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 5 – RWY 08 CLN / DVR / BIG – Sample 1 - Comparing Jul 13 (Conv) v Jun 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)
500 501	Consultation Ref / Diagram	Con Doc Fig 5 **500A** ACP Fig 10 **501B**	Con Doc Fig 6 **500B** ACP Fig 3 **501B**	The forecast impact for this route was based on the impact shown in Con Doc Fig 6 and ACP Fig 3 which was predicated on the results of the Trial of Route 1. As the RNAV SID replicated the con SID it was forecast by GAL and the CAA that the mean track of the RNAV deps over the ground would be unchanged other than a more concentrated dispersion similar to that demonstrated during the RNAV Trial for Route 1. The RNAV SID CL was designed so that it would be directly aligned with the Conv SID CL. As shown in Con Doc Fig 7 the RNAV CL was co-located with the Conv SID CL. It was however recognised that there was also potential for RNAV departures to be slightly south of the conv SID departures, but until the RNAV SID was introduced, this could not be determined.		
Folder Ref	Diagram CLN1Z,	**Month** **Jul 13** / **Number** **2076**	**Month** **Jun 14** / **Number** **1903**		Day: 3000 Night: 4000	
502	At 4000 ft GAL Slides: 8 v 3 CAA Slides 2v3	Deps spread evenly across the NPR CL occupying approx 30% of the width of the NPR swathe. After passing the A22, the concentrated departure dispersion splits into 2 parts; vectoring appears to be evident for either the DVR or CLN routing, although ac may be following the DVR SID alignment. The majority of deps are reaching 4000ft before Dormansland.	In the main, the dispersion of deps is spread evenly across the NPR CL occupying approx 20% of the width of the NPR swathe. After passing the A22, the concentrated departure dispersion splits into 2 parts - vectoring evident for either the DVR or CLN routing although ac may be following the DVR SID alignment. DVR SIDs appear to be slightly further south towards/ over Dormansland. The majority of deps are reaching 4000ft before Dormansland. In this traffic sample, there appear to be fewer deps over Lingfield using these SIDs compared with the conv SID. Note: in sample 2 with approx 50% less deps, this is not as evident.	The RNAV SID dispersion has slightly reduced compared with the width of the conv SID departure track dispersion, but shortly after passing the A22, there are 2 evident flight paths for the DVR and Clacton routes. Whilst ac are probably being vectored for the CLN routing, traffic on the DVR SID would either be following the SID procedure or being vectored by ATC. It was recognised as part of the ACP analysis, that there was a possibility that RNAV deps could be slightly south of the conv SID departures. This now appears evident from these traffic samples with the result that RNAV deps using the DVR SIDs are slightly further south towards / over Dormansland. The deps are slightly more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication, although the impacts of this are short in duration given the splitting of deps onto 2 routes, and the amount of vectoring by ATC to position the RNAV deps routing via Clacton.	There is a slight reduction in the spread of deps arising from vectoring.	RNAV track concentration as expected. RNAV sample is - 173 deps less.
503	Density Plot **CON DOC RTE 5** GAL Slides: 8 v 3 **CAA Slides 2v3**	Deps occupy approx. 10% of the width of the NPR swathe after departure and after passing the A22, there is a split in density dispersion into a number of single 'mini' concentrations. There is a wide pattern of	Deps occupy approx. 10% of the width of the NPR swathe after departure and after passing the A22, there is a single concentrated dispersion over Dormansland towards Mark Beach, then passing south of Penshurst.	The RNAV SID dispersion has slightly reduced compared with the width of the conv SID deps. After the A22 the pattern of the RNAV deps is noticeably different from that of the conv deps. Whilst the conv deps showed two distinct eastbound concentrated tracks (one over Lingfield and one to the north of Dormansland), the RNAV pattern shows a single concentration that has moved further south such that it is closer to / above Dormansland. It was noted that the RNAV SIDs are turning earlier compared with the conv SIDs, with the turn commencing before the A22.	There is a slight reduction in the spread of deps arising from vectoring. Vectoring has continued, however, it is apparent that traffic is further south of Edenbridge compared to the vectoring swathe of the conv SID.	RNAV track concentration as expected. RNAV sample is - 173 deps less.

		vectoring shortly after passing the A22.	There is a wide pattern of vectoring shortly after passing the A22.	This RNAV SID has resulted in a concentrated dispersion, although the impacts of the RNAV SID have been reduced by a continued wide spread vectoring practice when above NPR vectoring restrictions. Prior to vectoring, the deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication.		
	Alt Slice Diagrams (Note 7)	Period Number **1-31 Mar 14 476**	Period Number **1-7 Sep 14 411**			
504	Alt 4-5000ft GAL Slides:2-5 CAA Slides 2-5	Deps using approx 20-25% of the width of the NPR swathe spread across the NPR CL; however, vectoring occurring before the track change towards Dormansland. Majority of ac reaching 4000ft before the turn.	Deps using approx 10% of the width of the NPR swathe; however, vectoring occurring before the track change towards Dormansland. Majority of ac reaching 4000ft before the turn.	A slightly reduced spread of traffic with ac more concentrated, although vectoring is creating dispersion away from the RNAV SID CL both to the north and the south. The main concentration is slightly further south and now over Dormansland. It was noted that the RNAV SIDs are turning earlier compared with the conv SIDs, with the turn commencing before the A22.	No significant change in vectoring.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is - 65 deps less.
505	Alt 5-6000ft GAL Slides: 6-9 CAA Slides 2-5	Deps using approx 20-25% of the width of the NPR swathe spread across the NPR CL; however, increased vectoring evident in this alt band. Majority of ac reaching 5000ft before Lingfield racecourse. Widespread vectoring before the racecourse - presumably for the CLN SIDs	Deps using approx 10% of the width of the NPR swathe; however, increased vectoring evident in this alt band. Majority of ac reaching 5000ft before Lingfield racecourse. Widespread vectoring before the racecourse.	As the CLN SIDs are being vectored after passing the A22, the impact of the RNAV SID is somewhat negligible as there is little change in didpersion due to vectoring. For the DVR SIDs, the main concentration is slightly further south. This RNAV SID have resulted in a concentrated dispersion, although the impacts of the RNAV SID have been reduced by a continued wide spread vectoring practice when above NPR vectoring restrictions. The deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication but impact less than evident in consultation due to vectoring.	Less vectoring evident although sample is -65 deps.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is - 65 deps less.
506	Alt 6-7000ft Slides:10-13 CAA Slides 2-5	Deps using approx 20-25% of the width of the NPR swathe spread across the NPR CL; however, increased vectoring evident in this alt band. Majority of ac reaching 6000ft by Dormansland. Widespread vectoring initiated before the railway line to East Grinstead – presumably for the CLN SIDs.	Deps using approx 10% of the width of the NPR swathe; however, increased vectoring evident in this alt band. Majority of ac reaching 6000ft by Dormansland. Widespread vectoring initiated before the railway line to East Grinstead – presumably for the CLN SIDs.	As the CLN SIDs are being vectored after passing the A22, the impact of the RNAV SID is some what negligible as there is little change in dispersion due to vectoring. For the DVR SIDs, the main concentration is slightly further south. This RNAV SID has resulted in a concentrated dispersion, although the impacts of the RNAV SID have been reduced by a continued wide spread vectoring practice when above NPR vectoring restrictions. The deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication but impact less than evident in consultation due to vectoring.	Less vectoring evident although sample is -65 deps.	Traffic above 4000ft was not assessed in the ACP analysis as deps may be tactically vectored when reaching 3000/4000ft. RNAV sample is - 65 deps less.

ROUTE 5 – CLN / DVR / BIG – 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)
Folder Ref	Diagram CLN1Z,	Month	Number	Month	Number		Day: 3000 Night: 4000	
		Aug 13	917	Jul 14	1237			
507	At 4000 ft GAL Slides: 12 v7 CAA Slides 2v3	Deps spread evenly across the NPR CL occupying approx 25-30% of the width of the NPR swathe. After passing the A22, the concentrated departure dispersion splits into 2 parts; vectoring appears to be evident for either the DVR or CLN routing, although ac may be following the DVR SID alignment. The majority of deps are reaching 4000ft before Dormansland.		In the main, the dispersion of deps is spread evenly across the NPR CL occupying approx 20% of the width of the NPR swathe. After passing the A22, the concentrated departure dispersion splits into 2 parts - vectoring evident for either the DVR or CLN routing although ac may be following the DVR SID alignment. DVR SIDs appear to be slightly further south towards/ over Dormansland. The majority of deps are reaching 4000ft before Dormansland. In this traffic sample, there appear to be fewer deps over Lingfield using these SIDs compared with the conv SID. Note: in sample 2 with approx 50% less deps than in sample 1, this is not as evident as in sample 1.	The RNAV SID dispersion has slightly reduced compared with the width of the conv SID departure track dispersion, but shortly after passing the A22, there are 2 evident flight paths for the DVR and Clacton routes. Whilst ac are probably being vectored for the CLN routing, traffic on the DVR SID would either be following the SID procedure or being vectored by ATC. It was recognised as part of the ACP analysis, that there was a possibility that RNAV deps could be slightly south of the conv SID departures. This now appears evident from these traffic samples with the result that RNAV deps using the DVR SIDs are slightly further south towards / over Dormansland. The deps are slightly more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication, although the impacts of this are short in duration given the splitting of deps onto 2 routes, and the amount of vectoring by ATC to position the RNAV deps routing via Clacton.	There is no discernable difference from the con SIDs based on this sample.	RNAV track concentration as expected. RNAV sample is +320 more.
508	Density Plot **CON DOC RTE 5** GAL Slides: 12 v 7 CAA Slides 2v3	Deps occupy approx. 10% of the width of the NPR swathe after departure and after passing the A22, there is a split in density dispersion into 2 'mini' concentrations. There is a wide pattern of vectoring shortly after passing the A22.		Deps occupy approx 10% of the width of the NPR swathe after departure and after passing the A22, there is a single concentrated dispersion over Dormansland towards Mark Beach, then passing south of Penshurst. There is a wide pattern of vectoring shortly after passing the A22.		The RNAV SID dispersion has slightly reduced compared with the width of the conv SID deps. After the A22 the pattern of the RNAV deps is noticeably different from that of the conv deps. Whilst the conv deps showed two distinct eastbound concentrated tracks (one over Lingfield and one to the north of Dormansland), the RNAV pattern shows a single concentration that has moved further south such that it is closer to / above Dormansland. It was noted that the RNAV SIDs are turning earlier compared with the conv SIDs, with the turn commencing before the A22. This RNAV SID has resulted in a concentrated dispersion, although the impacts of the RNAV SID have been reduced by a continued wide spread vectoring practice when above NPR vectoring restrictions. Prior to vectoring, the deps are more concentrated than the conventional SID dispersion which was the aim of the RNAV SID replication.	There is a slight reduction in the spread of deps arising from vectoring. Vectoring has continued, however, it is apparent that traffic is further south of Edenbridge compared to the vectoring swathe of the conv SID.	RNAV track concentration as expected. RNAV sample is + 320 deps more.

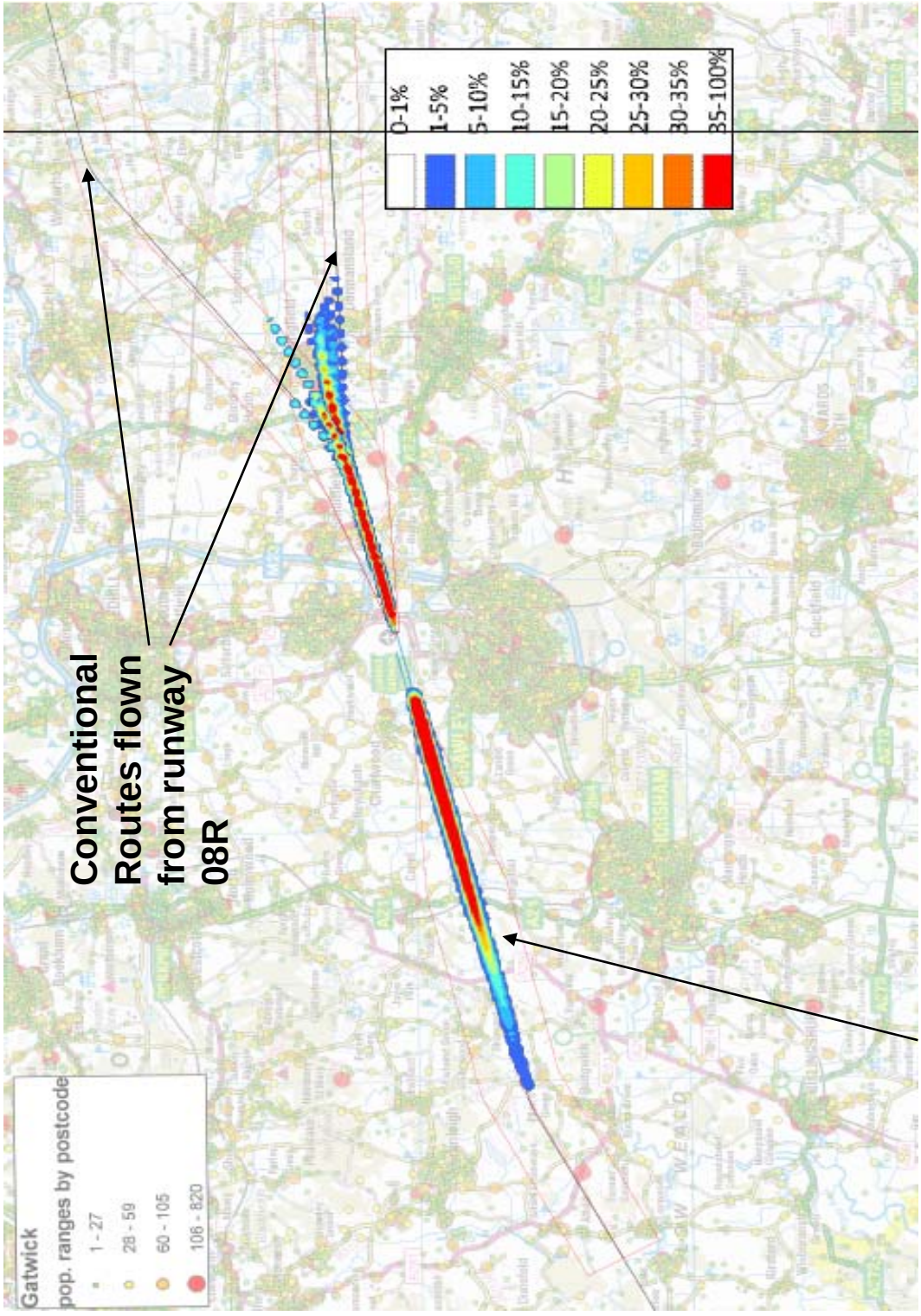
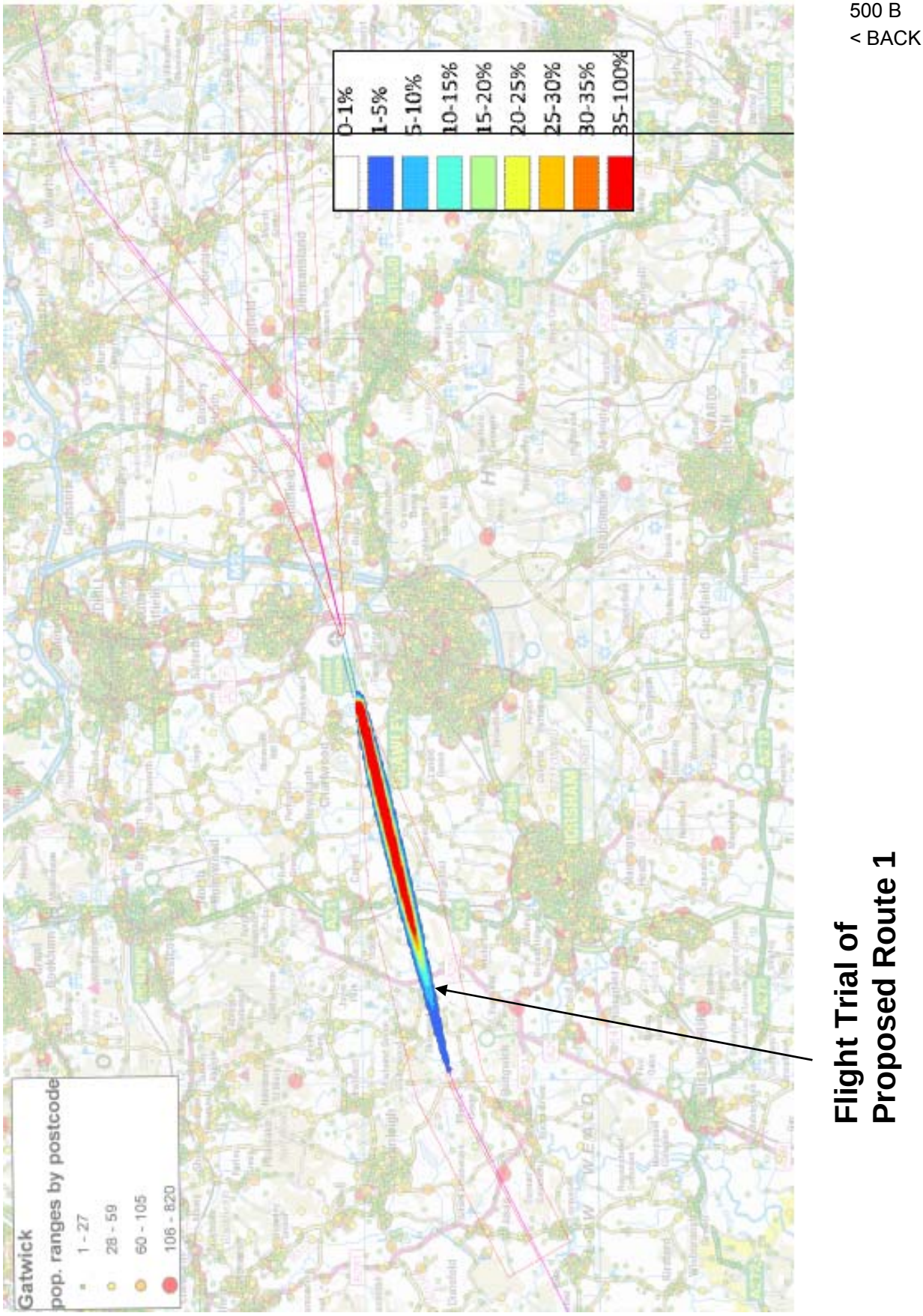


Figure5) Density plots of aircraft tracks (up to 4000 feet AMSL) following the **conventional departure SID** from Runway 26L and conventional (DVR/LAM) departure SID routes from runway 08R



500 B
< BACK

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

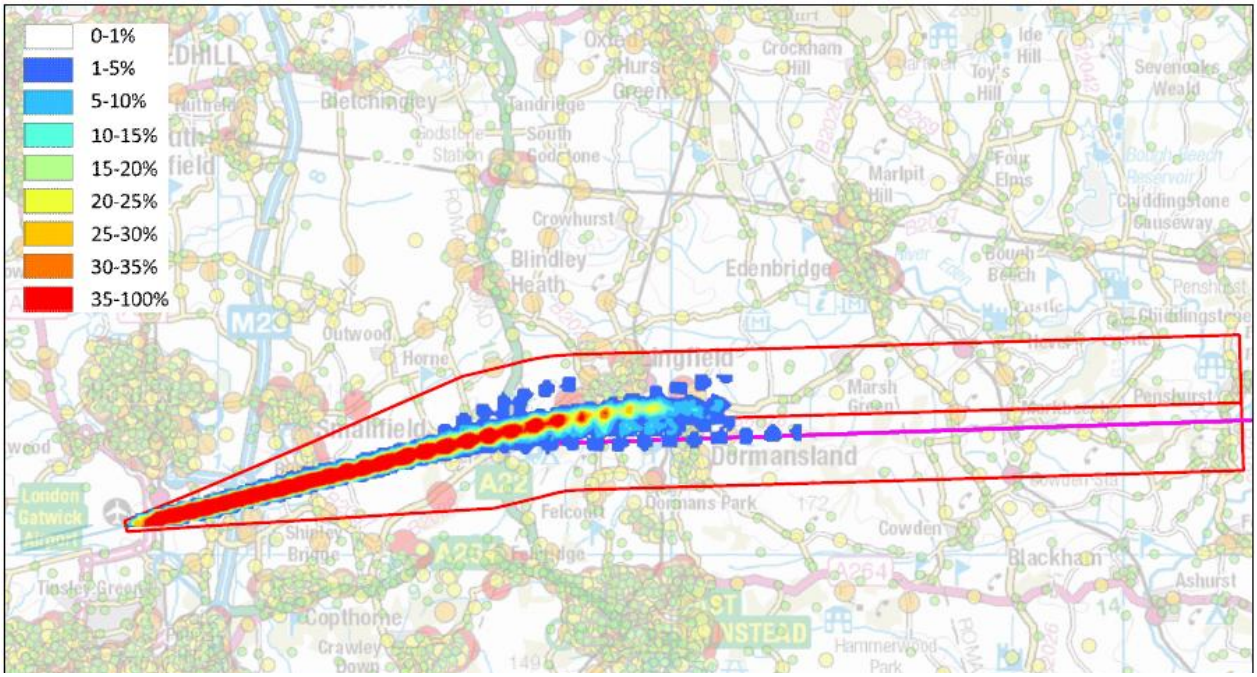


Figure 10 Route 5 Conventional Navigation

The impact regarding noise and track dispersion for route 5 is expected to be identical to that seen from the flight trials of route 1.

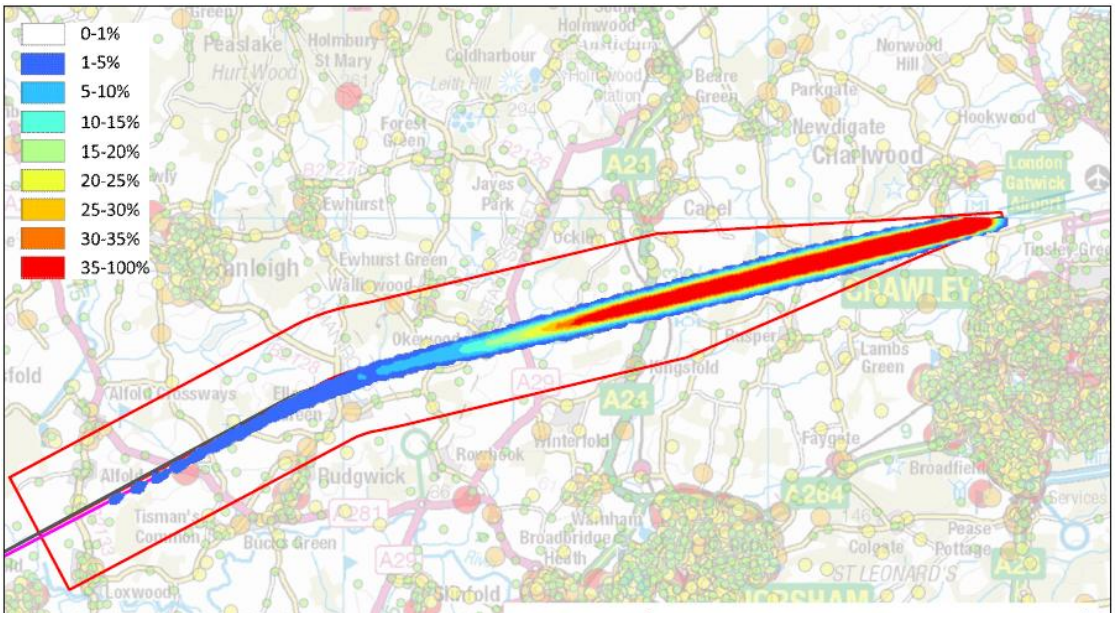


Figure 2 Route 1 Conventional Navigation

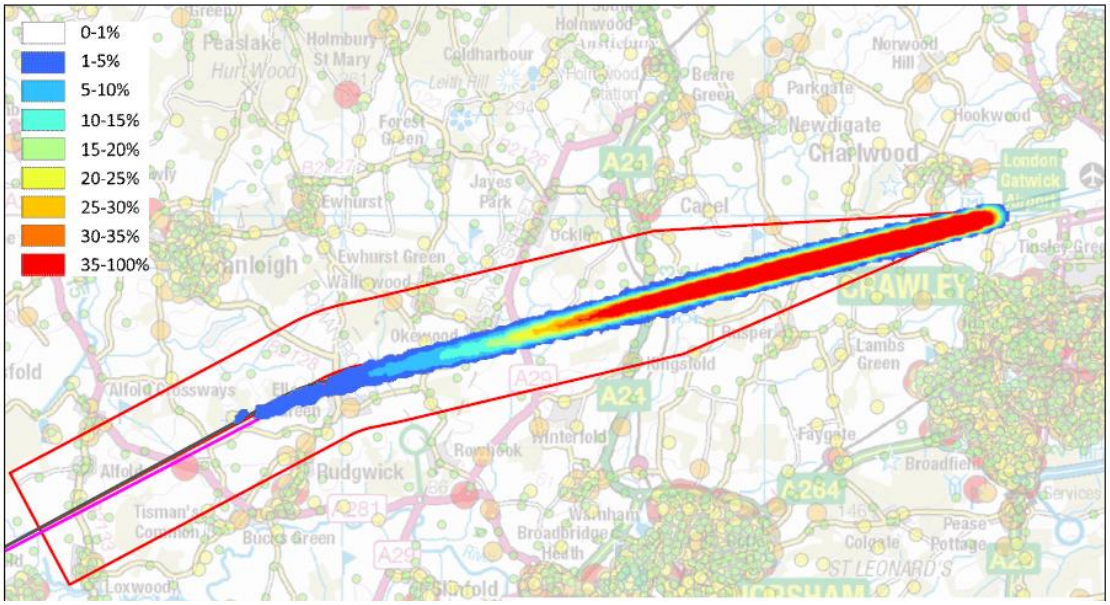


Figure 3 Route 1 PRNAV Navigation

501 B
< BACK

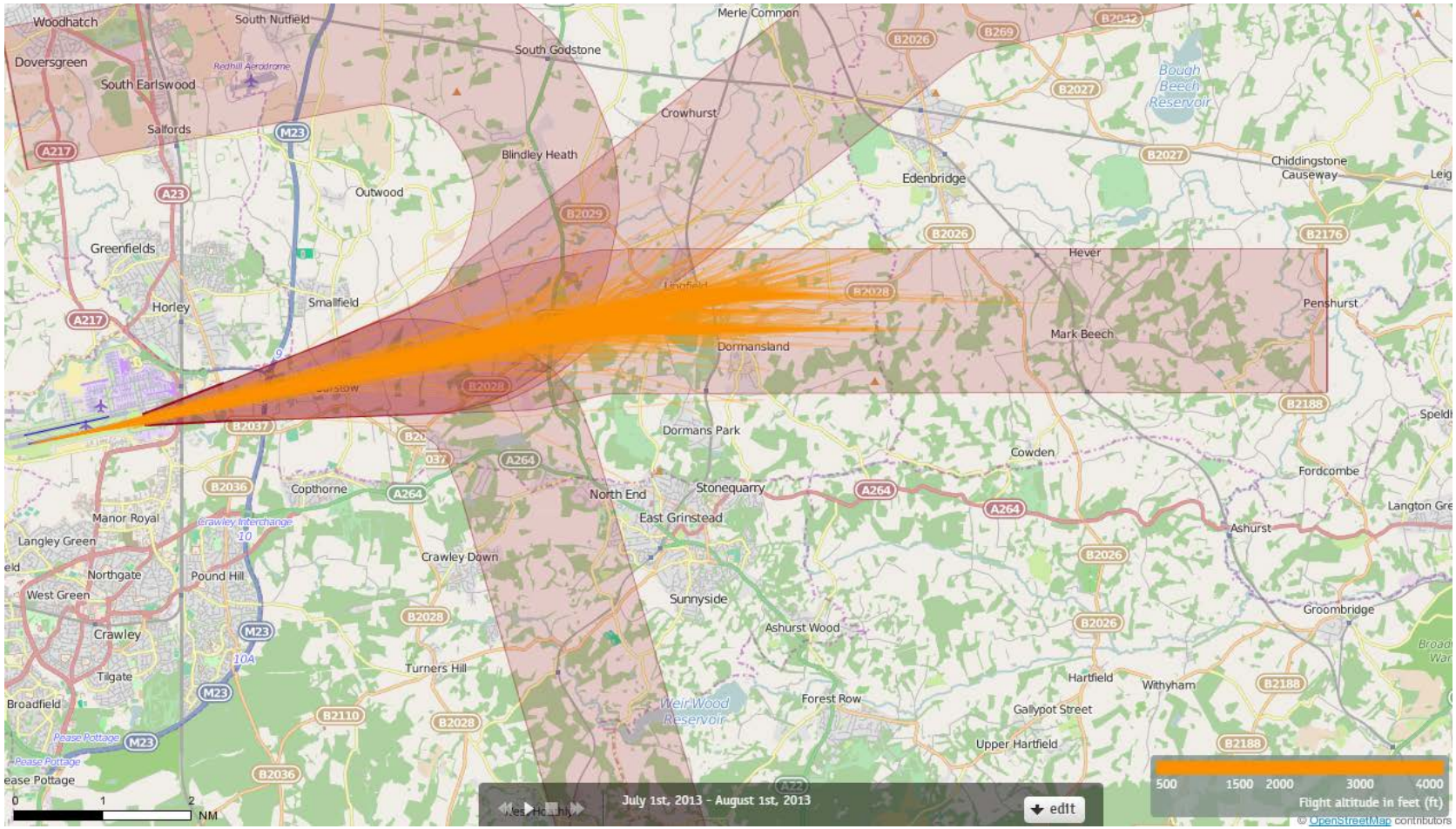
NOTE: The densities illustrated in Figures 2-14 were constructed by calculating the proportion of radar returns within a defined grid square, and colouring according to the relative density of the returns compared to the square with the highest observed density (for example yellow shading indicates radar 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.

08 CLACTON
Route 5

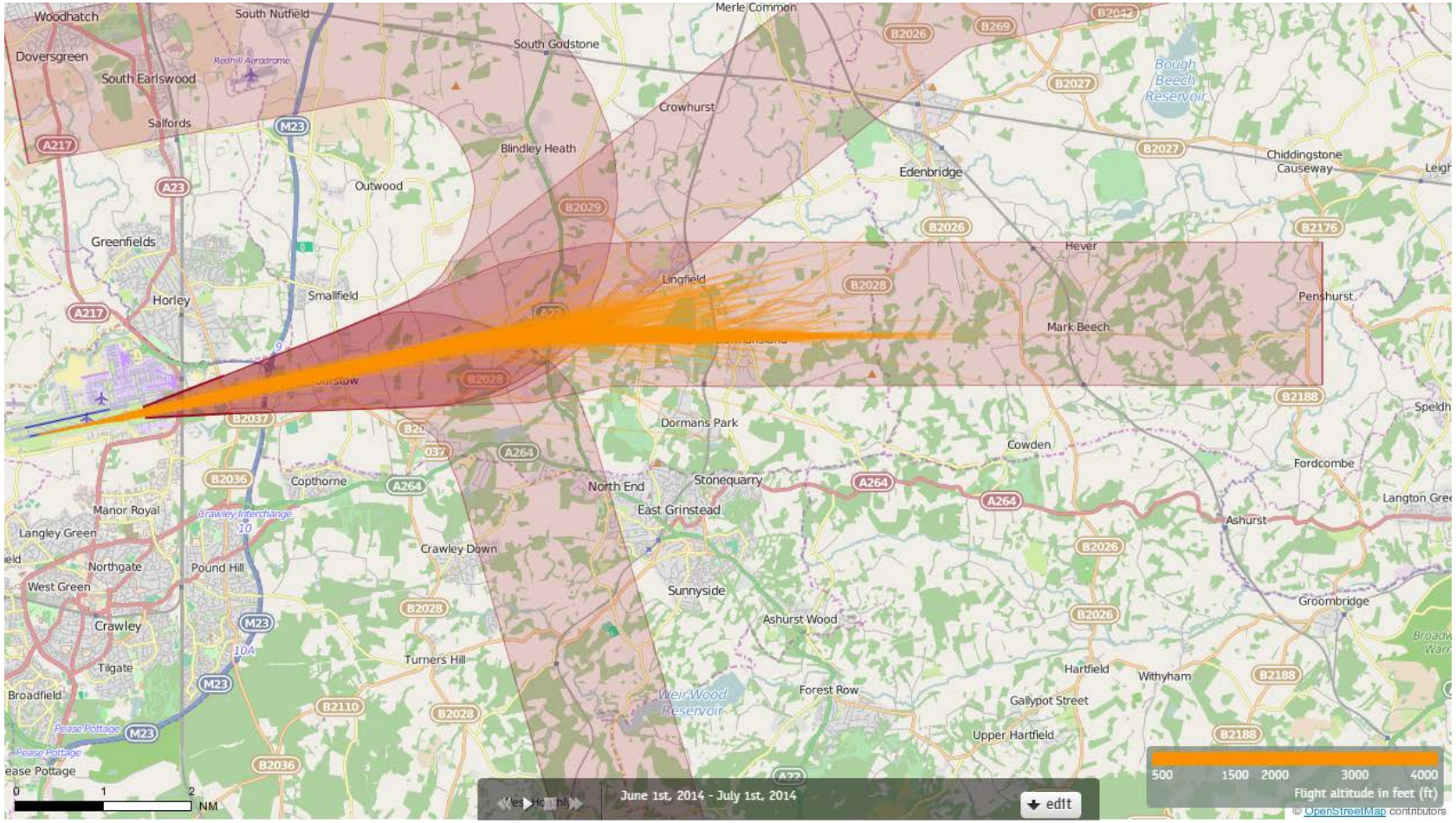
Pre and Post P-RNAV

< BACK

08CLACTON July 2013 Aircraft Tracks Cut Off at 4000ft Altitude
2076 Aircraft – Showing CONVENTIONAL Departures Only



08CLACTON June 2014 Aircraft Tracks Cut Off at 4000ft Altitude
1903 Aircraft – Showing P-RNAV Departures Only

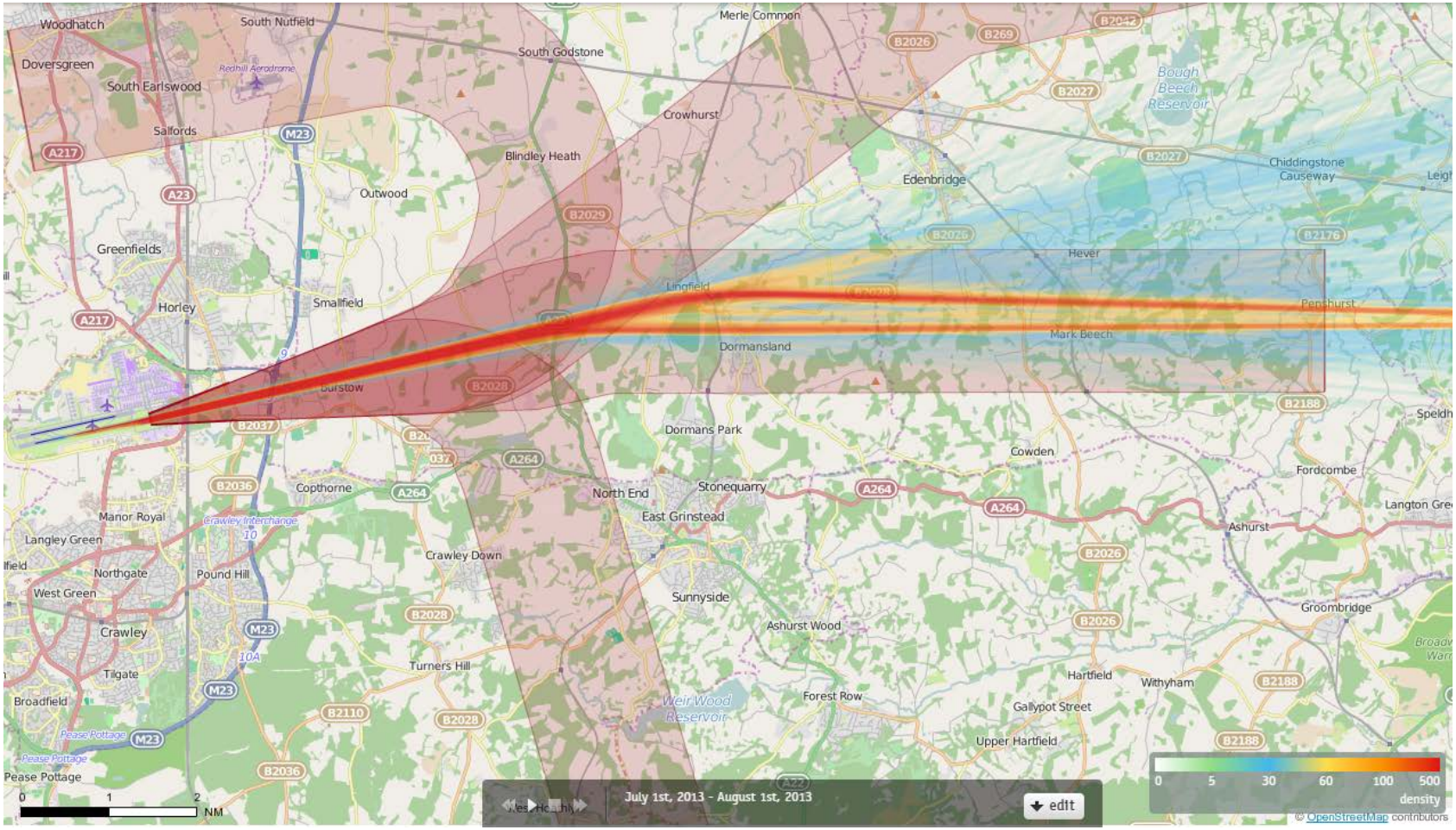


Orange plots show the tracks of aircraft until at an altitude of 4000ft

08 CLACTON
Route 5

Pre and Post P-RNAV

08CLACTON Density July 2013
2076 Aircraft – Showing CONVENTIONAL Departures Only



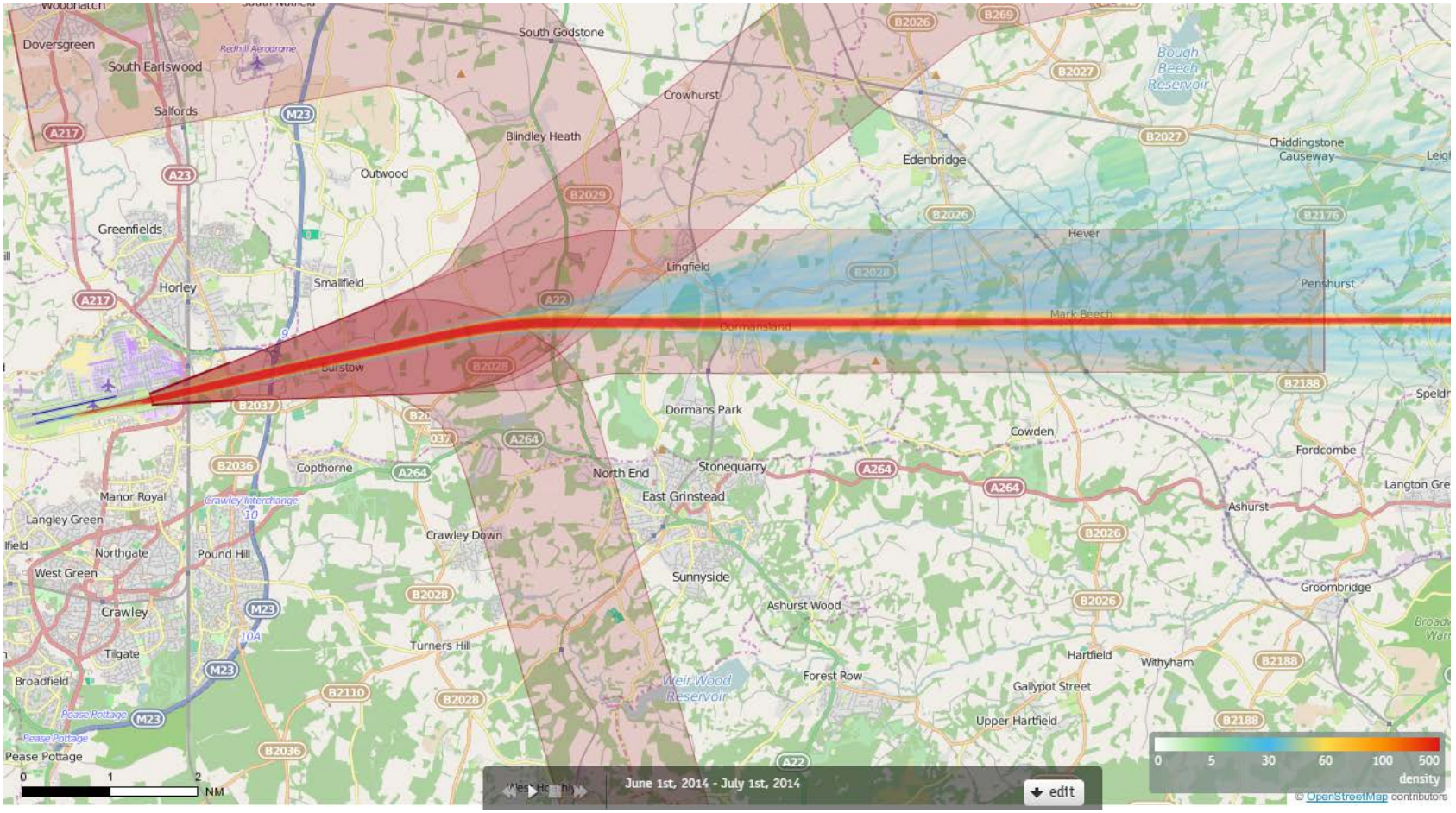
Track density

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.

08CLACTON Density June 2014
1903 Aircraft – Showing P-RNAV 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.

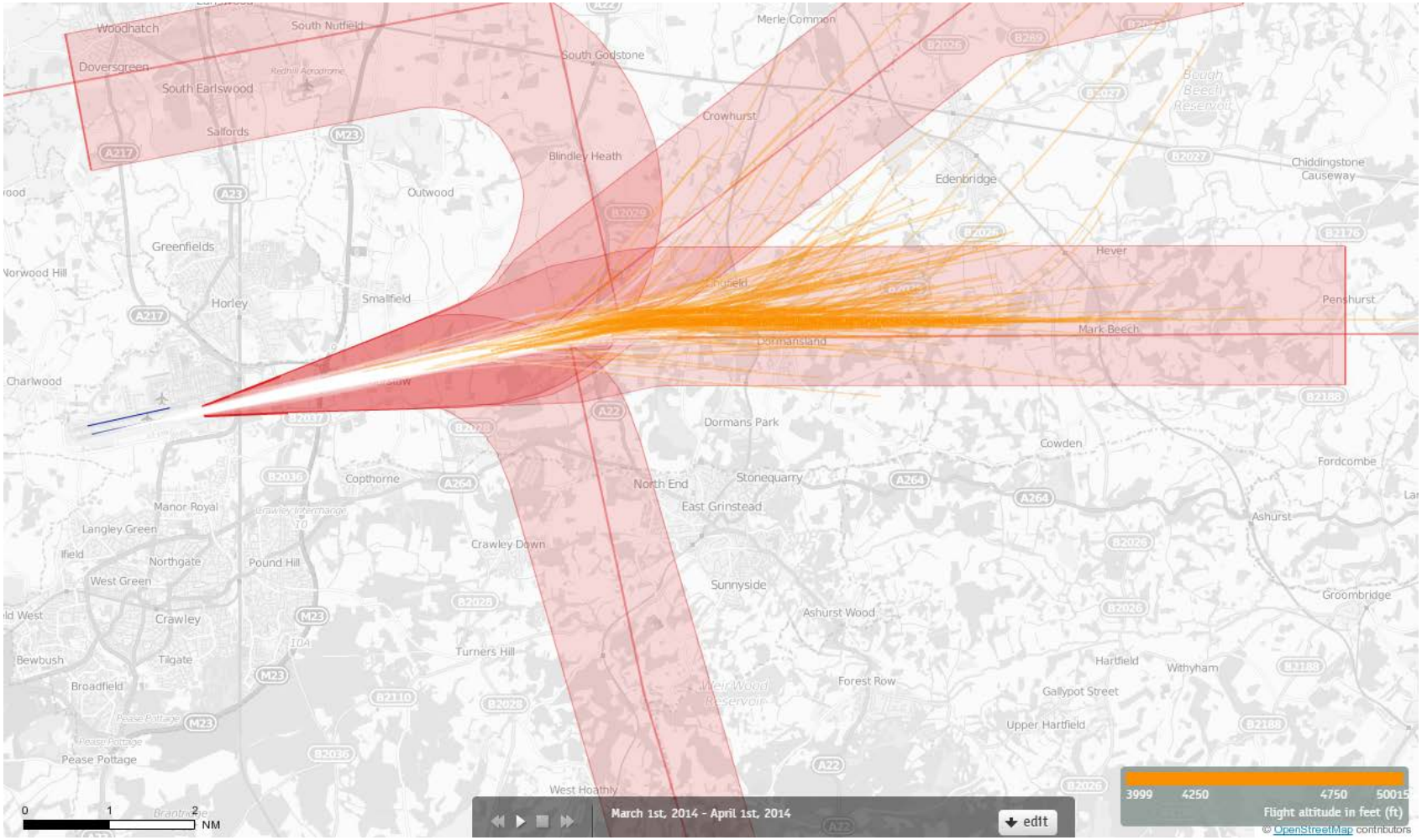
Counts in between are mapped to colours in between. If 100 were orange and 200 where red, then 150 would be coloured some orangy red.

08 CLACTON
Route 5

Altitude Bands

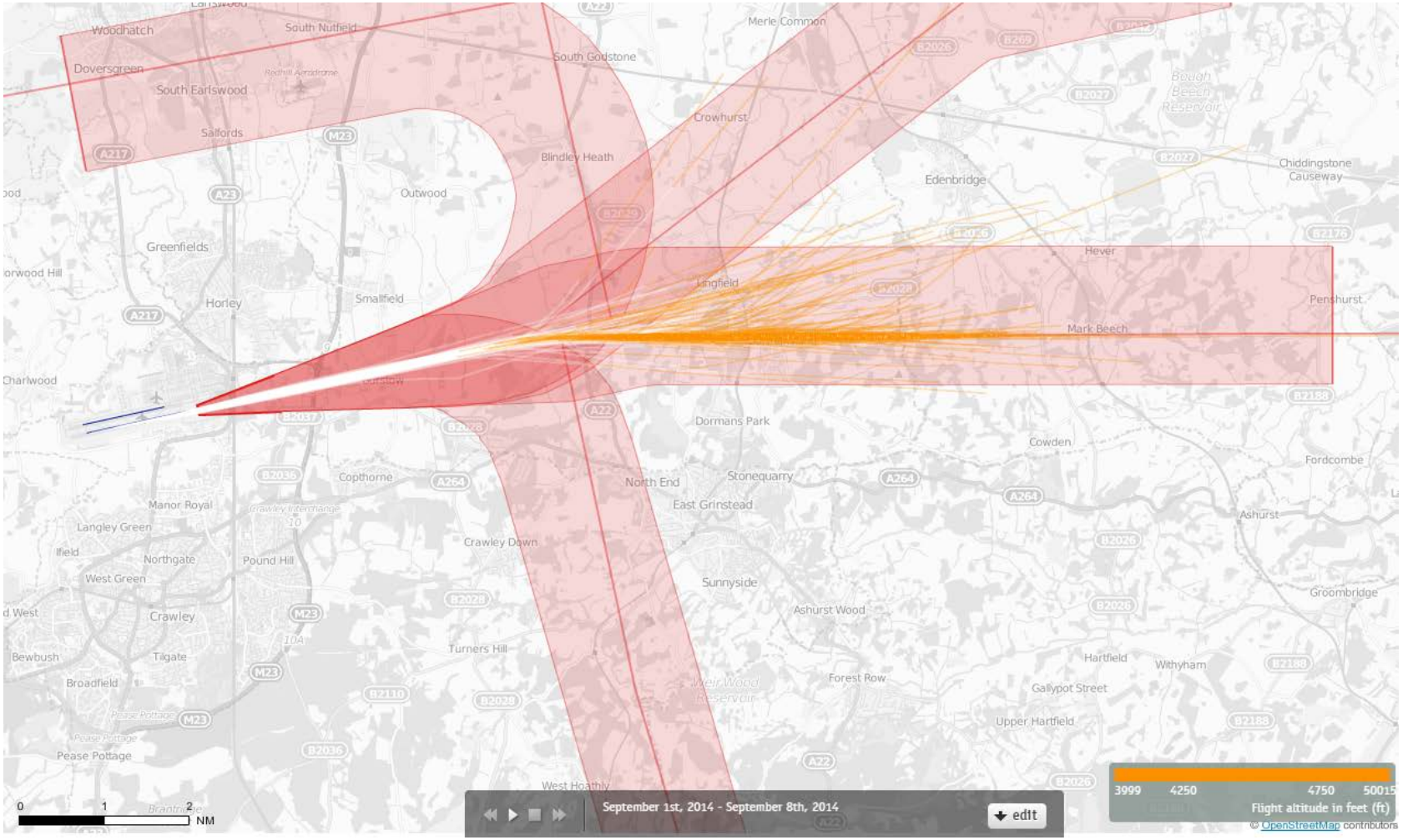
4000-5000ft

08 CLN Departures March 2014
4000-5000 feet (476 Aircraft – CONVENTIONAL ONLY)



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

08 CLN Departures 1st-7th September 2014
4000-5000 feet (411 Aircraft – P-RNAV ONLY)



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

08 CLN Departures March 2014
4000-5000 feet (476 Aircraft – CONVENTIONAL ONLY)

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

08 CLN Departures 1st – 7th September 2014
4000-5000 feet (411 Aircraft – P-RNAV ONLY)

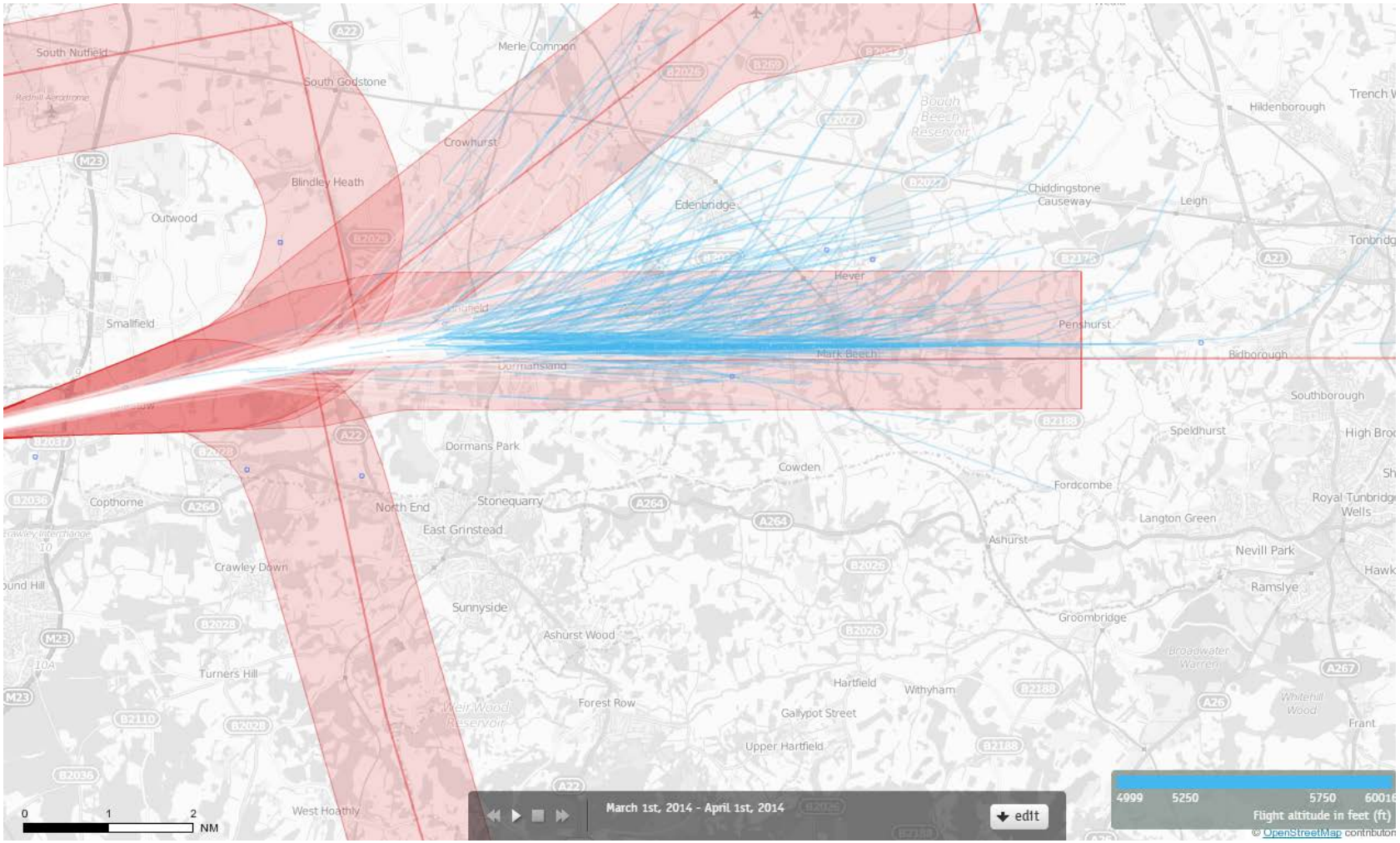
Orange plots show the points at which an aircraft was between 4000 and 5000ft altitude.

08 CLACTON
Route 5

Altitude Bands

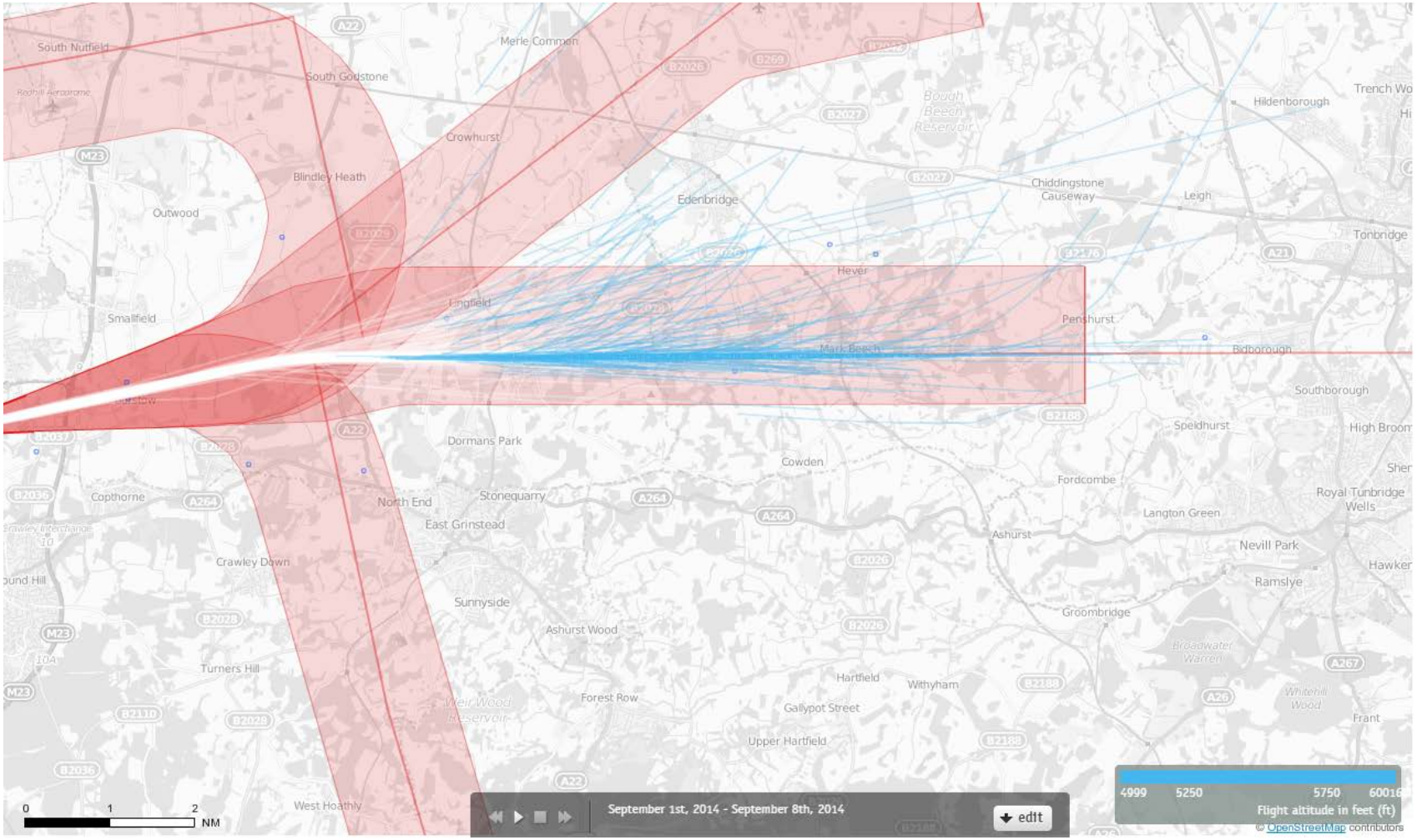
5000-6000ft

08 CLN Departures March 2014
5000-6000 feet (476 Aircraft – CONVENTIONAL ONLY)



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

08 CLN Departures 1st – 7th September 2014
5000-6000 feet (411 Aircraft – P-RNAV ONLY)



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

08 CLN Departures March 2014
5000-6000 feet (476 Aircraft – CONVENTIONAL ONLY)

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

08 CLN Departures 1st – 7th September 2014
5000-6000 feet (411 Aircraft – P-RNAV ONLY)

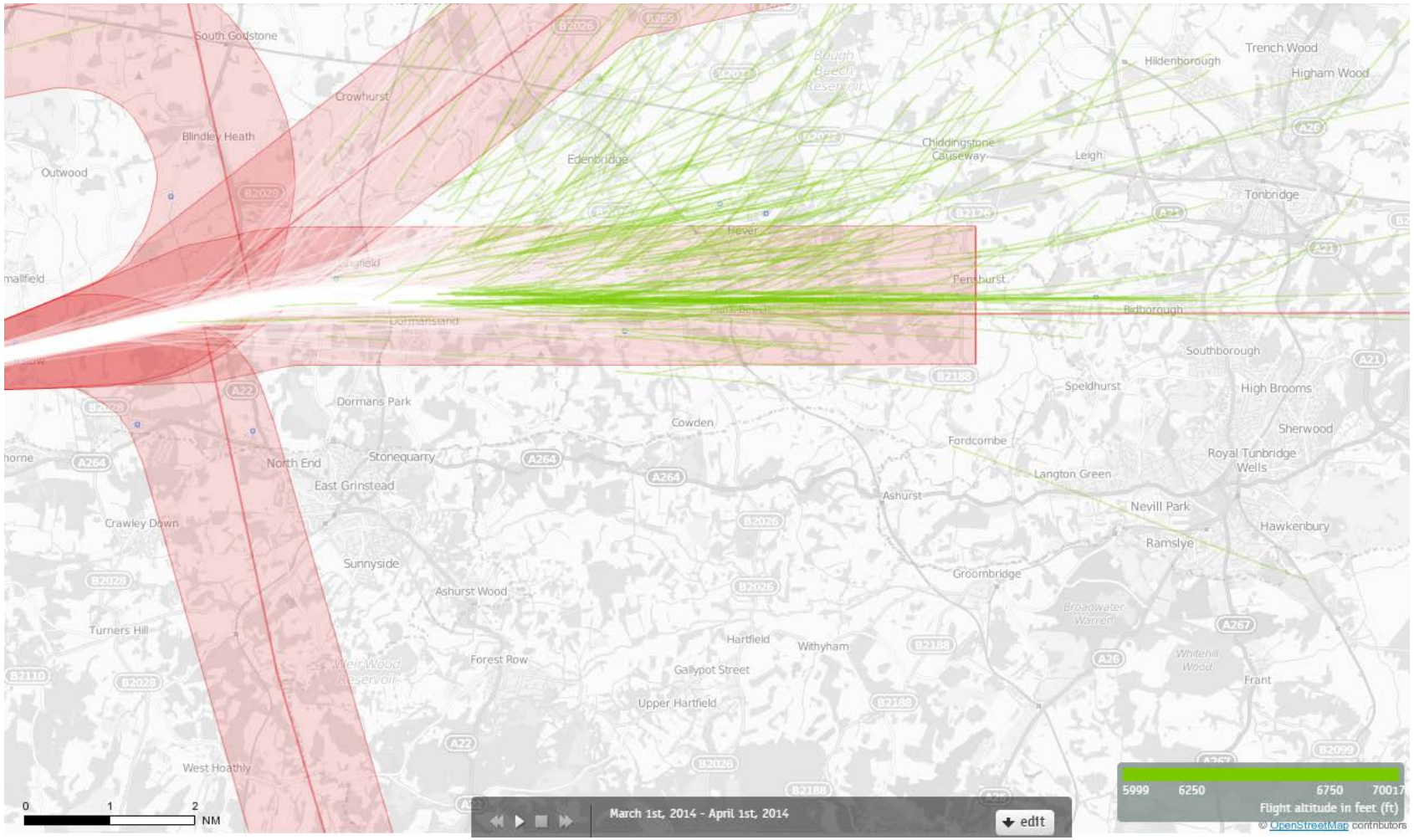
Blue plots show the points at which an aircraft was between 5000 and 6000ft altitude.

08 CLACTON
Route 5

Altitude Bands

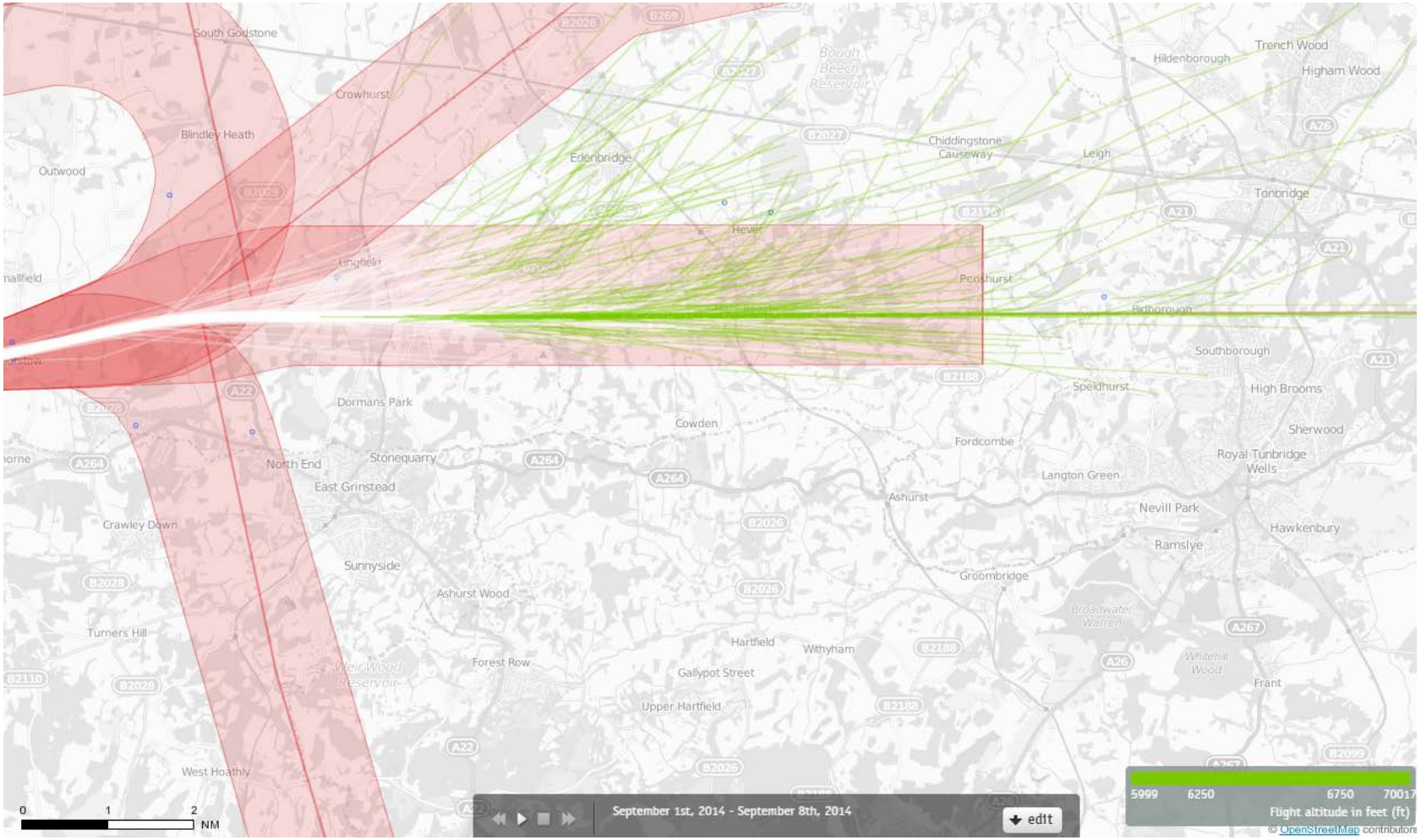
6000-7000ft

08 CLN Departures March 2014
6000-7000 feet (476 Aircraft – CONVENTIONAL ONLY)



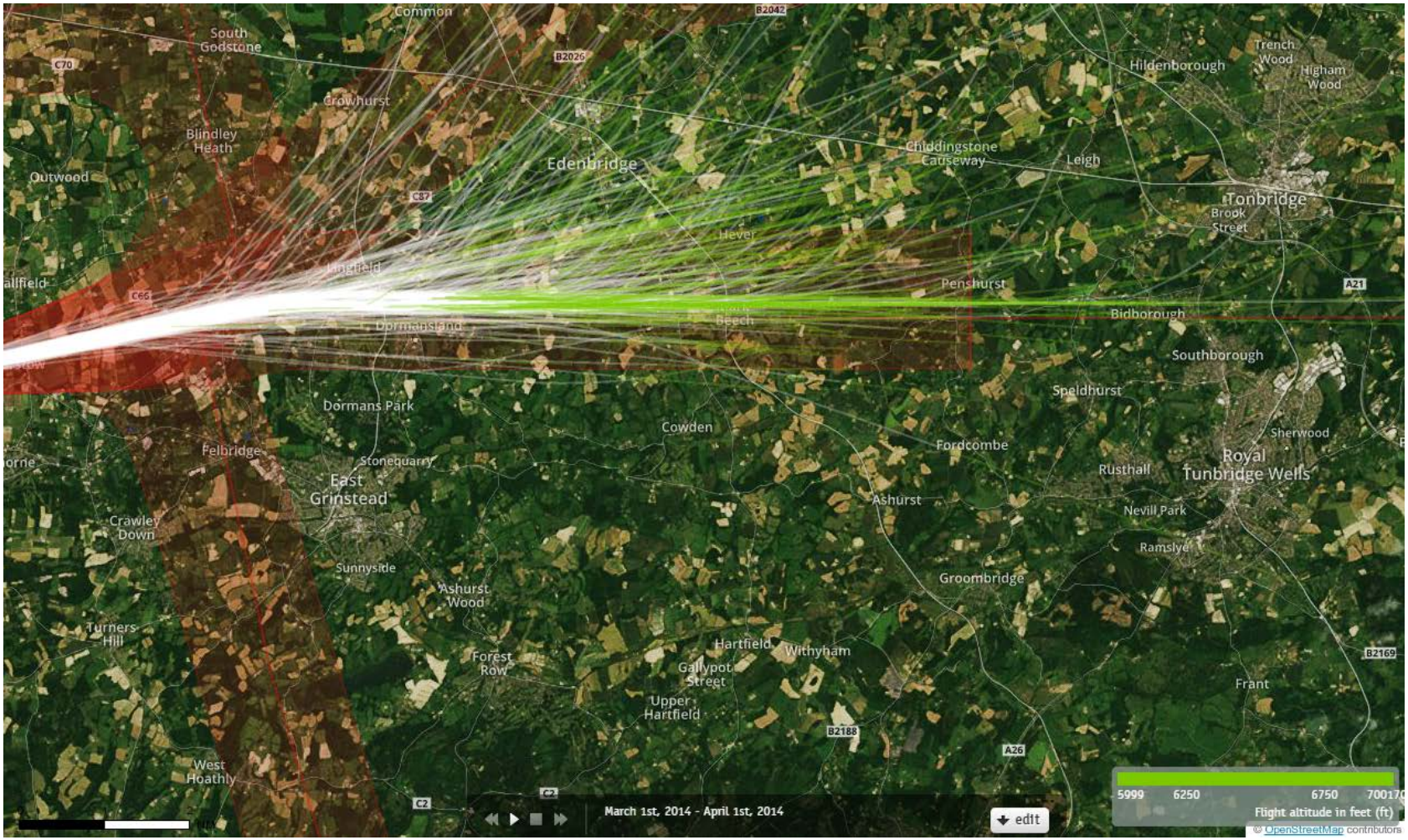
Green plots show the points at which an aircraft was between 6000 and 7000ft altitude.

08 CLN Departures 1st – 7th September 2014
6000-7000 feet (411 Aircraft – P-RNAV ONLY)



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

08 CLN Departures March 2014
6000-7000 feet (476 Aircraft – CONVENTIONAL ONLY)



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

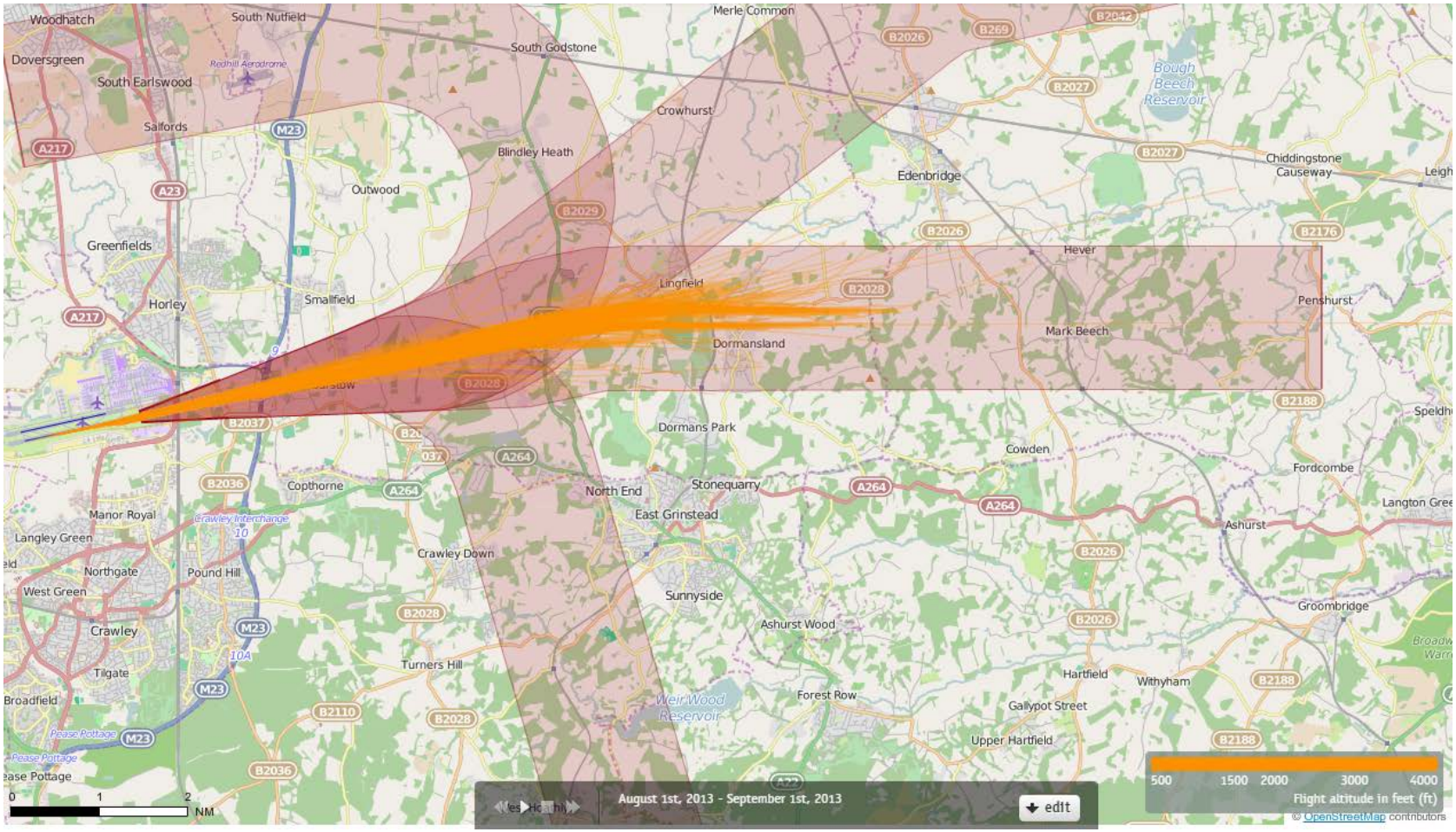
08 CLN Departures 1st – 7th September 2014
6000-7000 feet (411 Aircraft – P-RNAV ONLY)

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

08 CLACTON
Route 5
Sample 2

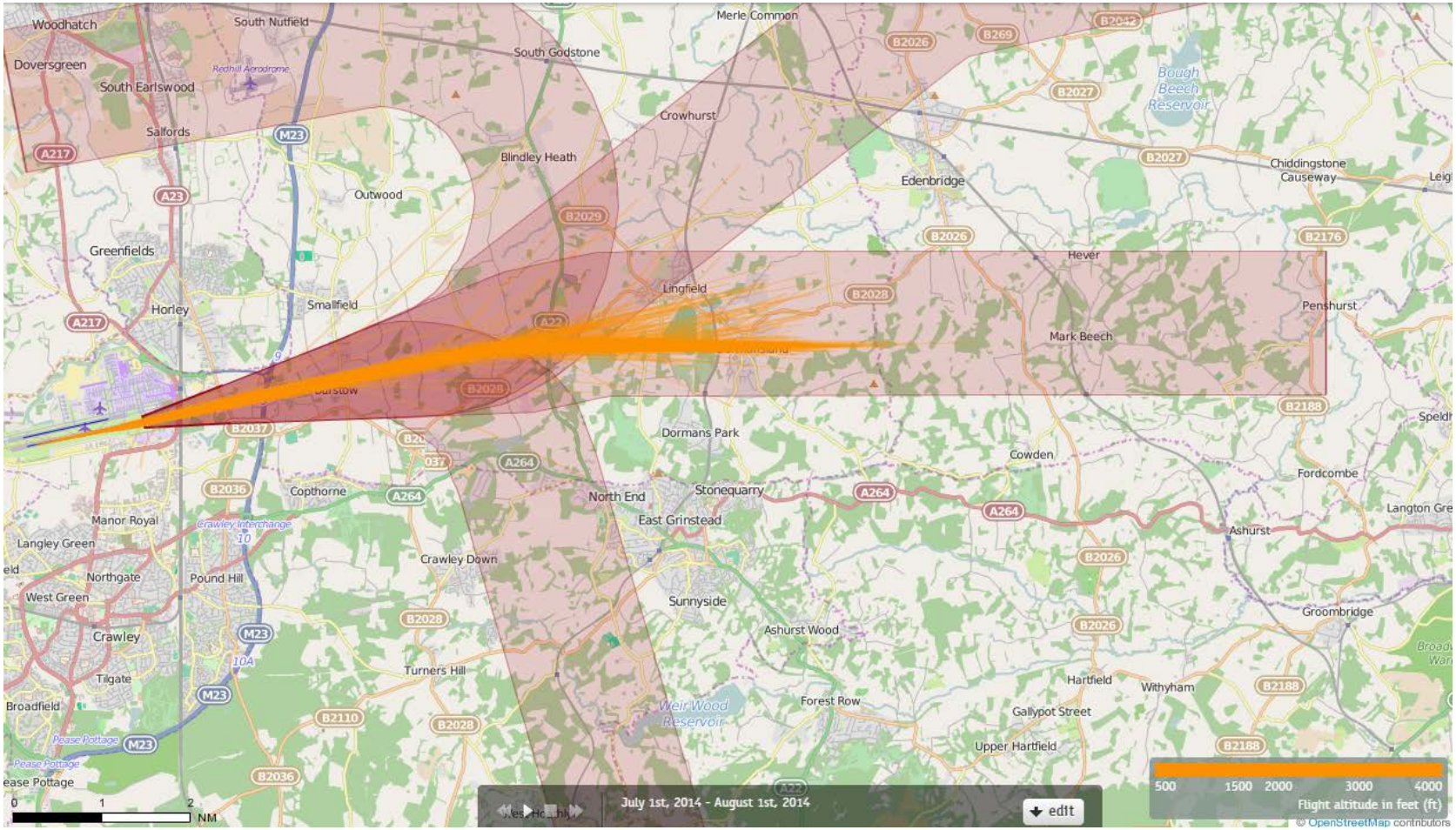
Pre and Post P-RNAV

08CLACTON August 2013 Aircraft Tracks Cut Off at 4000ft Altitude
917 Aircraft – Showing CONVENTIONAL Departures Only



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

08CLACTON July 2014 Aircraft Tracks Cut Off at 4000ft Altitude
1237 Aircraft – Showing P-RNAV Departures Only

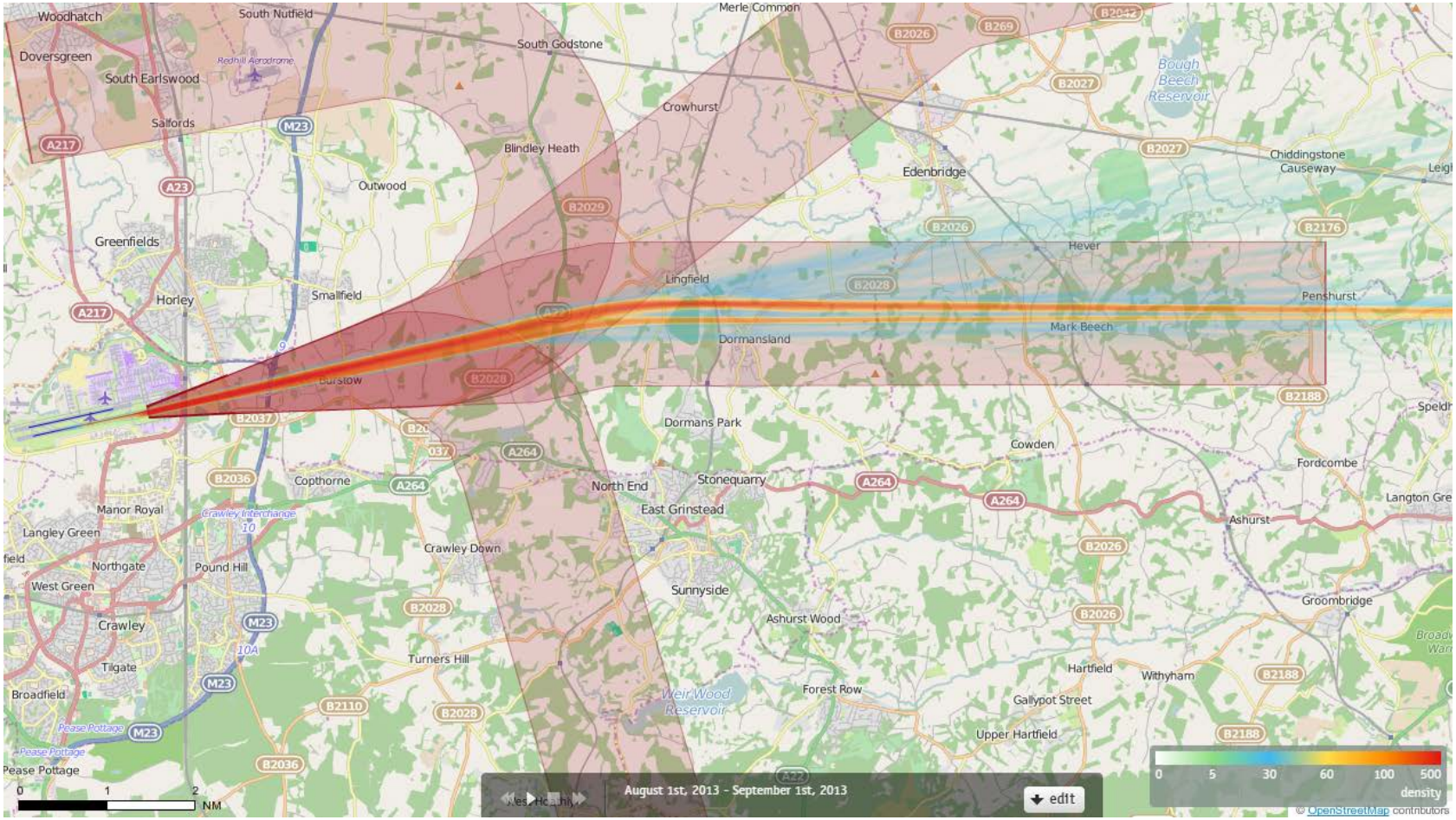


Orange plots show the tracks of aircraft until at an altitude of 4000ft

08 CLACTON
Route 5
Sample 2

Pre and Post P-RNAV

08CLACTON Density August 2013
917 Aircraft – Showing CONVENTIONAL Departures Only



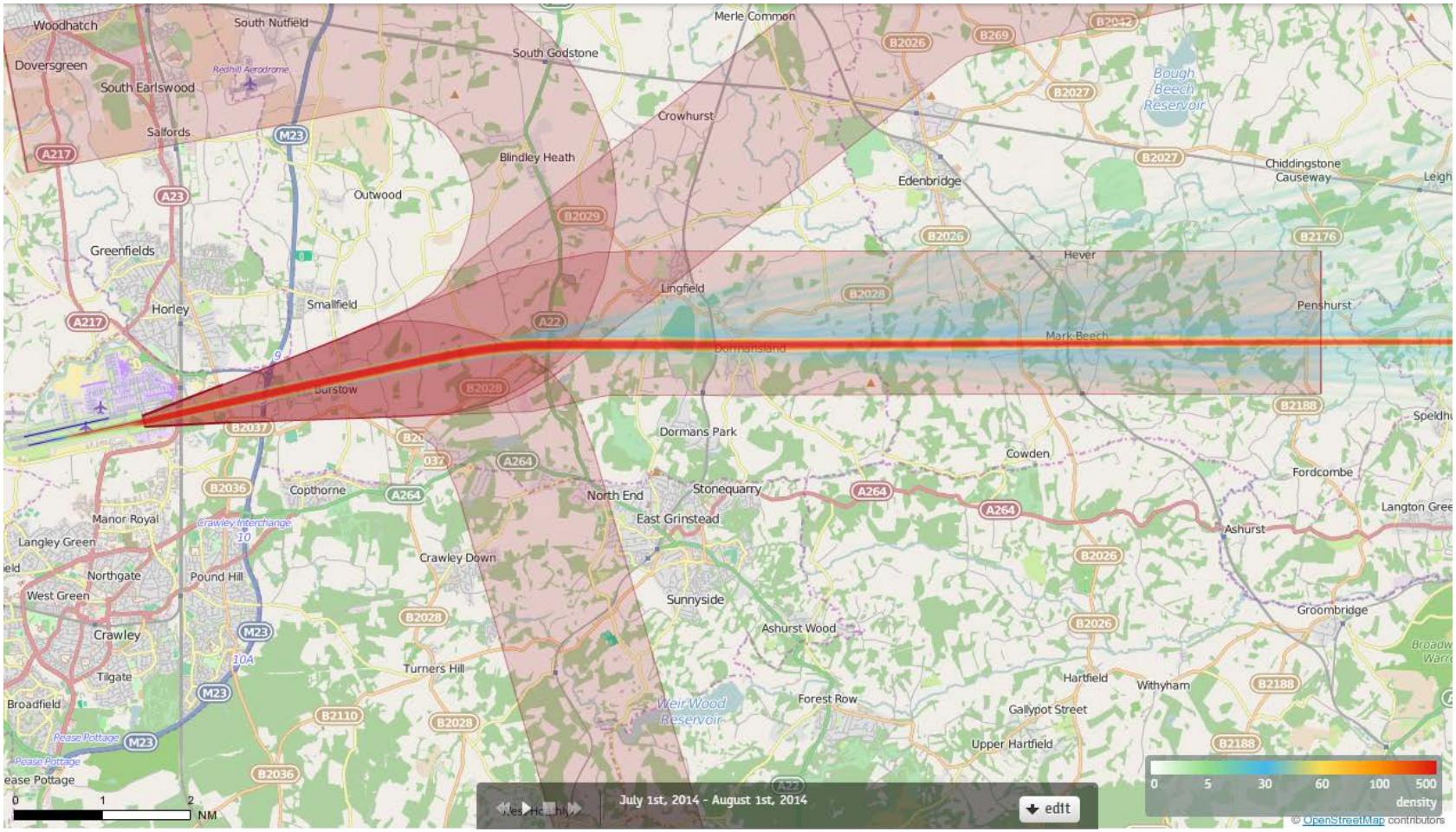
Track density

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.

08CLACTON Density July 2014
1237 Aircraft – Showing P-RNAV 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.