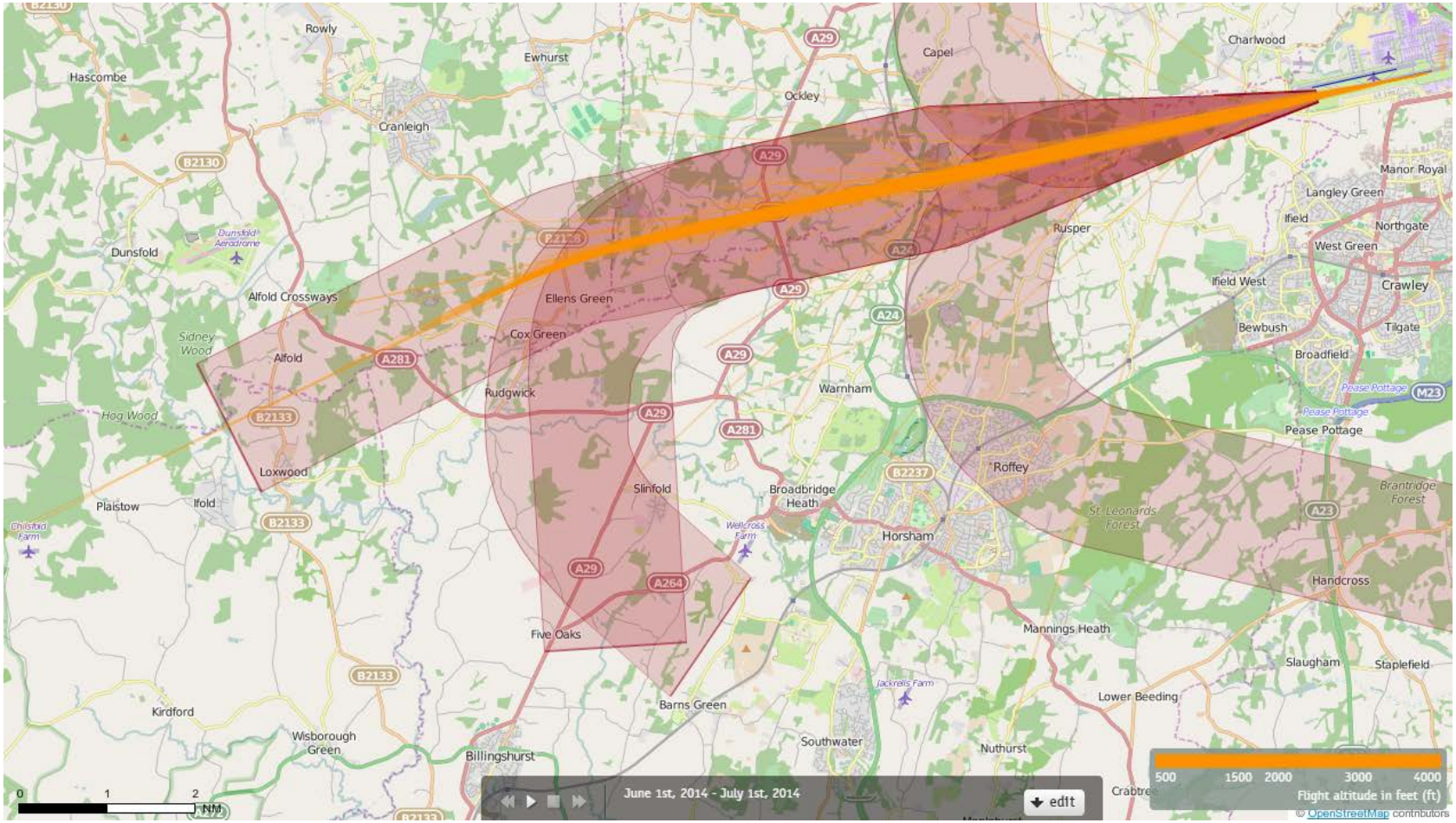
Pre and Post P-RNAV

26SOUTHAMPTON July 2013 Aircraft Tracks Cut Off at 4000ft Altitude
1550 Aircraft – Showing CONVENTIONAL Departures Only



Orange plots show the tracks of aircraft until at an altitude of 4000ft

26SOUTHAMPTON June 2014 Aircraft Tracks Cut Off at 4000ft Altitude
1577 Aircraft – Showing P-RNAV Departures Only

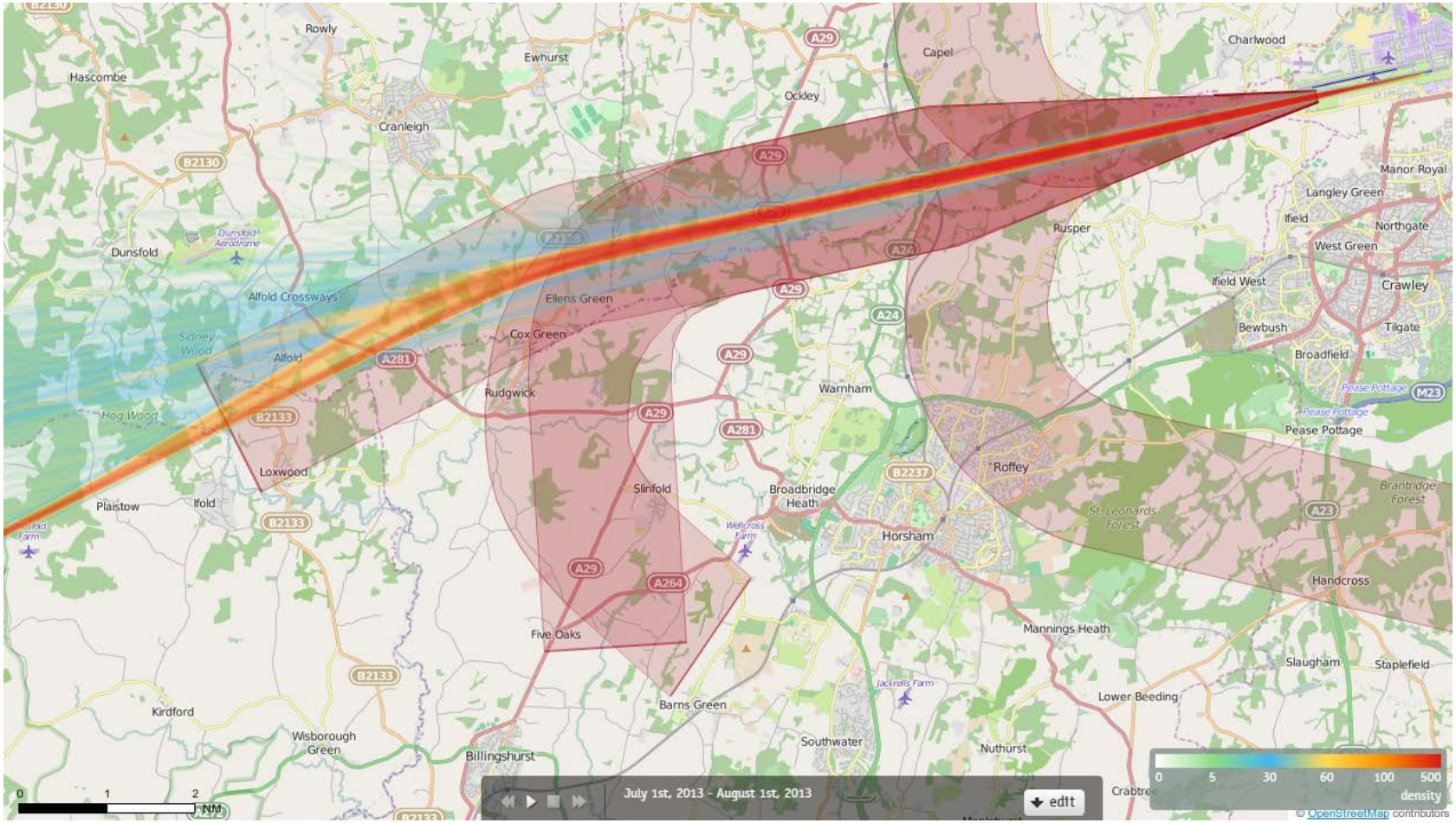


Orange plots show the tracks of aircraft until at an altitude of 4000ft

26 SOUTHAMPTON Route 1

Pre and Post P-RNAV

26SOUTHAMPTON Density July 2013
1550 Aircraft – Showing CONVENTIONAL Departures Only



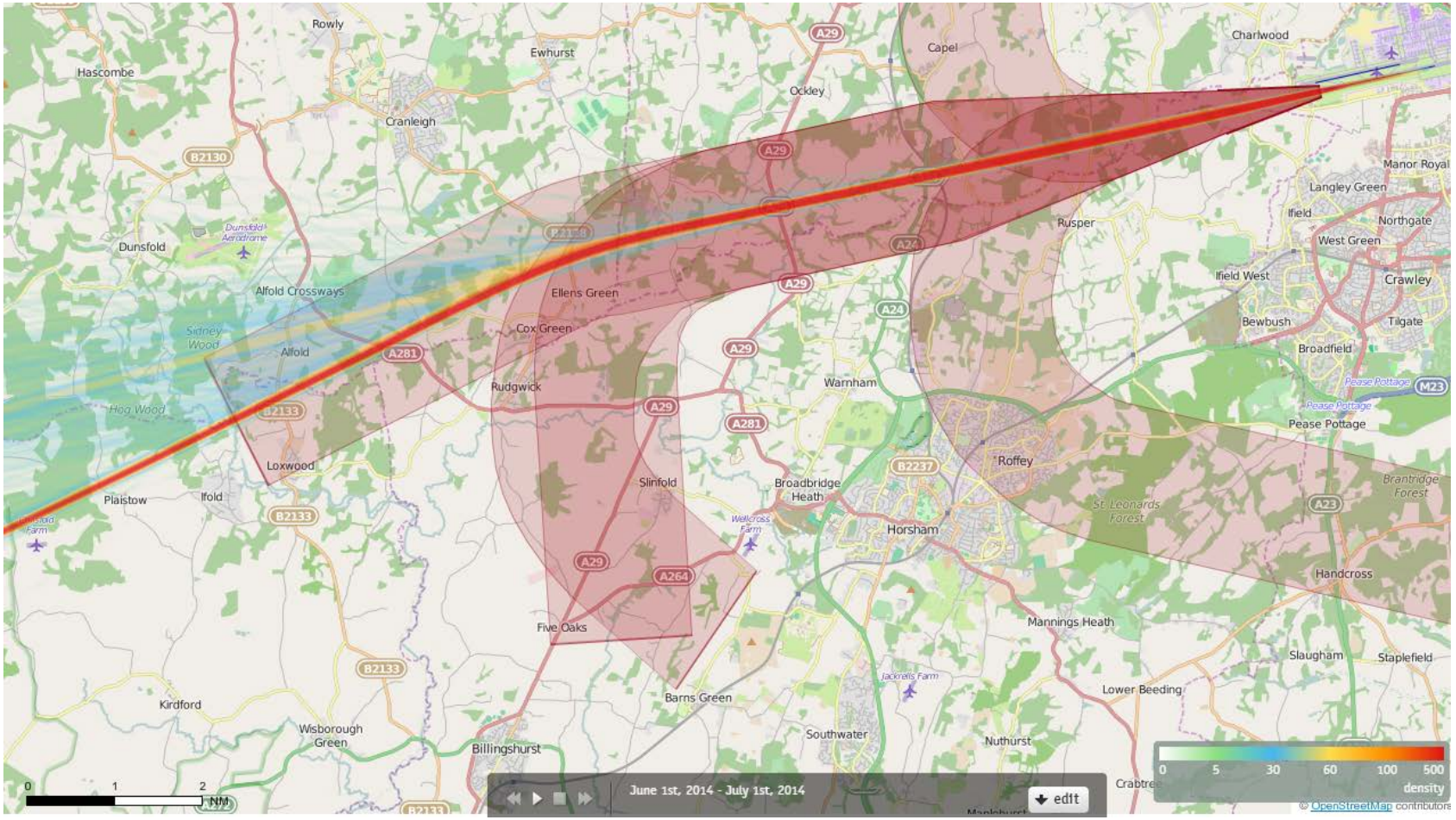
Track density

Each track is drawn as a line which has a width of just a few pixels and each pixel on the screen counts how often a ‘track line’ comes across this pixel when drawing all the tracks.

When all the tracks have been drawn, each pixel decides upon its colour based on the number of times a ‘track line’ has come across that pixel. The conversion from "count" to "colour" is guided by the numbers and colours given in the current Palette.

Counts in between are mapped to colours in between. If 100 were orange and 200 where red, then 150 would be coloured some orangy red.

26SOUTHAMPTON Density June 2014
1577 Aircraft – Showing P-RNAV Departures Only



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Counts in between are mapped to colours in between. If 100 were orange and 200 where red, then 150 would be coloured some orangy red.

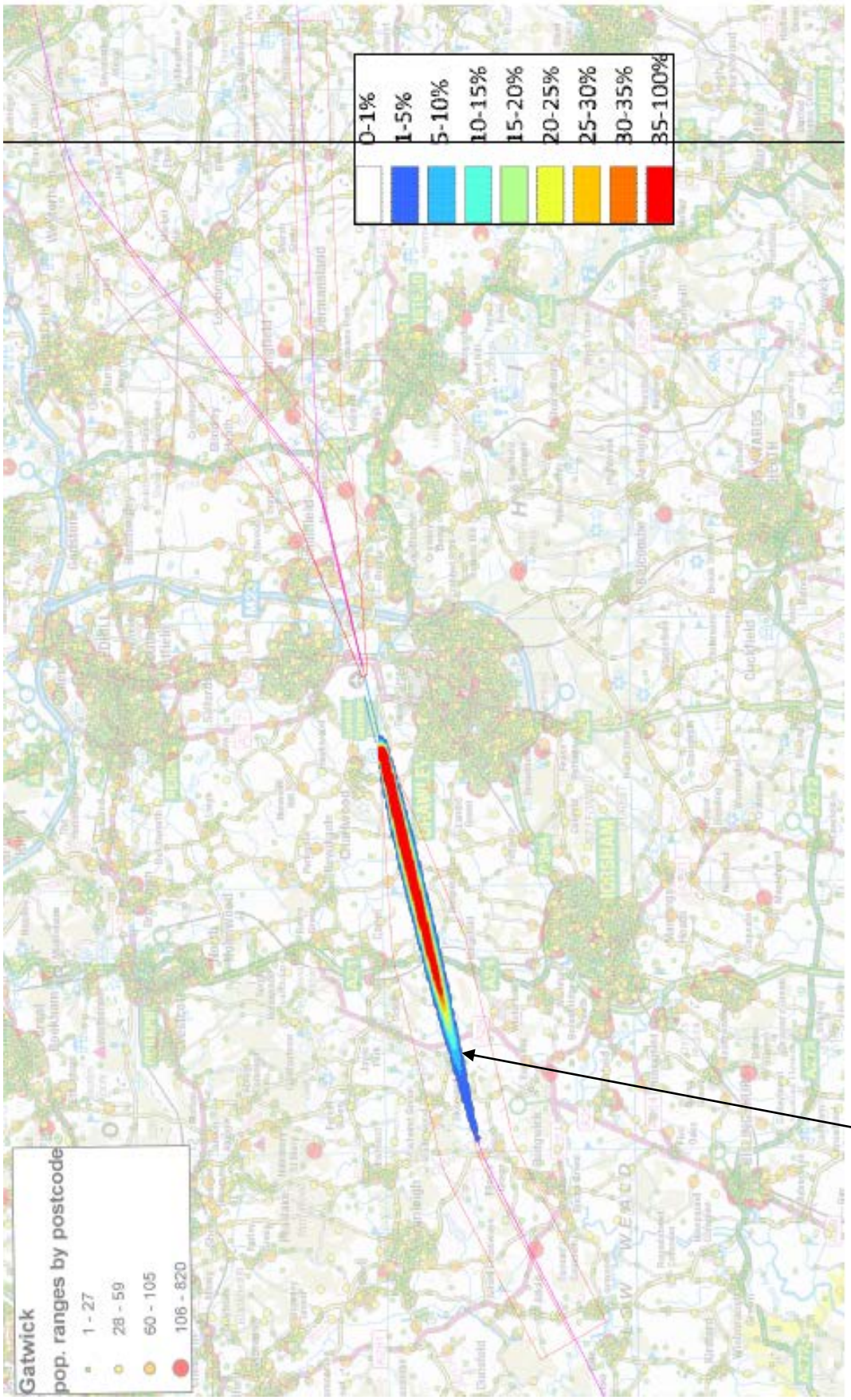

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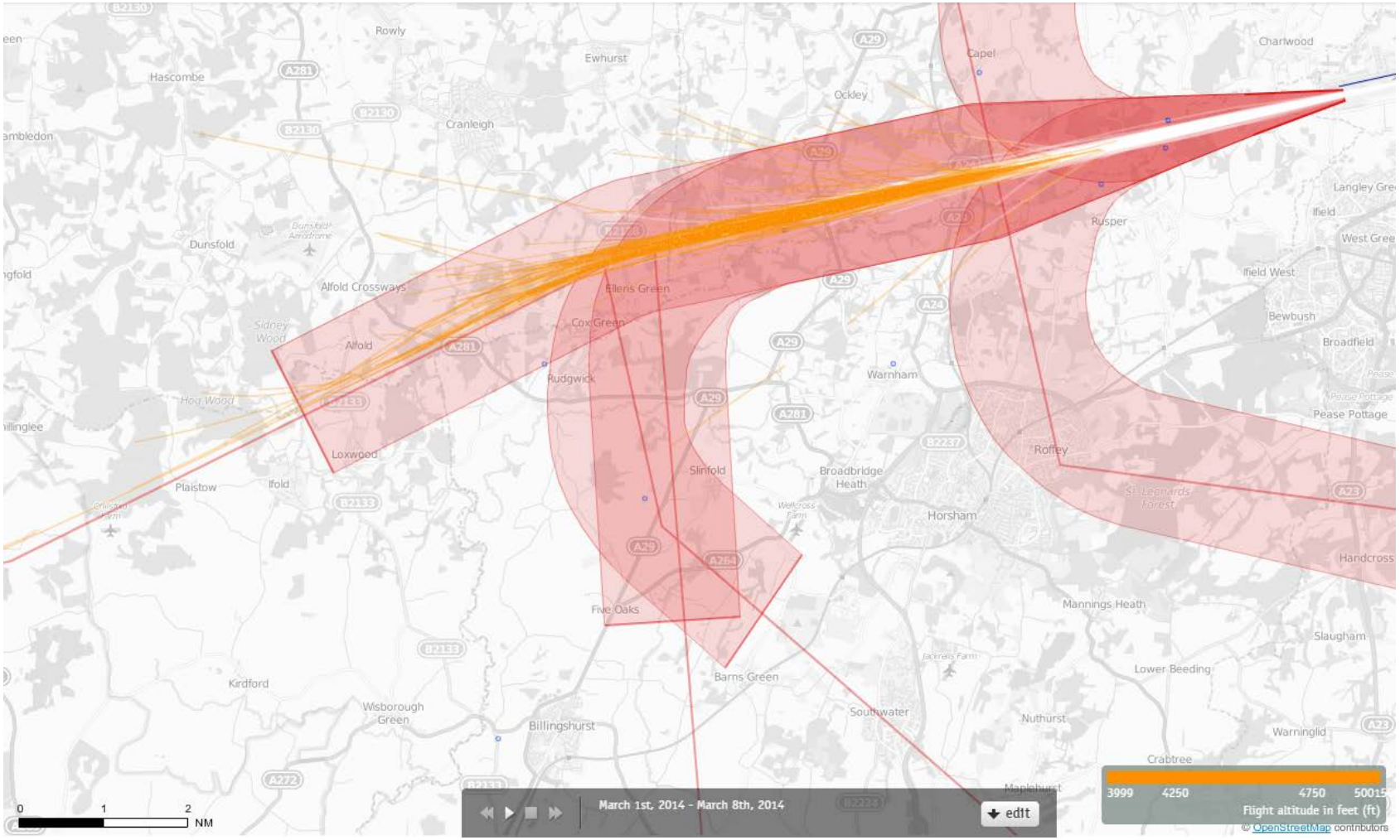
Figure6) Density plot of aircraft tracks (up to 4000 feet AMSL) following **ROUTE 1** P-RNAV SID from Runway 26L

26 SOUTHAMPTON Route 1

Altitude Bands

4000-5000ft

26 SAM Departures 1st-7th March 2014
4000-5000 feet (359 Aircraft – CONVENTIONAL ONLY)



Orange plots show the points at which an aircraft was between 4000 and 5000ft altitude.

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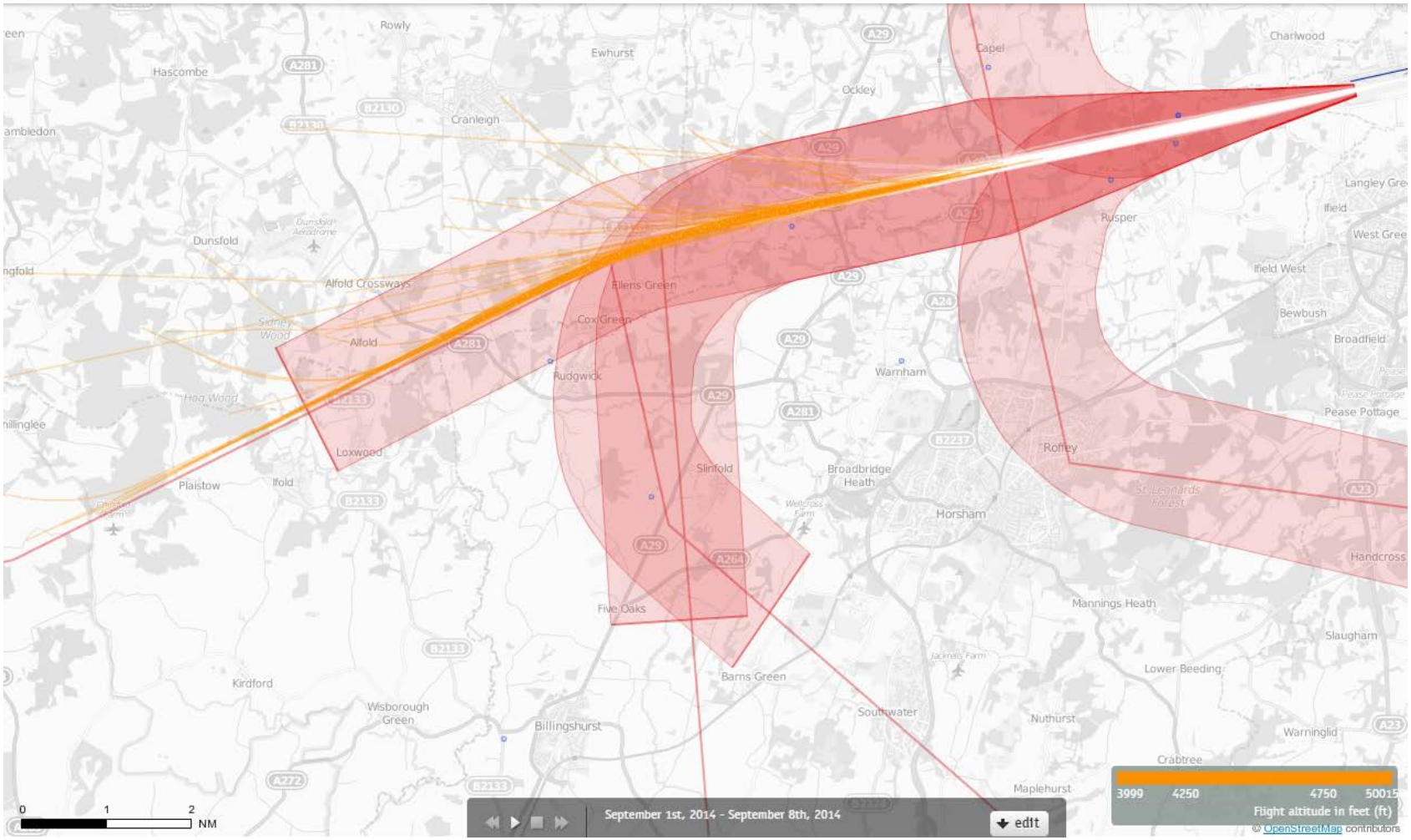
26 SAM Departures 1st – 7th September 2014
4000-5000 feet (357 Aircraft – P-RNAV ONLY)



Orange plots show the points at which an aircraft was between 4000 and 5000ft altitude.

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26 SAM Departures 1st-7th March 2014
4000-5000 feet (359 Aircraft – CONVENTIONAL ONLY)

Orange plots show the points at which an aircraft was between 4000 and 5000ft altitude.

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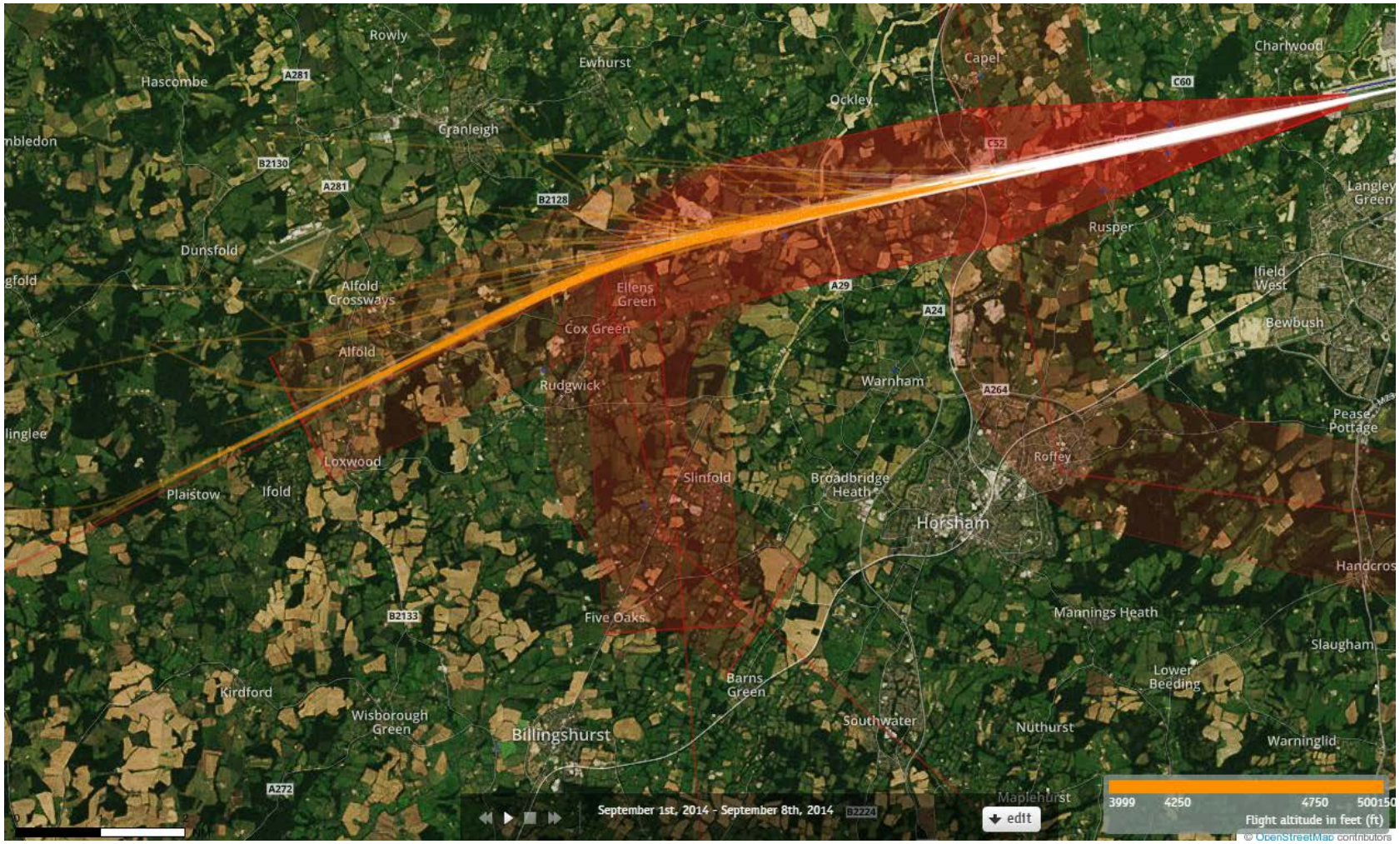
26 SAM Departures 1st – 7th September 2014
4000-5000 feet (357 Aircraft – P-RNAV ONLY)



Orange plots show the points at which an aircraft was between 4000 and 5000ft altitude.

26 SOUTHAMPTON Route 1

Altitude Bands

5000-6000ft

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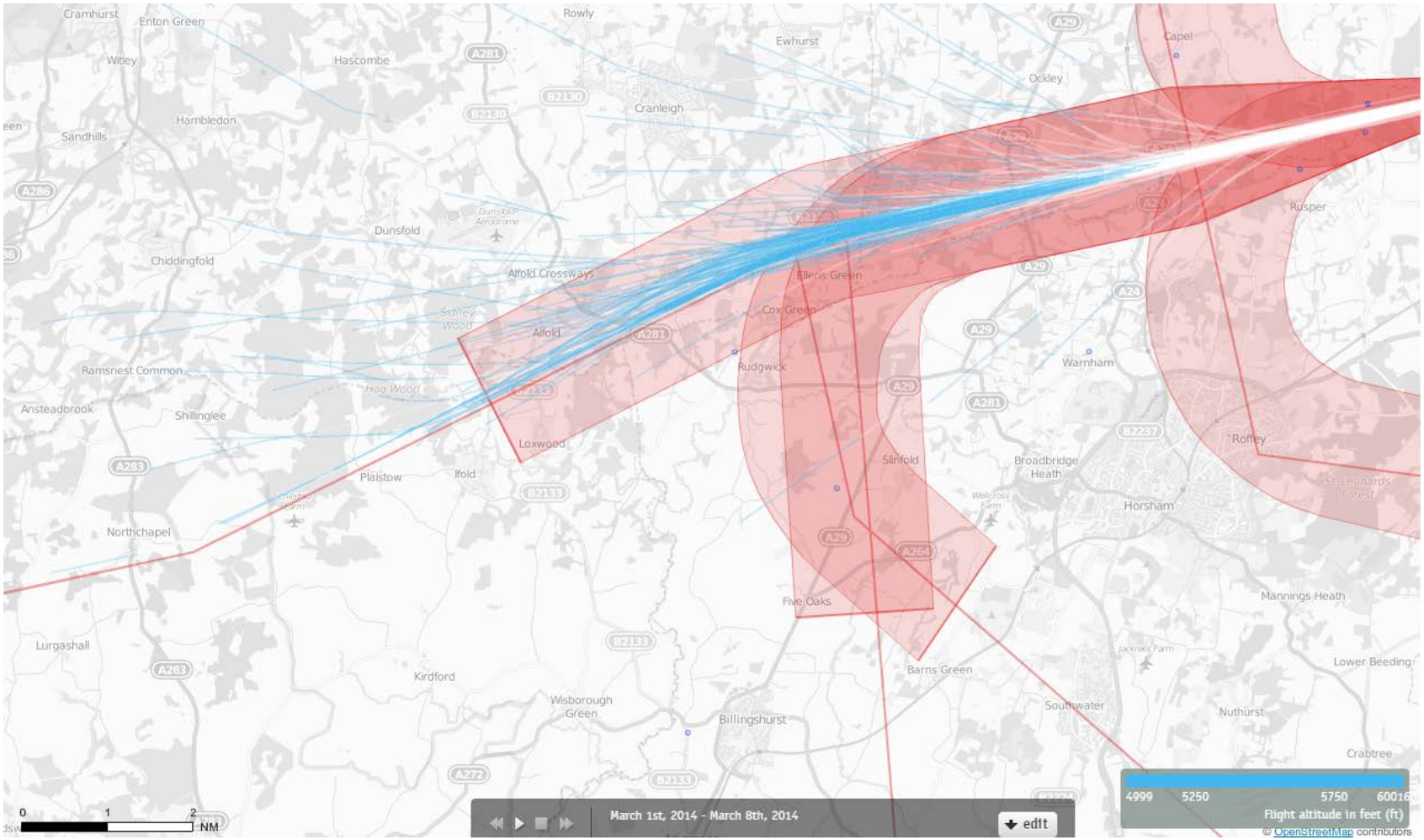
26 SAM Departures 1st-7th March 2014
5000-6000 feet (359 Aircraft – CONVENTIONAL ONLY)



Blue plots show the points at which an aircraft was between 5000 and 6000ft altitude.

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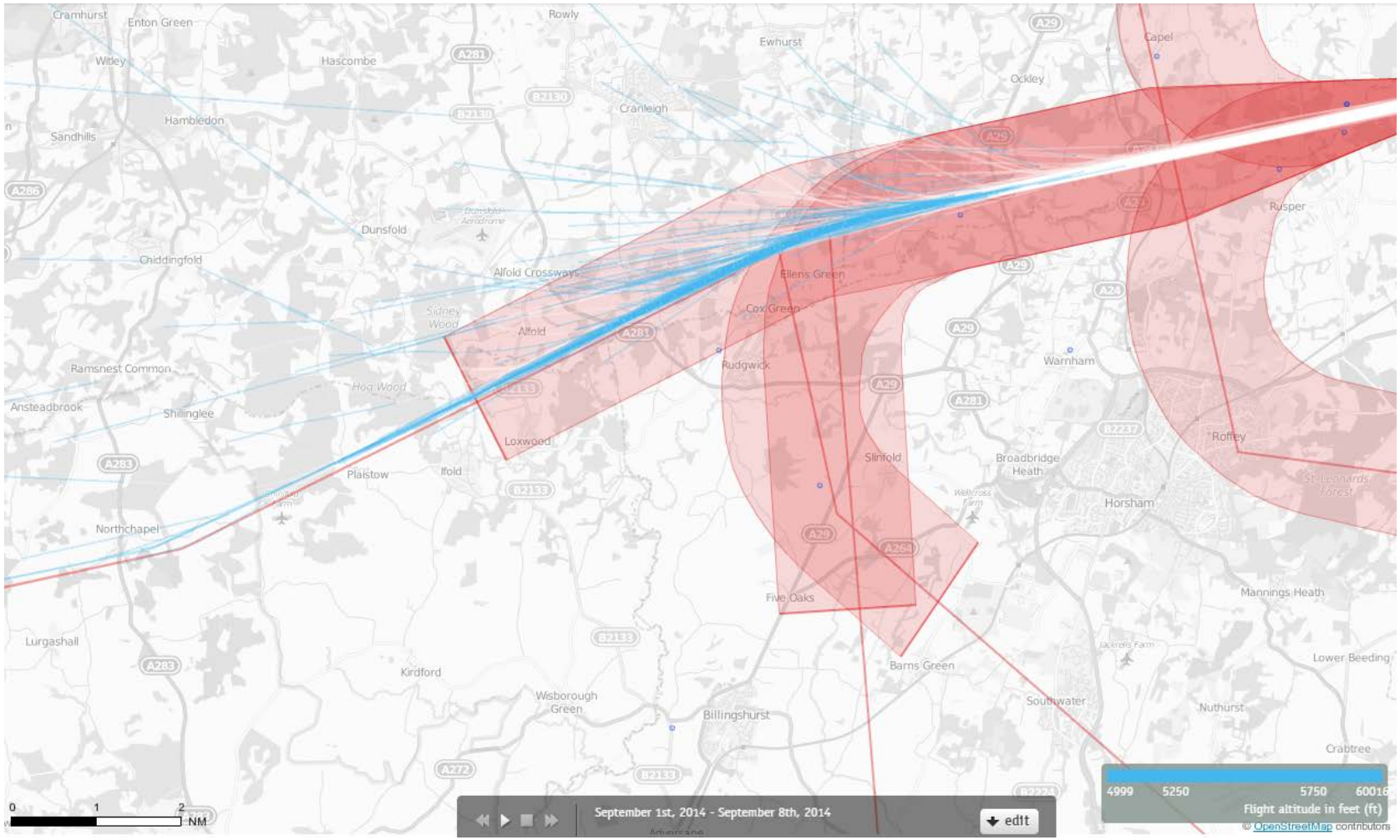
26 SAM Departures 1st – 7th September 2014
5000-6000 feet (357 Aircraft – P-RNAV ONLY)



Blue plots show the points at which an aircraft was between 5000 and 6000ft altitude.

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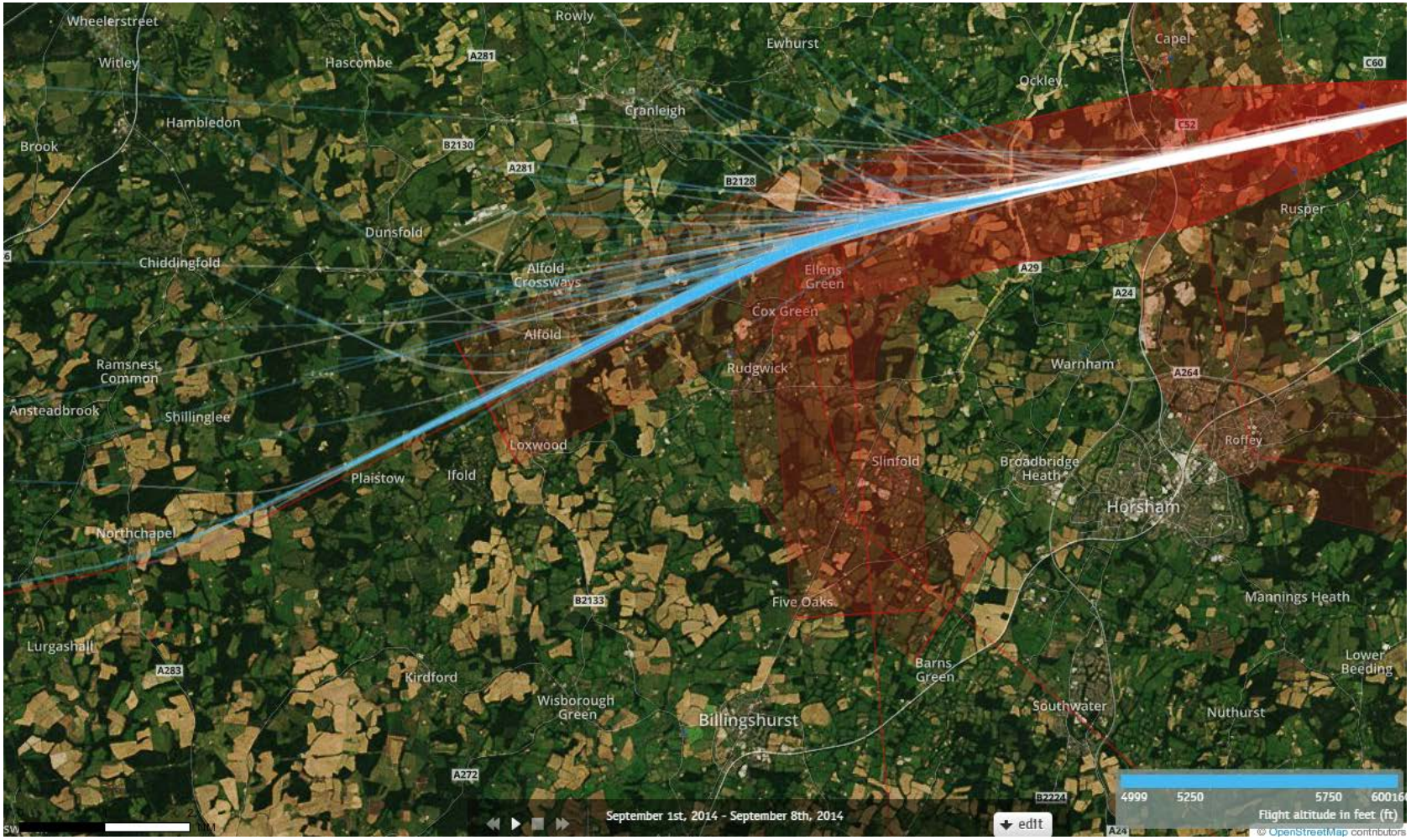
26 SAM Departures 1st-7th March 2014
5000-6000 feet (359 Aircraft – CONVENTIONAL ONLY)

Blue plots show the points at which an aircraft was between 5000 and 6000ft altitude.

26 SAM Departures 1st – 7th September 2014
5000-6000 feet (357 Aircraft – P-RNAV ONLY)



Blue plots show the points at which an aircraft was between 5000 and 6000ft altitude.

26 SOUTHAMPTON Route 1

Altitude Bands

6000-7000ft

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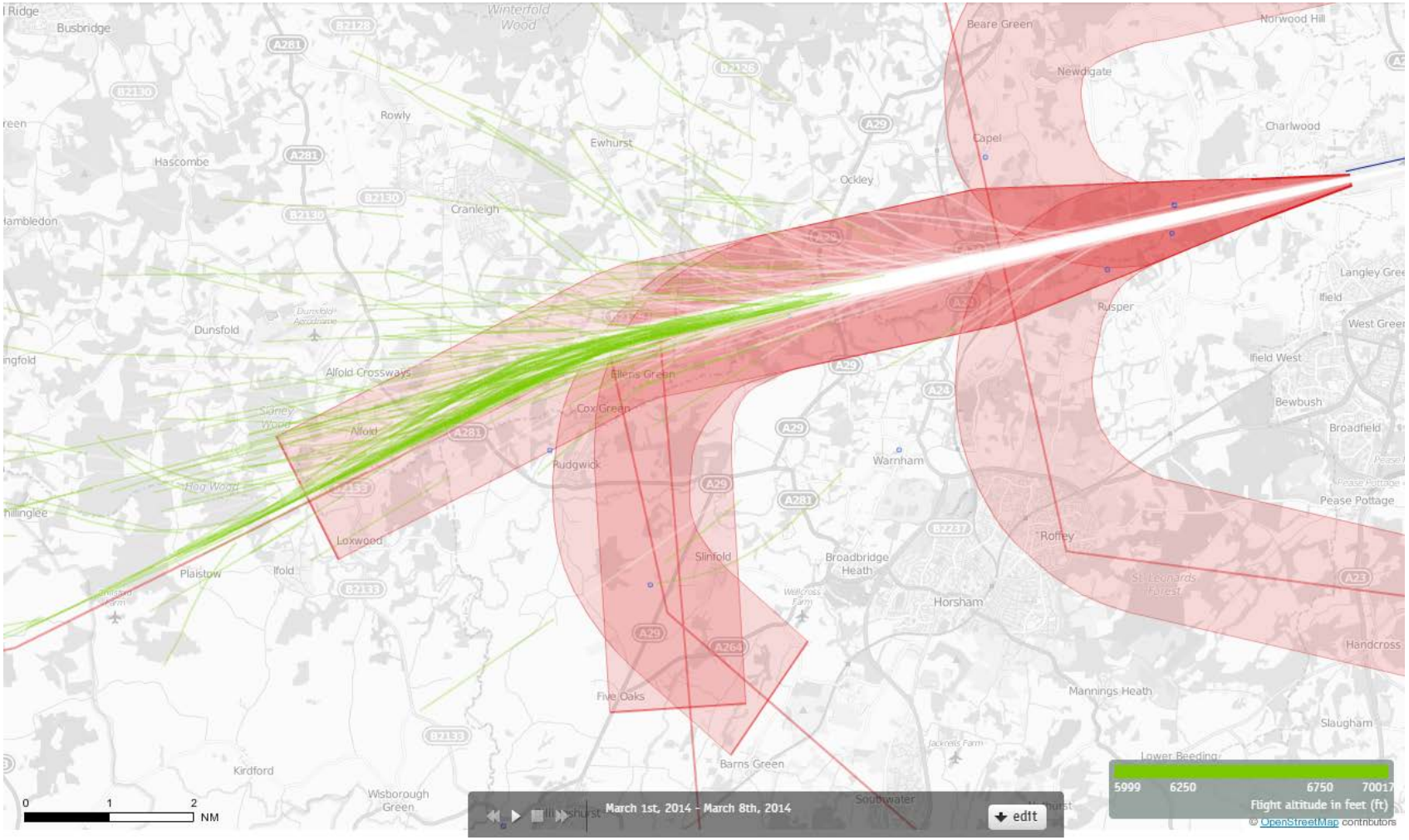
26 SAM Departures 1st-7th March 2014
6000-7000 feet (359 Aircraft – CONVENTIONAL ONLY)



Green plots show the points at which an aircraft was between 6000 and 7000ft altitude.

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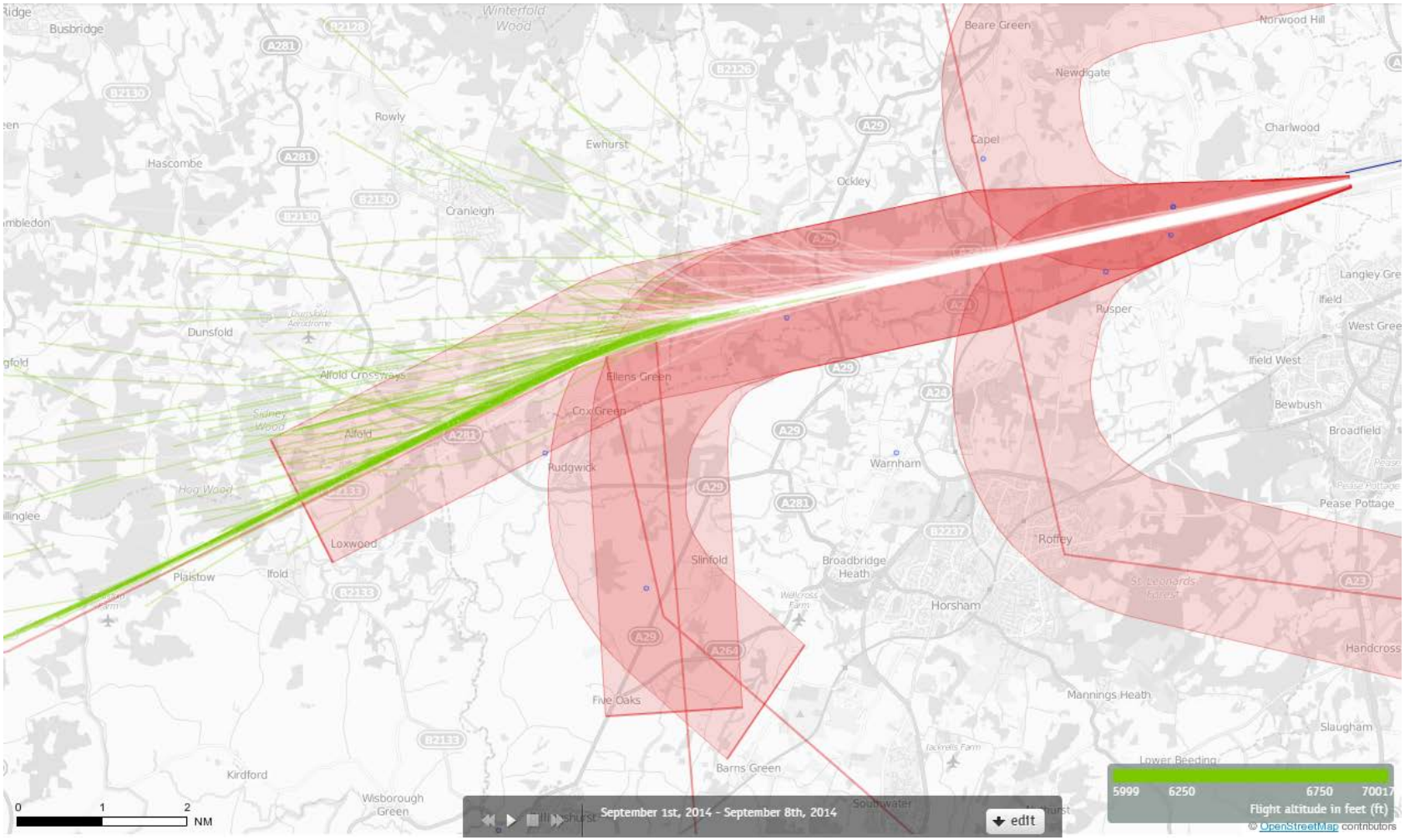
26 SAM Departures 1st – 7th September 2014
6000-7000 feet (357 Aircraft – P-RNAV ONLY)



Green plots show the points at which an aircraft was between 6000 and 7000ft altitude.

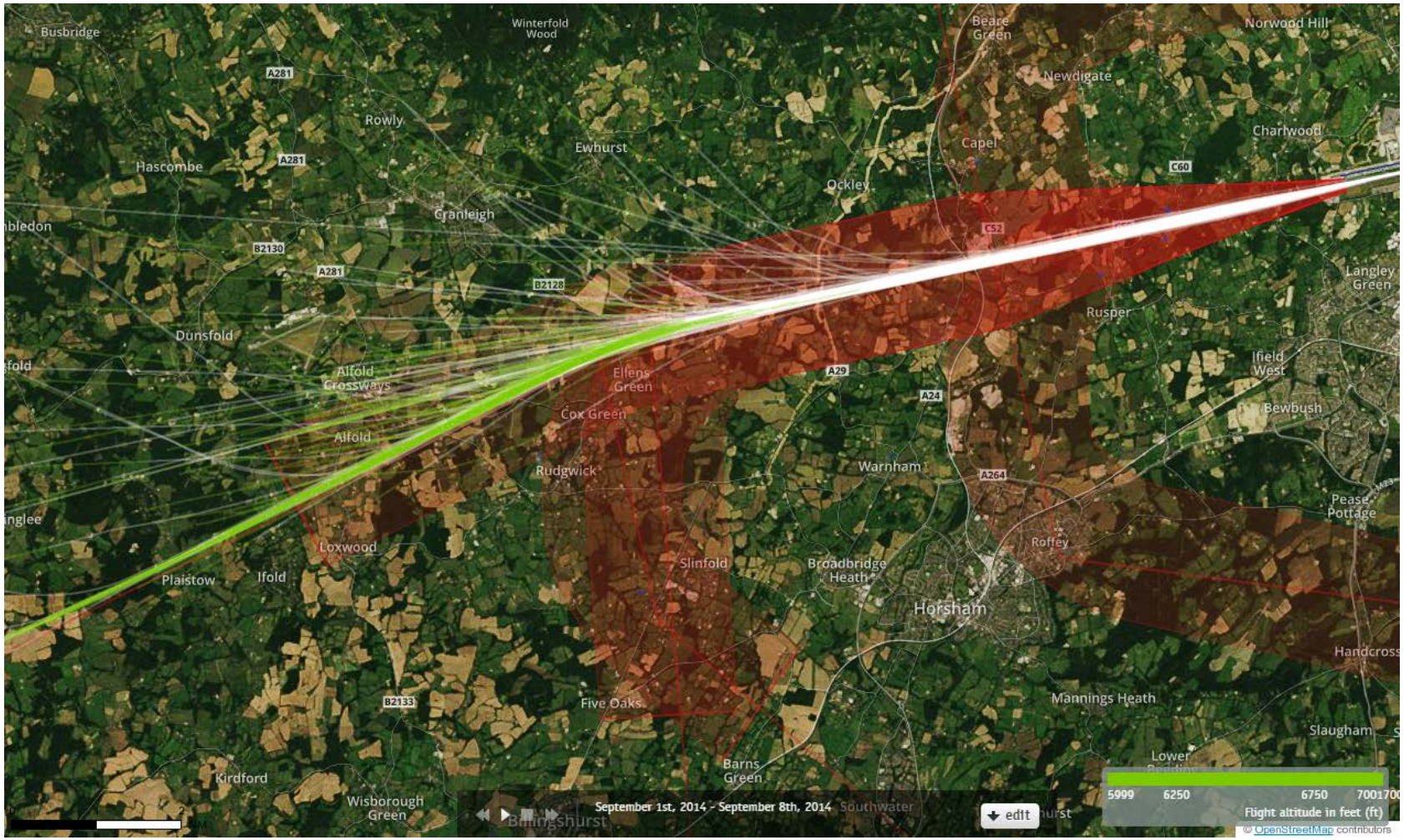
< BACK

26 SAM Departures 1st-7th March 2014
6000-7000 feet (359 Aircraft – CONVENTIONAL ONLY)

Green plots show the points at which an aircraft was between 6000 and 7000ft altitude.

< BACK

26 SAM Departures 1st – 7th September 2014
6000-7000 feet (357 Aircraft – P-RNAV ONLY)



Green plots show the points at which an aircraft was between 6000 and 7000ft altitude.

26 SOUTHAMPTON Route 1

Pre and Post P-RNAV

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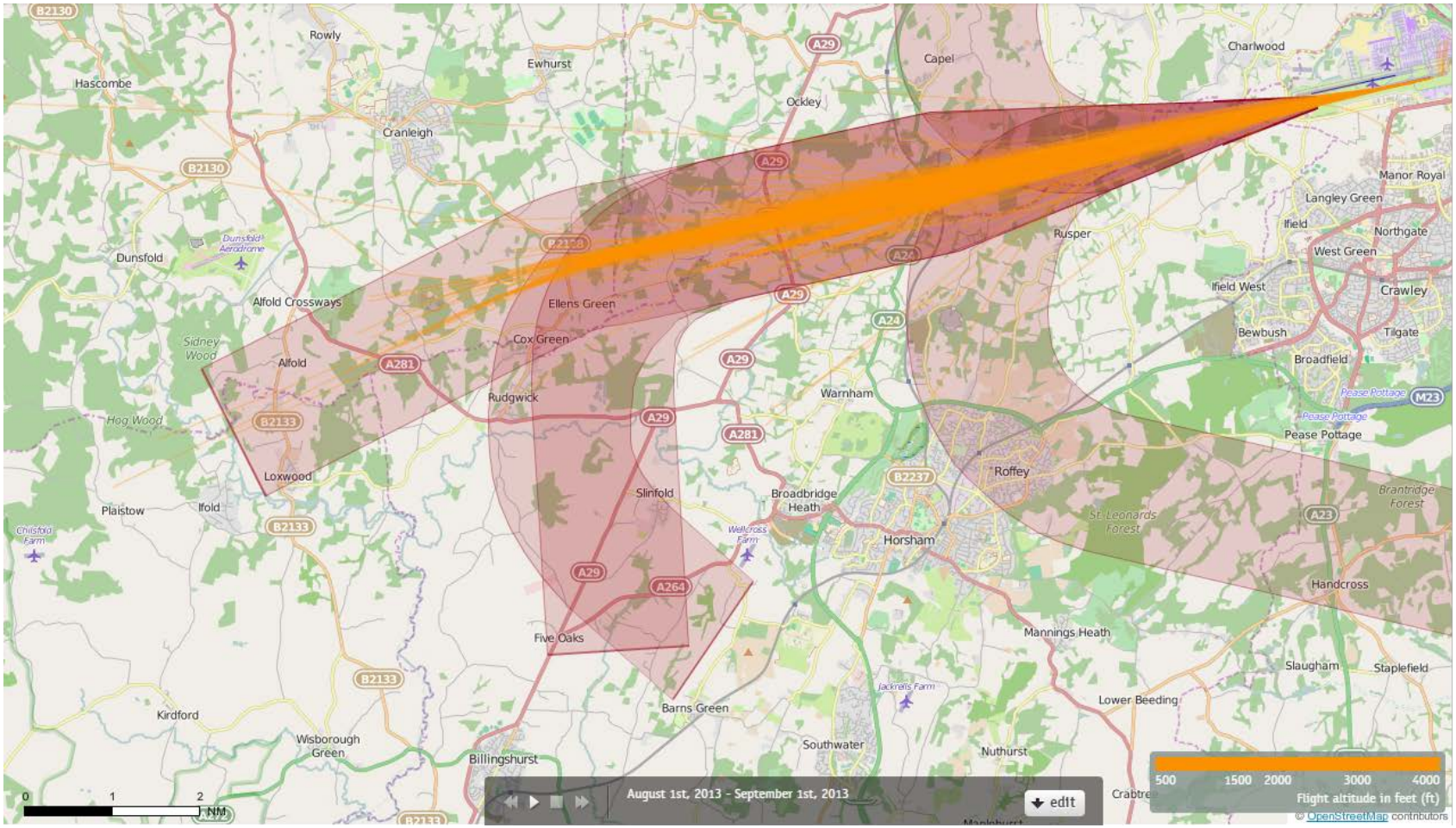
26SOUTHAMPTON August 2013 Aircraft Tracks Cut Off at 4000ft Altitude
2401 Aircraft – Showing CONVENTIONAL Departures Only



Orange plots show the tracks of aircraft until at an altitude of 4000ft

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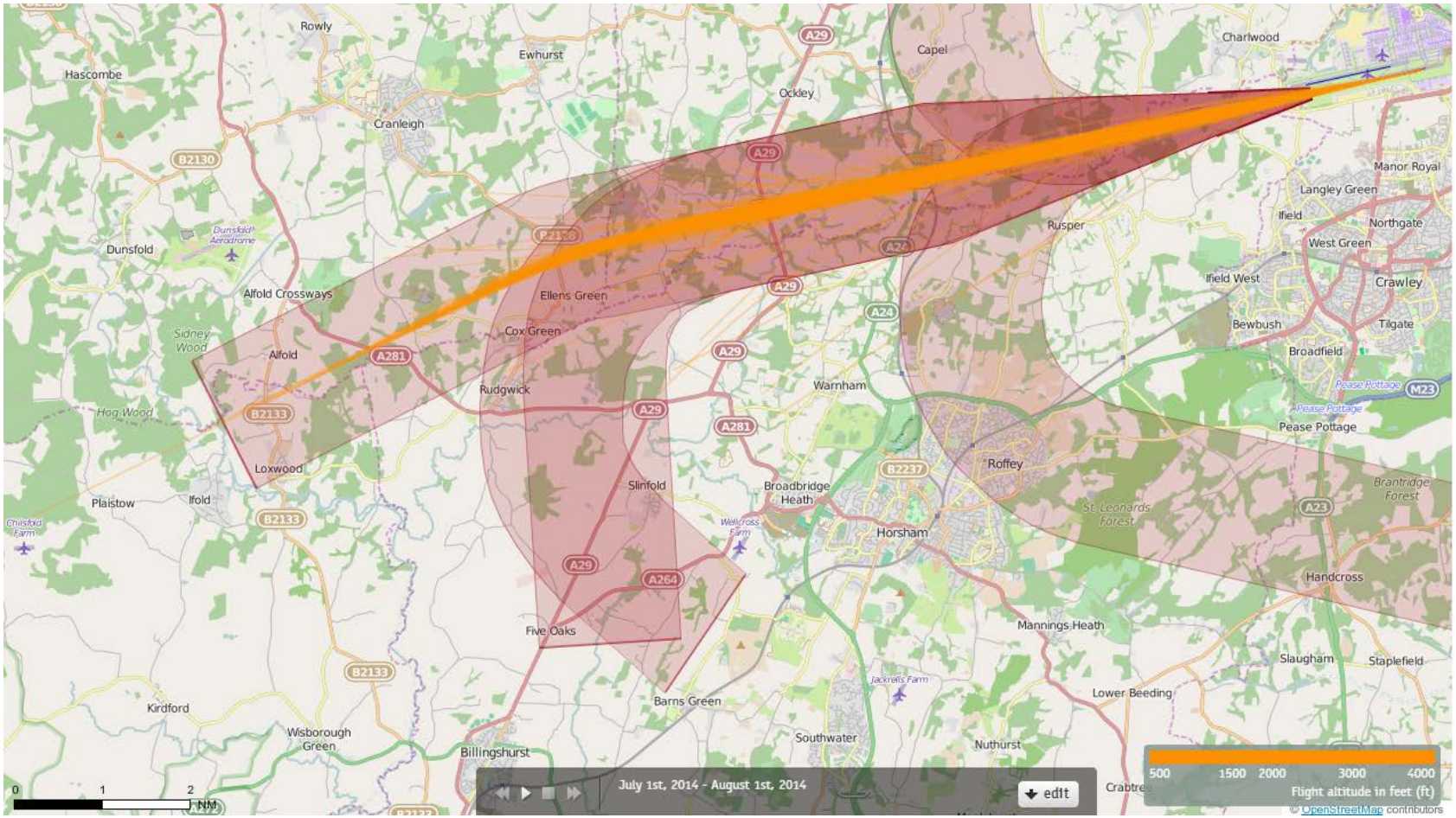
26SOUTHAMPTON July 2014 Aircraft Tracks Cut Off at 4000ft Altitude
2257 Aircraft – Showing P-RNAV Departures Only



Orange plots show the tracks of aircraft until at an altitude of 4000ft

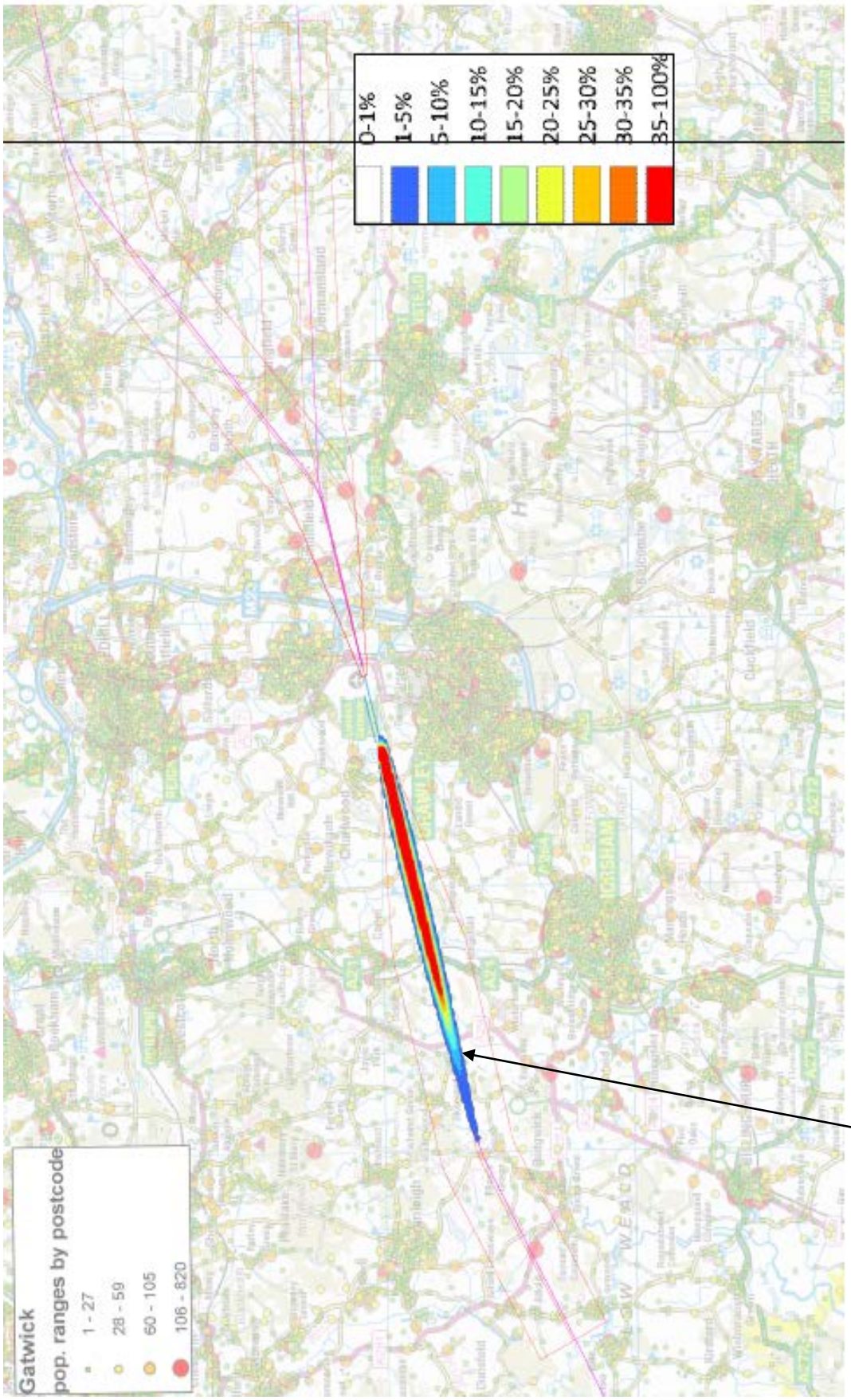
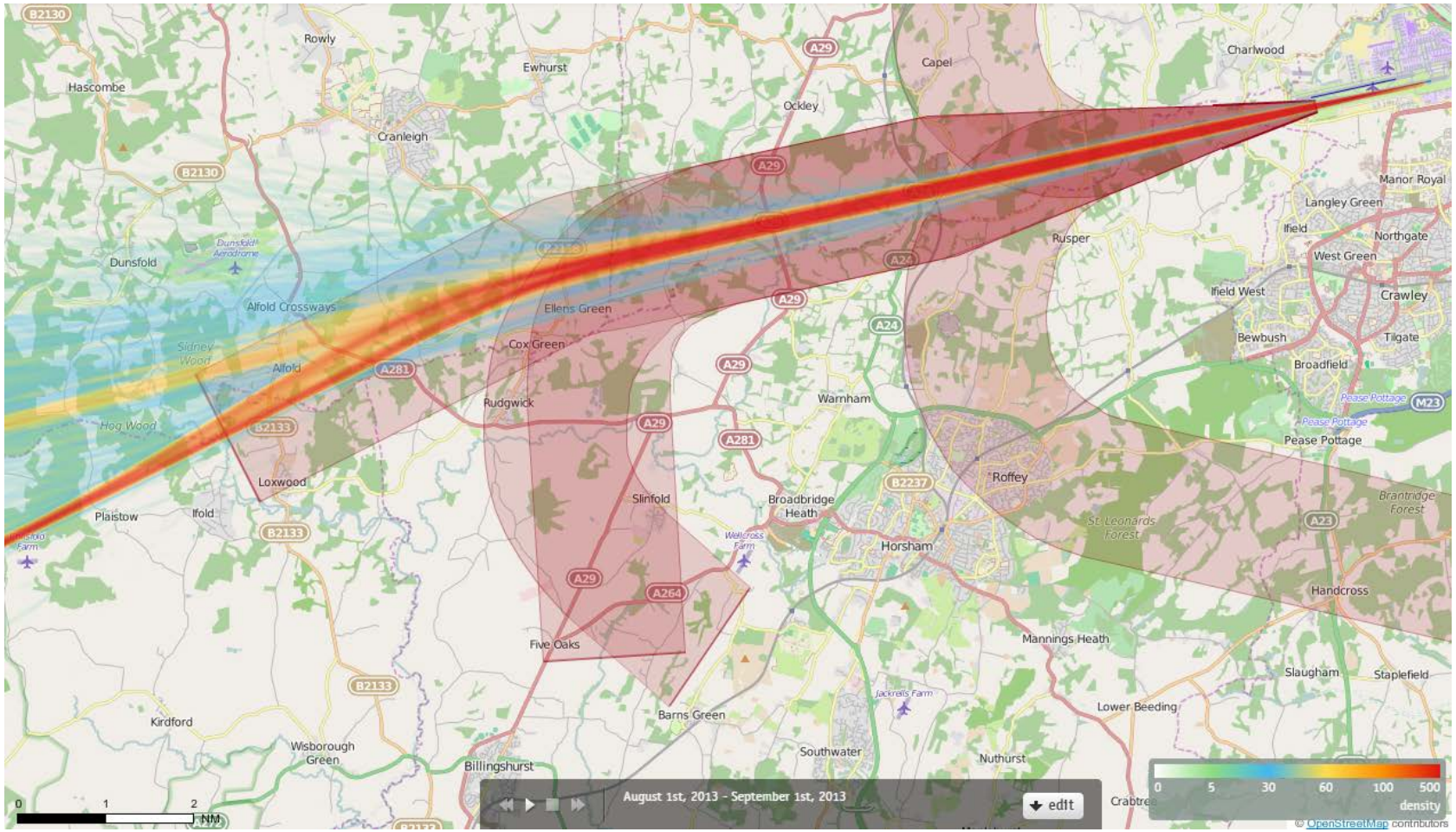


Figure6) Density plot of aircraft tracks (up to 4000 feet AMSL) following **ROUTE 1** P-RNAV SID from Runway 26L

26 SOUTHAMPTON Route 1

Pre and Post P-RNAV

26SOUTHAMPTON Density August 2013
2401 Aircraft – Showing CONVENTIONAL Departures Only



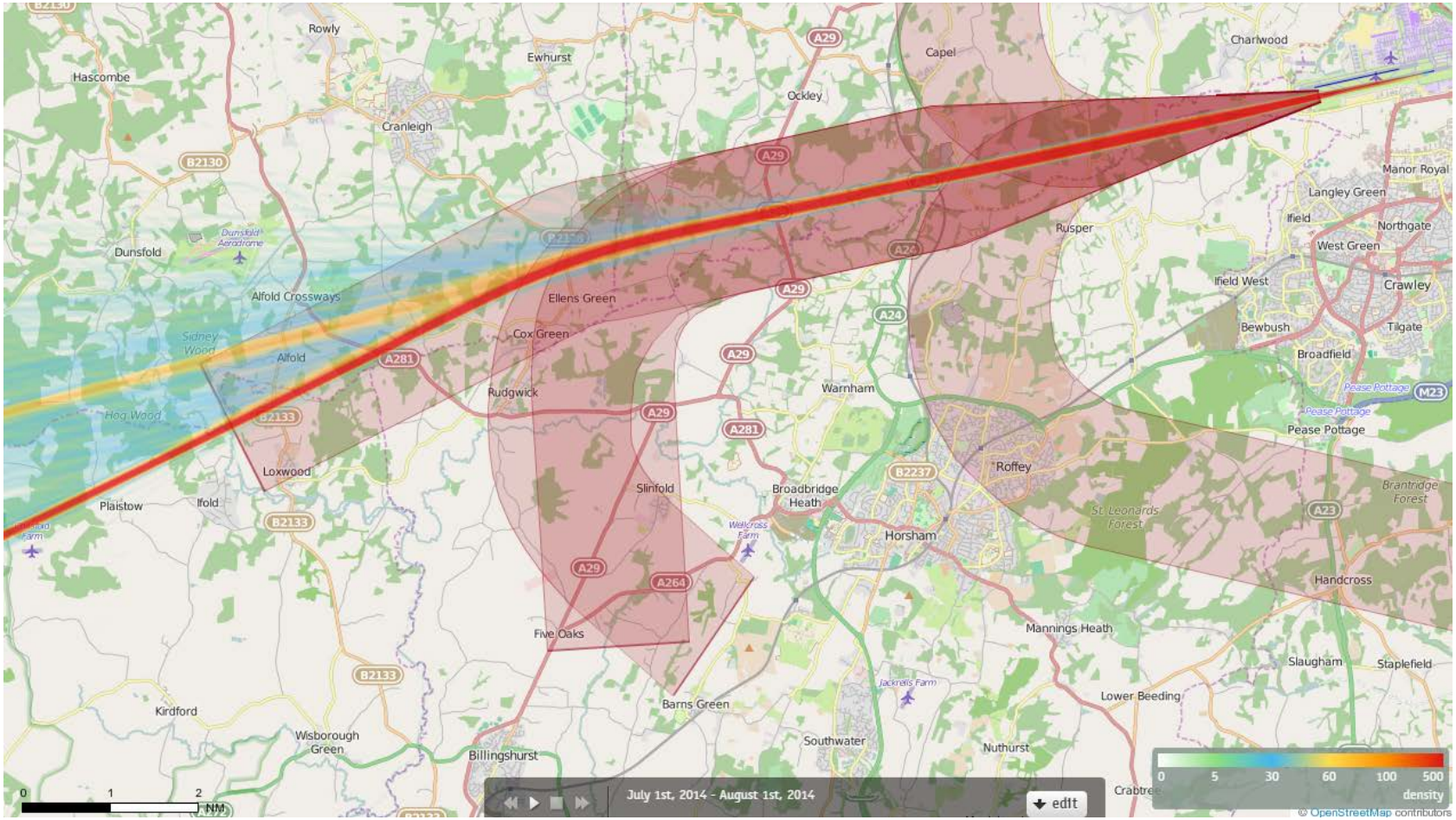
Track density

Each track is drawn as a line which has a width of just a few pixels and each pixel on the screen counts how often a ‘track line’ comes across this pixel when drawing all the tracks.

When all the tracks have been drawn, each pixel decides upon its colour based on the number of times a ‘track line’ has come across that pixel. The conversion from "count" to "colour" is guided by the numbers and colours given in the current Palette.

Counts in between are mapped to colours in between. If 100 were orange and 200 where red, then 150 would be coloured some orangy red.

26SOUTHAMPTON Density July 2014
2257 Aircraft – Showing P-RNAV Departures Only



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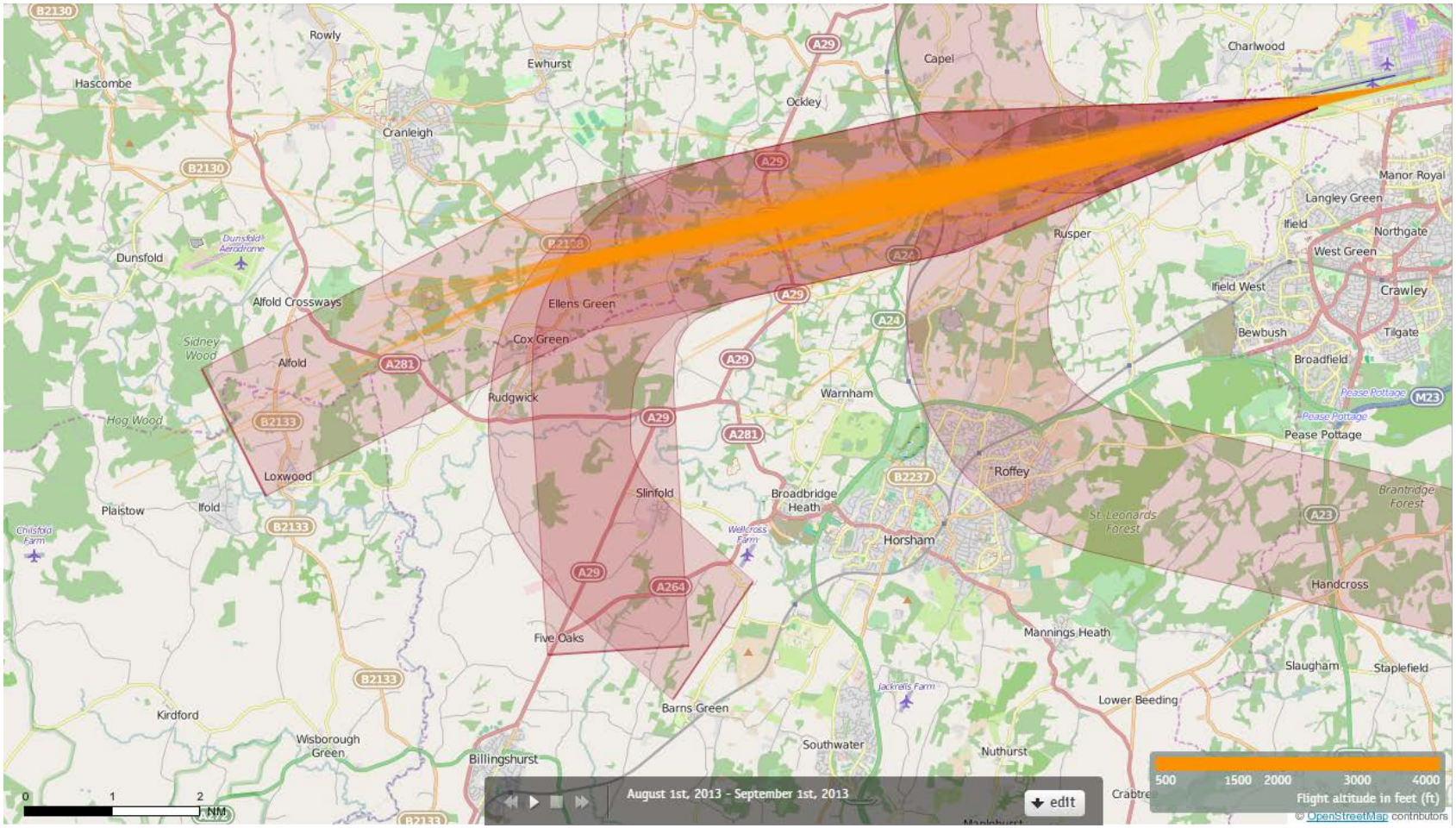
26 SOUTHAMPTON Route 1

Pre and Post P-RNAV

< BACK

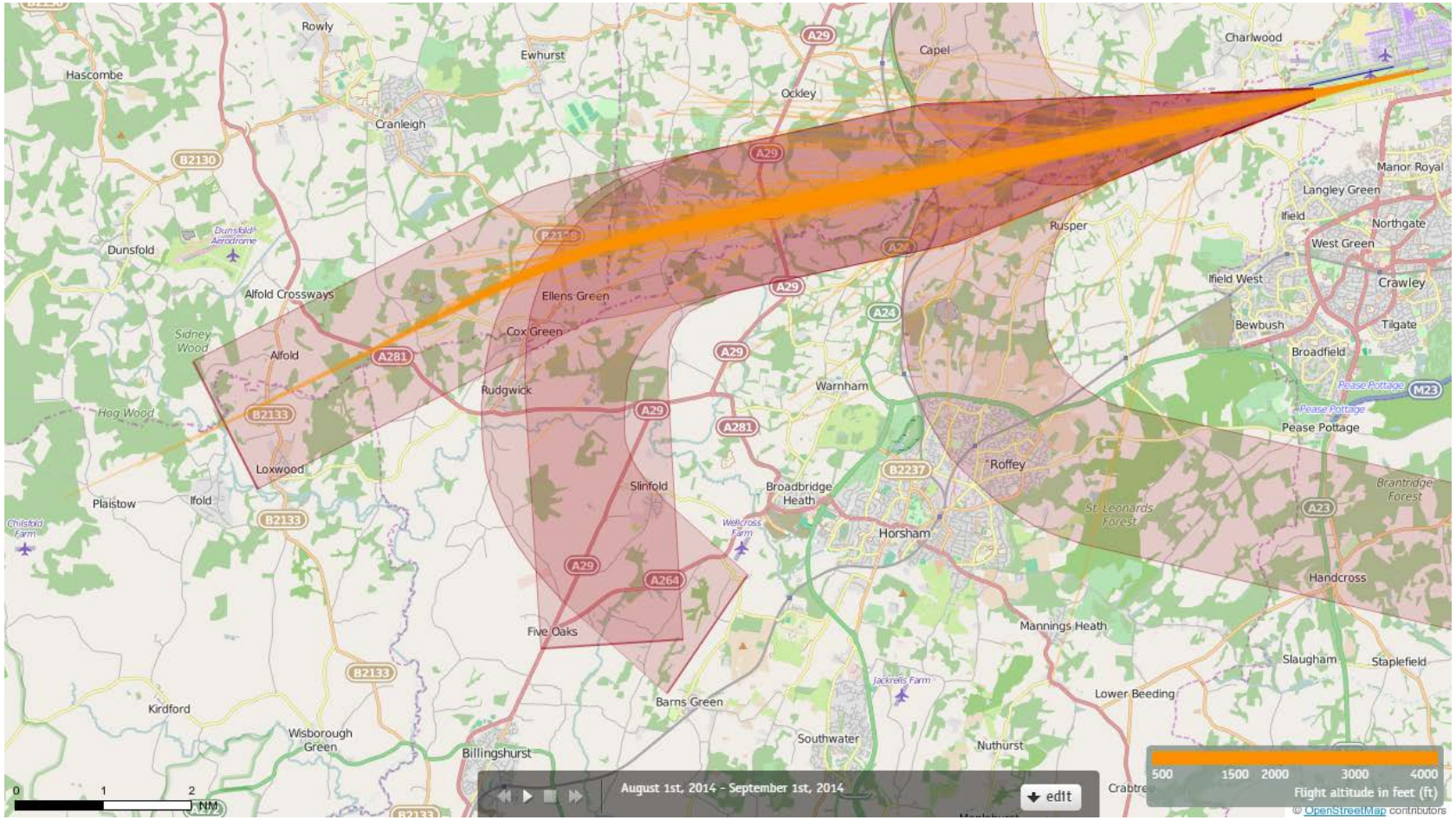
26SOUTHAMPTON August 2013 Aircraft Tracks Cut Off at 4000ft Altitude
2401 Aircraft – Showing CONVENTIONAL Departures Only



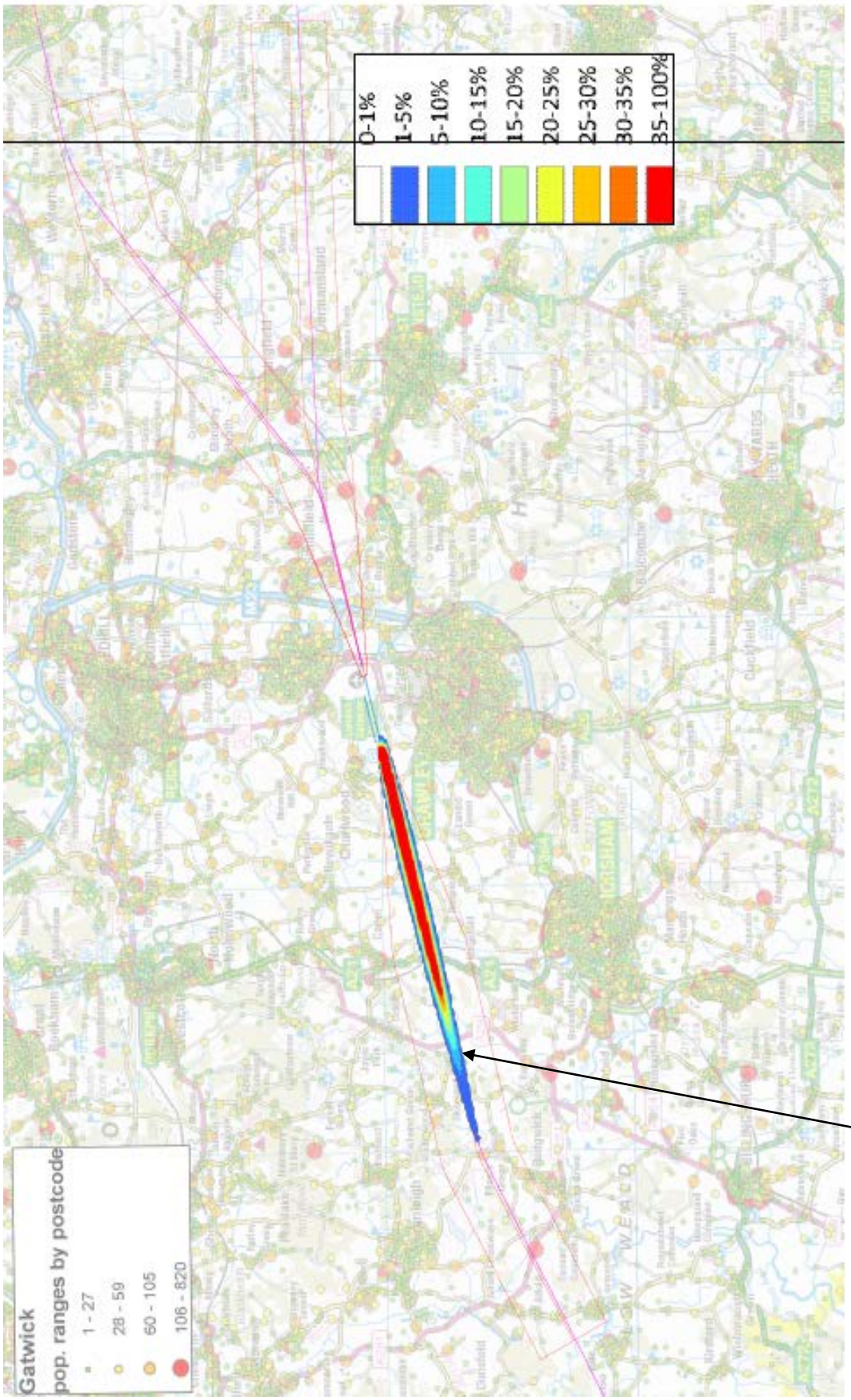
Orange plots show the tracks of aircraft until at an altitude of 4000ft

< BACK

26SOUTHAMPTON August 2014 Aircraft Tracks Cut Off at 4000ft Altitude
3006 Aircraft – Showing P-RNAV Departures Only



Orange plots show the tracks of aircraft until at an altitude of 4000ft



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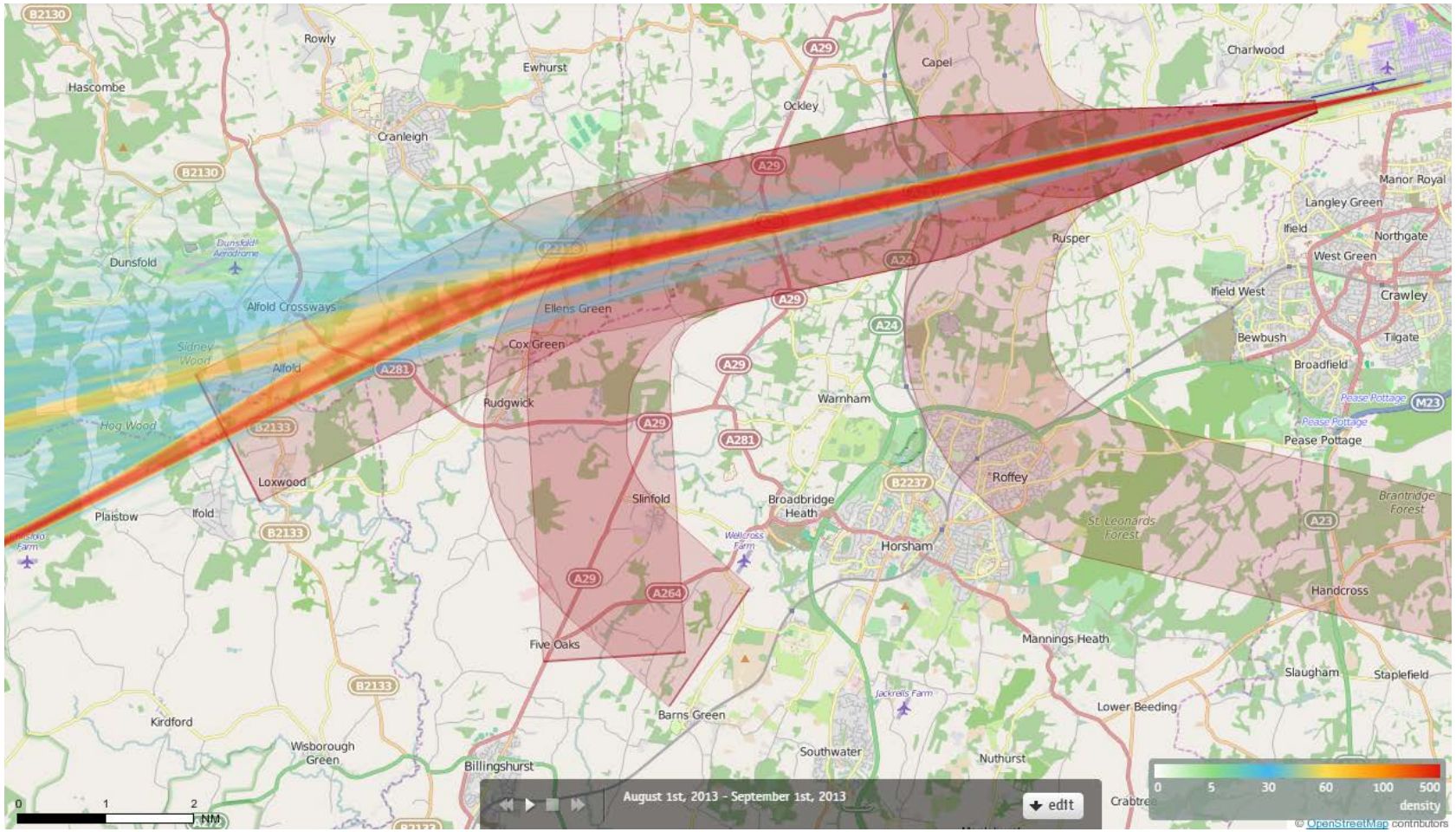
26 SOUTHAMPTON Route 1

Pre and Post P-RNAV

26SOUTHAMPTON Density August 2013
2401 Aircraft – Showing CONVENTIONAL Departures Only



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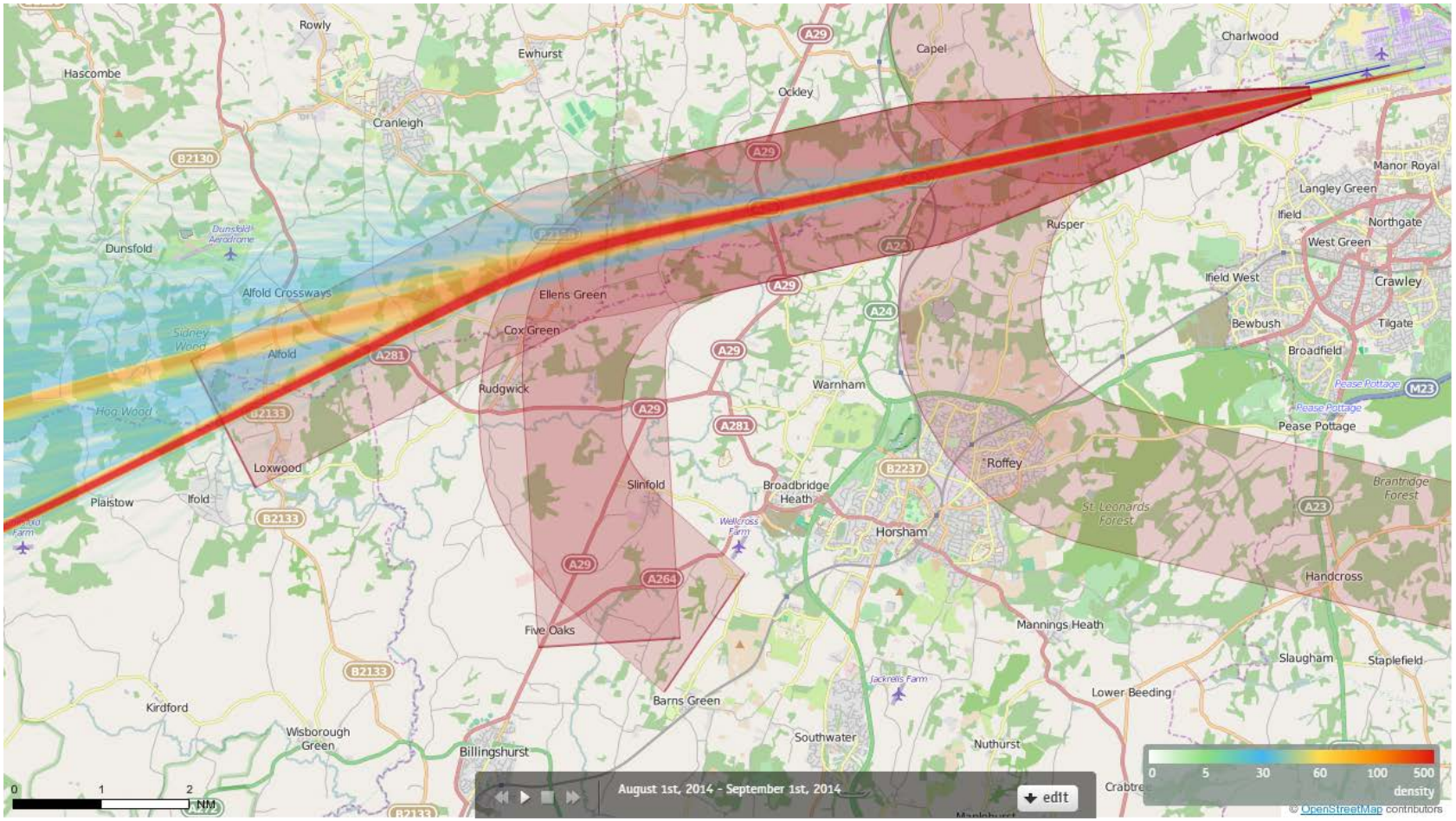
26SOUTHAMPTON Density August 2014
3006 Aircraft – Showing P-RNAV Departures Only



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