



Farnborough Airport

**Additional Airspace Consultation
(Limited in scope and area)**

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1. Introduction

- 1.1. TAG Farnborough Airport held a consultation in 2014. This was about proposed changes to flightpaths and airspace related to our air traffic control operation.
- 1.2. We received more than 13,000 comments and suggestions¹.
- 1.3. In 2014 we published Feedback Report Part A, detailing the numbers of responses and the subjects of those comments.
In 2015 we published Feedback Report Part B, detailing changes we made to the airspace proposal due to the consultation comments.
Also in 2015 we submitted a formal Airspace Change Proposal (ACP) to the Civil Aviation Authority (CAA), using Feedback Report Part B as the main description of the impacts, design changes and considerations.

What is this consultation for?

- 1.4. We are following up on the 2014 consultation with an additional consultation, in a limited area where we have changed some aspects of the proposal.
- 1.5. This proposal has already been the subject of large scale air traffic control simulations. After the 2014 consultation ended, we redesigned some parts of the airspace due to the feedback we received.
- 1.6. Since then, we undertook two new simulations with modified designs. The first of these two new simulations proved the revised system worked, but also identified opportunities to refine it even further, in a limited area.
- 1.7. The second simulation successfully tested the refined design. We have now adopted all the changes into this new, favoured, version.
- 1.8. This consultation covers those refinements. We are asking the people that live in this limited area for your opinions and comments about how these changes might impact you.

What are the benefits of this improvement?

- 1.9. This modification to the proposal changes the 'spread' of one of the proposed arrival paths.
- 1.10. It would reduce the total amount of new 'controlled' airspace we need. It would also simplify the crossing point with another route, improving the overall efficiency of the proposed design, and enhancing safety even further.

Why are we consulting?

- 1.11. For this improvement to work, we need to change the spread of the flightpath of TAG Farnborough Airport arrival routes from the south.
- 1.12. We are holding an additional consultation² because this is slightly different from what we predicted in the original consultation, and from what we described in Feedback Report Part B.

Who are we consulting?

- 1.13. We are consulting two groups of stakeholders:
 - a. People who may not have been overflown by the original 2014 proposal or the 2015 design, but who *may be overflown differently* as a result of this modification. This is limited to a specific geographical region. Information for these stakeholders is presented in Section 3.
 - b. Airspace users – for example, pilots of General Aviation (GA) aircraft such as leisure flyers and gliders in the region, the MoD, and national organisations representing the interests of aviation specialists. Technical details for these stakeholders are presented in Section 4, starting on page 11.

¹ See www.consultation.tagfarnborough.com for full details.

² This process was agreed with the CAA as part of TAG Farnborough Airport's continuing compliance with the UK airspace change process, known as 'CAP725'

When are we consulting?

- 1.14. This consultation starts the morning of Wednesday 10th August and ends twelve weeks later, at 7pm on Wednesday 2nd November.
- 1.15. This duration has been agreed with the CAA because it is an additional limited consultation in an area where consultation has already taken place.

What does this consultation *not* cover?

- 1.16. Places in the new proposal where the flightpath flow and height would be similar to the predictions made in the original 2014 consultation, or where the flightpath flow and height would be similar to the predictions published in 2015's Feedback Report Part B:
Not within the scope of this consultation – these impacts would either not change significantly compared with the original consultation, or would not change significantly from the results published in 2015's report.
- 1.17. Aircraft that are taking off from TAG Farnborough Airport, or those that are arriving to TAG Farnborough Airport from the northwest:
Not within the scope of this consultation – these impacts would either not change significantly compared with the original consultation, or would not change significantly from the results published in 2015's report.
- 1.18. Places in the new proposal where the flightpath flow and height would be similar to today:
Not within the scope of this consultation – these impacts would not change significantly from today.
- 1.19. Aircraft that are not using TAG Farnborough Airport, for example Heathrow, Gatwick or military arrivals or departures:
Not within the scope of this consultation – impacts attributable to these aircraft are not under TAG Farnborough Airport's direct control.
- 1.20. Extra runways at other airports:
Not within the scope of this consultation – the potential impact of a future runway is not under TAG Farnborough Airport's control, and will be subject to its own consultation in due course.

Where are we consulting?

- 1.21. We are consulting over a limited geographical area. This area was covered in the original 2014 consultation, but is limited to where the impacts are likely to be different from the predictions in 2015's Feedback Report Part B.
- 1.22. That feedback report illustrated the predicted flow direction, width and height in more detail, using coloured swathes and lines on maps to explain the likelihood of overflight. This document provides modified illustrations and maps.
- 1.23. See Figure 1 opposite for a map of the limited consultation area.
- 1.24. It covers the residents of 24 civil parishes, one in northern Hampshire, the rest in West Sussex. It also includes part of the South Downs National Park.
- 1.25. For aviation specialists, see Section 4 which describes proposed changes to airspace volumes.

TAG Farnborough Airspace Consultation

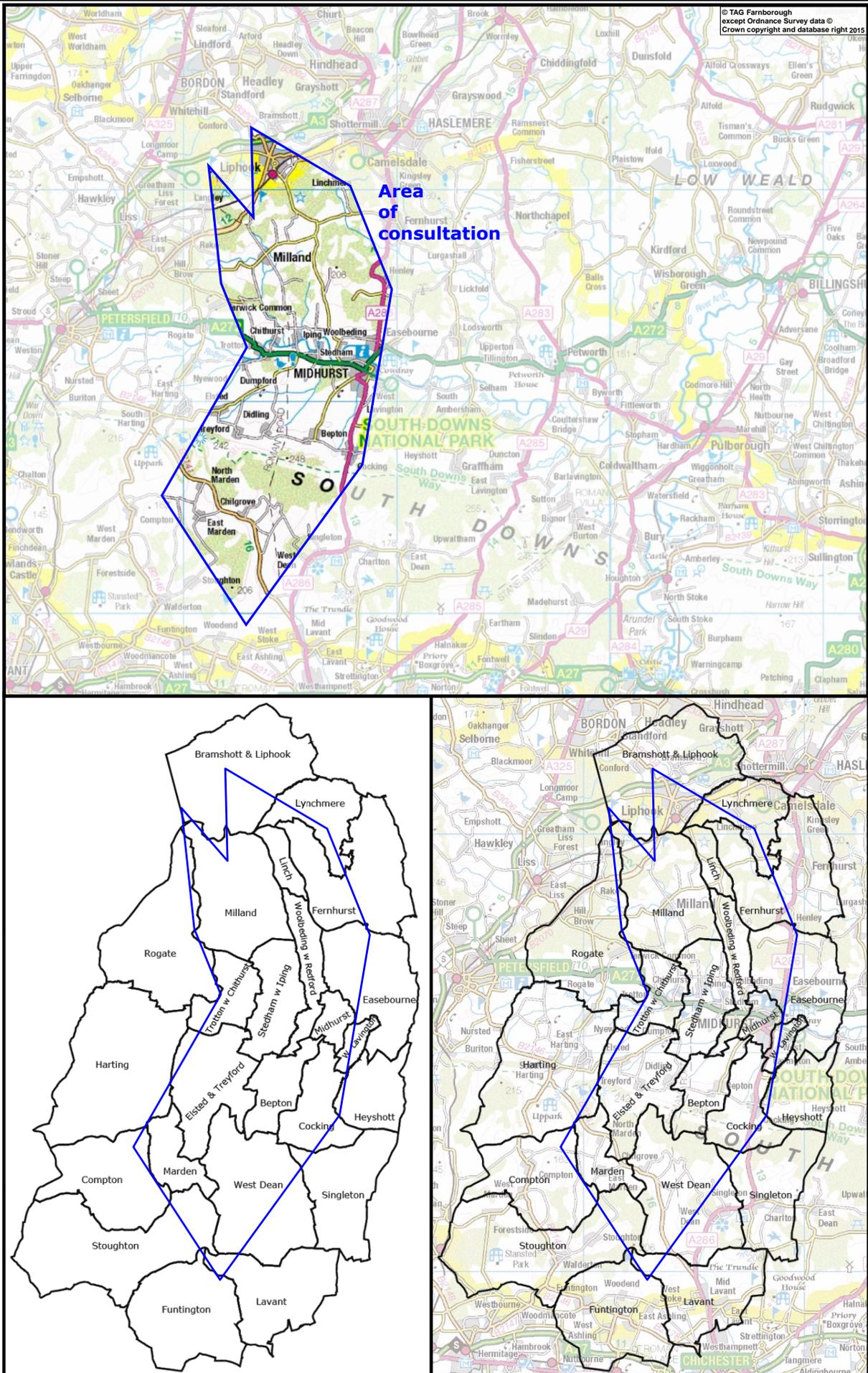


Figure 1 Area within the scope of this consultation (top map, blue shape). Consultation area (blue shape) overlaid with parish council boundaries (above).

2. Justifications and objectives

- 2.1. There has been no change to the overall justification for our proposal. The specific objectives for the flights discussed in this additional consultation are presented below – these relate only to arrivals to TAG Farnborough Airport from the south.

What are the justifications for this proposal?

- 2.2. To bring benefits to the air traffic control operation and to other airspace users in the region.
- 2.3. To further enhance aviation safety.
- 2.4. To reduce noise impact on the overall population.

What are the objectives of this proposal?

- 2.5. To increase the predictability and efficiency of the arrival routes from the south coast.
- 2.6. To reduce the complexity of aircraft interactions.
- 2.7. To establish a route structure that, as far as practicable:
- a. Avoids towns and villages below 4,000ft; and
 - b. Avoids major population centres between 4,000ft and 7,000ft.
- 2.8. To encourage the general aviation community to use our air traffic services.

3. Changes to Environmental Impacts

- 3.1. This consultation compares today's flightpath spread with a proposed new spread. It is only about aircraft arriving from the south coast, over West Sussex and Hampshire, on their way to TAG Farnborough Airport.
- 3.2. The flightpath spread would be different within the blue shape in Figure 1. This blue shape is our consultation area. We have considered the overall environmental impact in developing the proposal; this consultation is your opportunity to provide local knowledge, of which we may not be aware. We ask about the impacts the proposed change might have on you.
- 3.3. We welcome responses from parish councils, South Downs National Park, and members of the public who live or work in this area. If you are interested in the aviation technical aspect of this proposal, please see Section 4 from page 11.

How should you consider the different environmental impacts?

- 3.4. Some places would notice little change in impact due to this proposal. Some places may notice less impact due to this proposal. Some places are likely to notice overflights more often, which may be experienced as a change in noise impact, or visual intrusion of an aircraft silhouette.
- 3.5. Please look at the maps provided in this section – they are explained below. Use them to identify where you live, work, or spend your leisure time. Note the shape and extent of the blue area – this is the geographical limit of the consultation. *Places outside the blue area are not within the scope of this consultation.*
 - a. How do flights arriving at TAG Farnborough Airport from the south *currently* affect you?
 - b. Consider whether this proposal would *change* the impact on you - would it be less, about the same, or more than today? What additional information should we consider when finalising our proposal?
In your response, please consider how these impacts could be *different* from today – this consultation is about that difference, from your experience of today's overflights.
 - c. Remember the things that *are not included* in this consultation, for example aircraft using other airports such as Heathrow or Gatwick – revisit paragraphs 1.16-1.20 for details.

Today - Figure 2 overleaf

- 3.6. Today the variable paths flown by individual aircraft, when added together, comprise a very wide swathe. This swathe is made of three generic air traffic flows³. Figure 2 overleaf shows the overall spread of today's flights, and the colours show the typical altitudes of those flights.
- 3.7. The flows converge as they descend northwards, until they merge into one main flow which takes them towards the runway. This occurs in an area to the south of TAG Farnborough Airport, marked on Figure 2 as 'confluence for final approach'.

This proposal - Figure 3 overleaf

- 3.8. Under this modified proposal the main convergence would be more likely to happen further south, forming one main flow with two minor flows³. This would be positioned further west than today, as shown in Figure 3 on page 9.
- 3.9. Generally, the main flow and minor flows would still be spread over a wide area as illustrated by the arrows in Figure 3. The overall flow width would be narrower than today.
- 3.10. Figure 3 shows the spread expected as a result of this proposal, and the colours show the expected altitudes. In the blue consultation area flights would typically be at similar altitudes to today.
- 3.11. Overflight of the South Downs National Park would change as per the paragraphs above. You may wish to consider impacts on the South Downs National Park in your response.

³ Flow arrows: The placement of arrows on all of these maps does not imply that 'gaps' exist where overflight does not (or would not) occur. The arrows are illustrative of how the air traffic flows work, and do not represent the precise position of any particular flight.

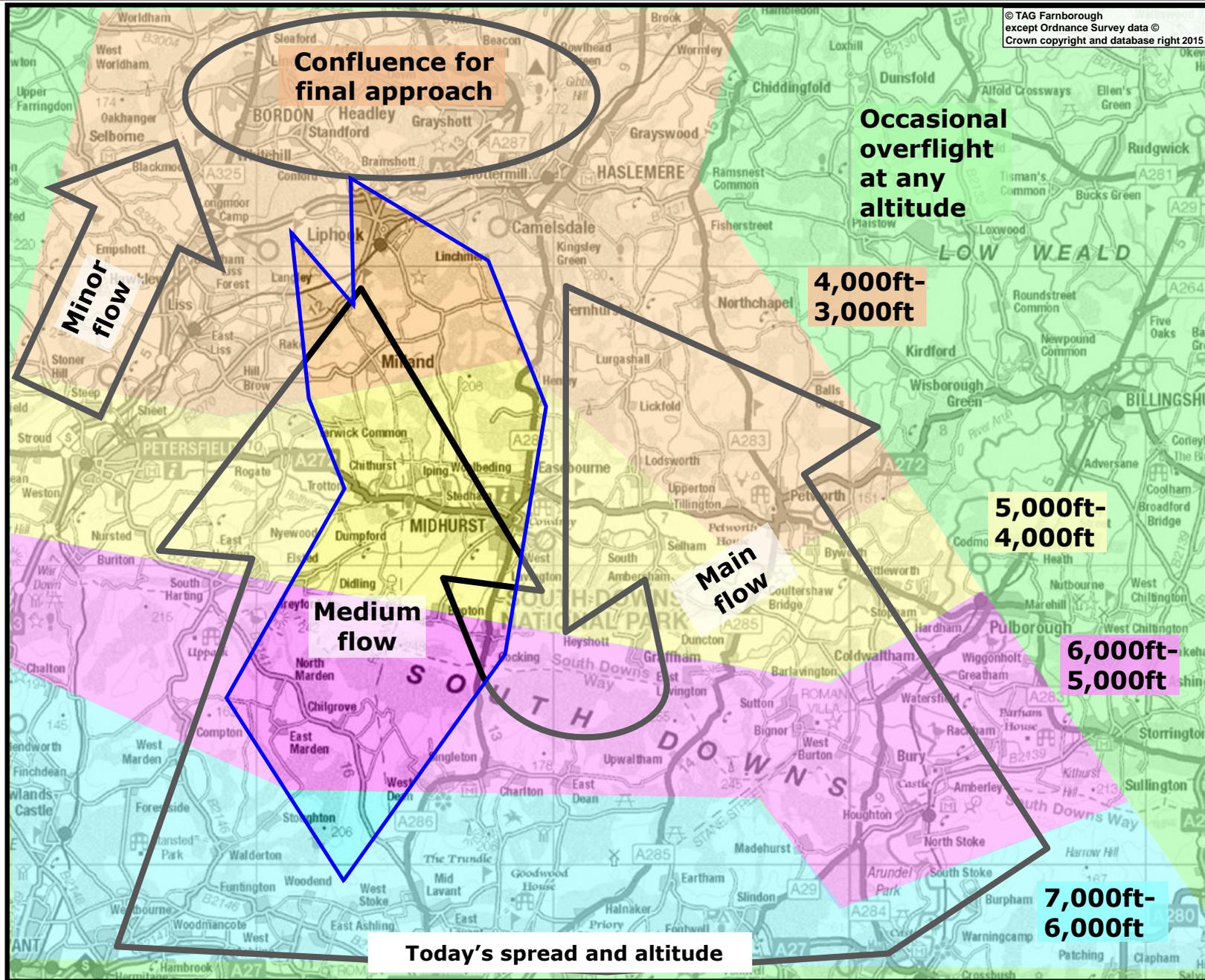


Figure 2 Typical flow, spread and altitude of today's arrival flightpath. This is the same map area as Figure 1.

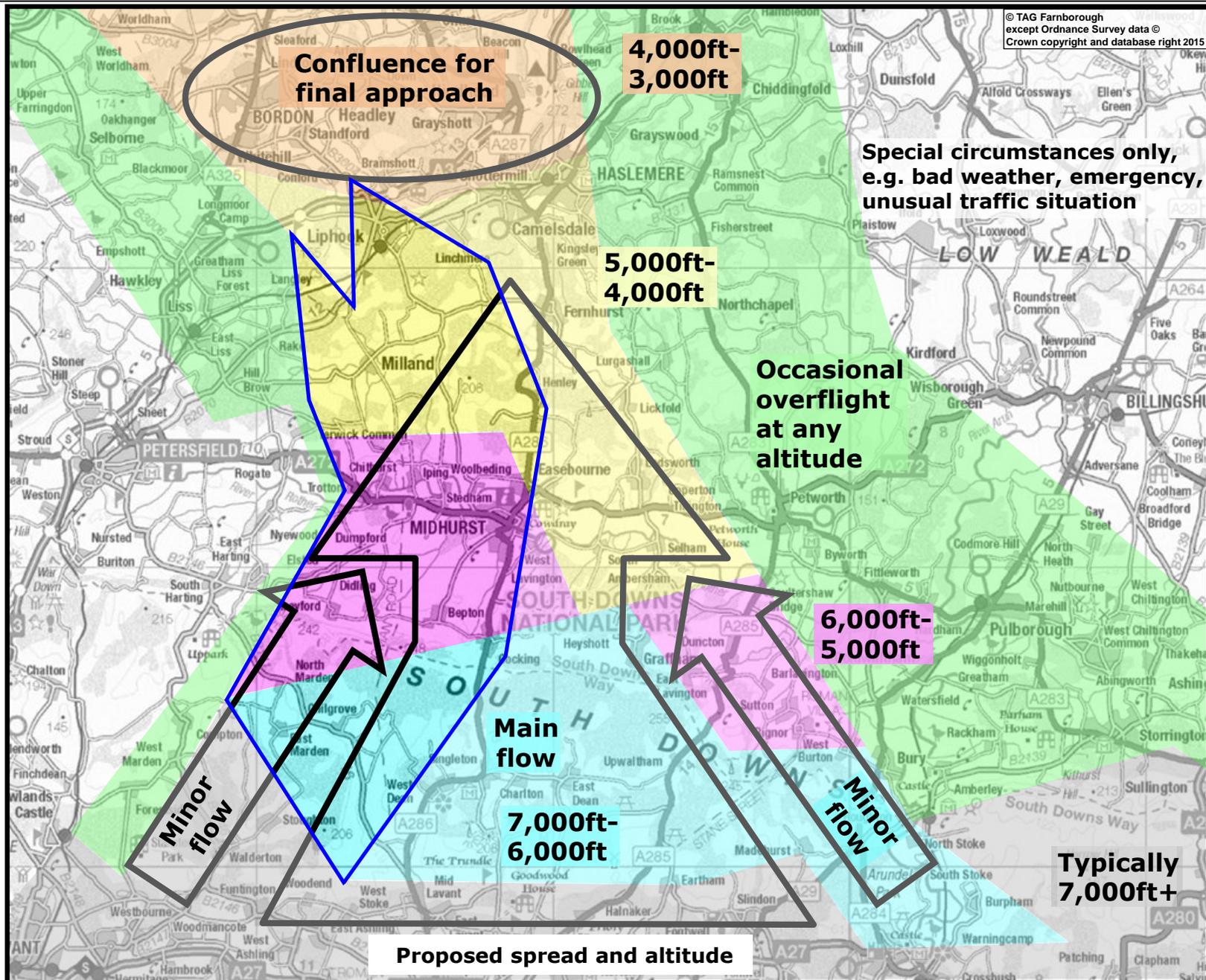


Figure 3 Typical flow, spread and altitude for this proposal. This is the same map area as Figure 1, Figure 2.

Supporting information

3.12. In order to explain the potential impacts we have provided tables illustrating the current and forecast numbers of flights, and the noise impact they could have on the ground when they are at different heights.

	Actual 2015	2019 forecast
Annual	5,212	7,200
Average per hour Weekday	1.13	1.56
Average per hour Weekend	0.70	0.97

Figure 4 Table: Numbers of flights from the south, arriving at TAG Farnborough Airport

Note 1: These numbers cover the overall spread of the arrivals flow shown in the maps. Arrivals from the southeast would be more likely to stay to the east of the spread, and could stay outside the blue consultation area entirely.

Note 2: The hourly numbers given in the table above are averages, based on the notified operating hours of the airport. Like any airport, there are busy periods where flights per hour are greater than average, likewise there are quiet periods where there are few flights, sometimes none at all. At Farnborough, these peaks and troughs are based on too many factors to be predictable, though weekends and public holidays tend to be less busy than weekdays. This would not change due to the proposal.

Height above ground	Most common types Executive jets c.75% of flights	Noisiest types Boeing 737, Airbus A320 c.10% of flights
3,000ft-4,000ft	57-60 dBA	61-64 dBA
4,000ft-5,000ft	Up to 57 dBA	59-61 dBA
5,000ft-6,000ft	55 dBA or below	57-59 dBA
6,000ft-7,000ft	55 dBA or below	55-57 dBA

Figure 5 Table: Typical loudest noise levels of arriving aircraft

Note 3: This table shows the potential noise impact of a single flight directly overhead at a given height. This measurement is known as L_{max} and the units are known as A-weighted decibels, hence these numbers are all L_{max} dBA. The colour of each row matches the colours in the altitude maps on previous pages. Flights that are not directly overhead would sound quieter.

Example sound	Noise level L_{max} dBA
Vacuum cleaner, 1m distance	70 dBA
Conversational speech, 1m away	60 dBA
Quiet office	50 dBA
Room in quiet suburban area	40 dBA

Figure 6 Table: Everyday sounds (context for equivalent levels)

Note 4: This table shows the typical noise impact of common sounds. These examples also use the measurement L_{max} dBA to allow for direct comparison.

Fuel consumption and greenhouse gas emissions such as CO₂

3.13. The likely lengths of flightpath (and likely altitudes) for the route arrangement described here are similar to those stated in the 2014 consultation. As a result there would not be significant differences between the two arrangements regarding predicted fuel use and emissions.

How to respond

3.14. Please see Section 5 on page 16 for details of how to respond to this consultation.

4. Changes to impacts on airspace users

- 4.1. This section discusses technicalities of airspace design and classification, comparing this proposal with previously-published designs. Here we use technical language associated with the aviation industry.

Who are we consulting?

- 4.2. We are consulting those who may be affected by changes to controlled airspace (CAS) dimensions under this modified proposal.
- 4.3. This includes members of the National Air Traffic Management Advisory Committee (including NATS and the MoD), and local airspace organisations in the region.
- 4.4. Individuals who use the airspace around Farnborough, and/or who use the cost-free Lower Airspace Radar Service (LARS) West, are welcome to respond.

How will we describe the differences?

- 4.5. In this section we refer to these airspace designs:
- a. Option 25, which is the airspace design originally consulted upon in 2014;
 - b. Option 34, which is the airspace design described in Feedback Report Part B in 2015; and
 - c. Option 36 proposed here⁴, which is a modified version of Option 34 but is 18% smaller in volume and 14% smaller in area.
- 4.6. The following pages compare specific regions of design Options 25, 34 and 36.
- 4.7. The proposed changes are from Option 34 to Option 36, as shown in full in Section 7 on page 18.
- 4.8. No other volumes are changed from Option 34. No SIDs, RNAV1 holds, RNAV5 holds or RNAV5 STARs are changed from Option 34.
- 4.9. In Feedback Report Part B paragraph 5.4.c, we described how we would review airspace arrangements. After the two recent simulations we revisited these principles:
- a. Is airspace still required, once our targets have been considered?
 - b. Could the airspace bases be raised further, whilst still meeting the objectives?
 - c. Could the airspace be reduced in size, whilst still maintaining safety?
 - d. Could the airspace be simplified, to reduce charting complexity?

How should you consider the differences?

- 4.10. Please look at the maps provided in this section.
- a. Use them to consider how Option 34 would impact your operation.
 - b. Then consider how Option 36 would impact your operation – would it be better, about the same, or worse than Option 34?
 - c. In your response, consider how Option 36's impacts would be *different from* those impacts of Option 34.
- 4.11. In addition to this, we are negotiating with representatives of GA organisations about other arrangements such as flexible use of airspace (FUA). These negotiations are ongoing with a view to further reduce the impact the entire proposal might have on GA operations. The design described here – Option 36 – is the baseline for these discussions.

⁴ Option 35 was an alternate design that was discarded – see paragraph 9.6.

South Coast, Southdown glider site at Parham, Goodwood aerodrome

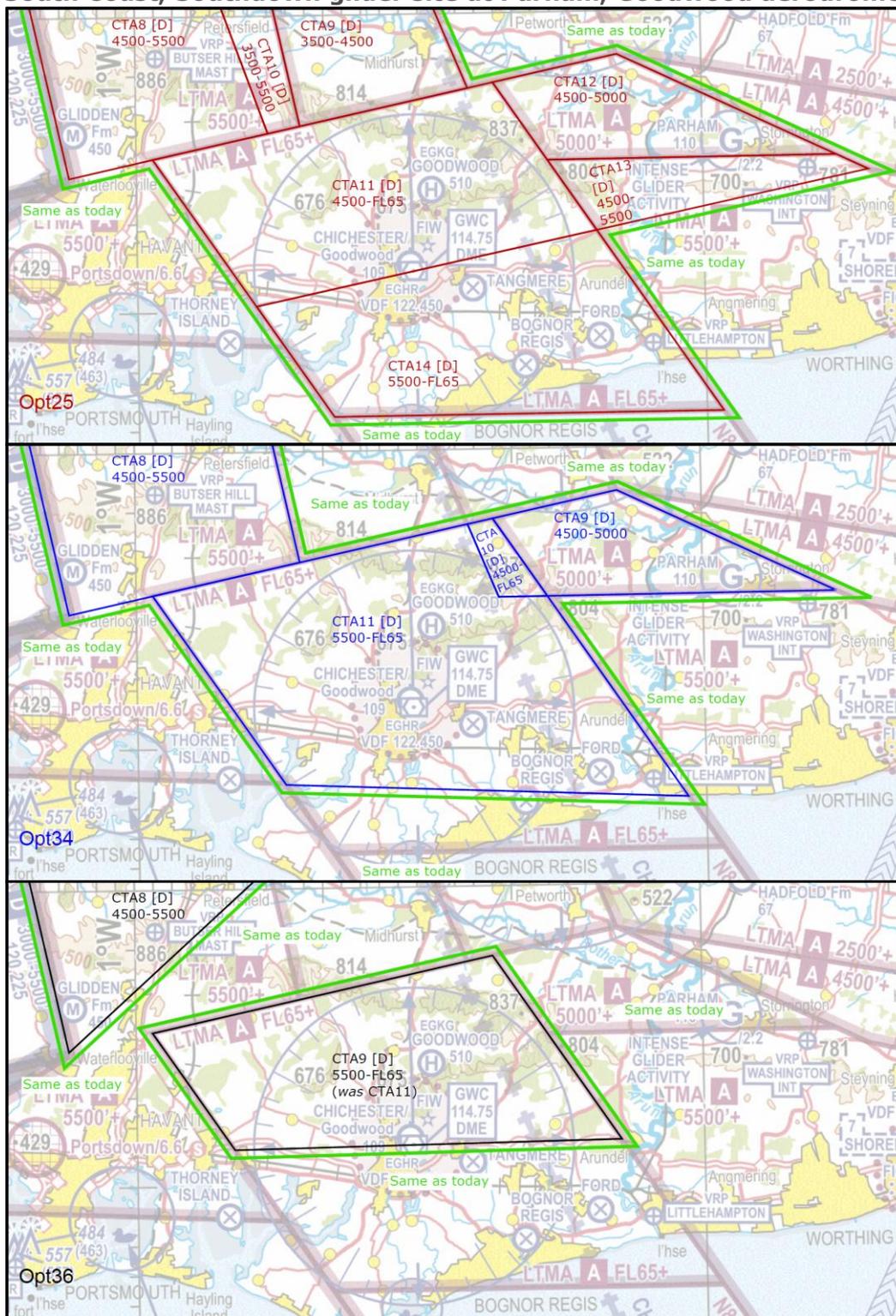


Figure 7 Comparison of Option 25 (top), Option 34 (middle), Option 36 (above)

- 4.12. The evolution from Option 25 can be seen, as volumes were reshaped. In Option 36's case, the airspace outside the CTA is entirely unchanged from today, hence the green outline.
- 4.13. Option 34's CTA9 and CTA10 have been deleted. This deletion further mitigates the impact on Southdown Gliding Club at Parham. Option 34's CTA11 has been significantly reduced in size by truncating it at GWC, and renumbered CTA9 for Option 36. This further mitigates the impact on users of Goodwood aerodrome, especially those wishing to climb out to operate to the south at higher altitudes. The east-west line through GWC simplifies navigation: south of the line the CAS base is LTMA FL65, north of the line it is CTA9 at 5,500ft.
- 4.14. Option 36's CTA9 remains Class D, accessible via clearance to all radio-equipped aircraft, including unpowered.

CTA 8 – South of Lasham gliding aerodrome

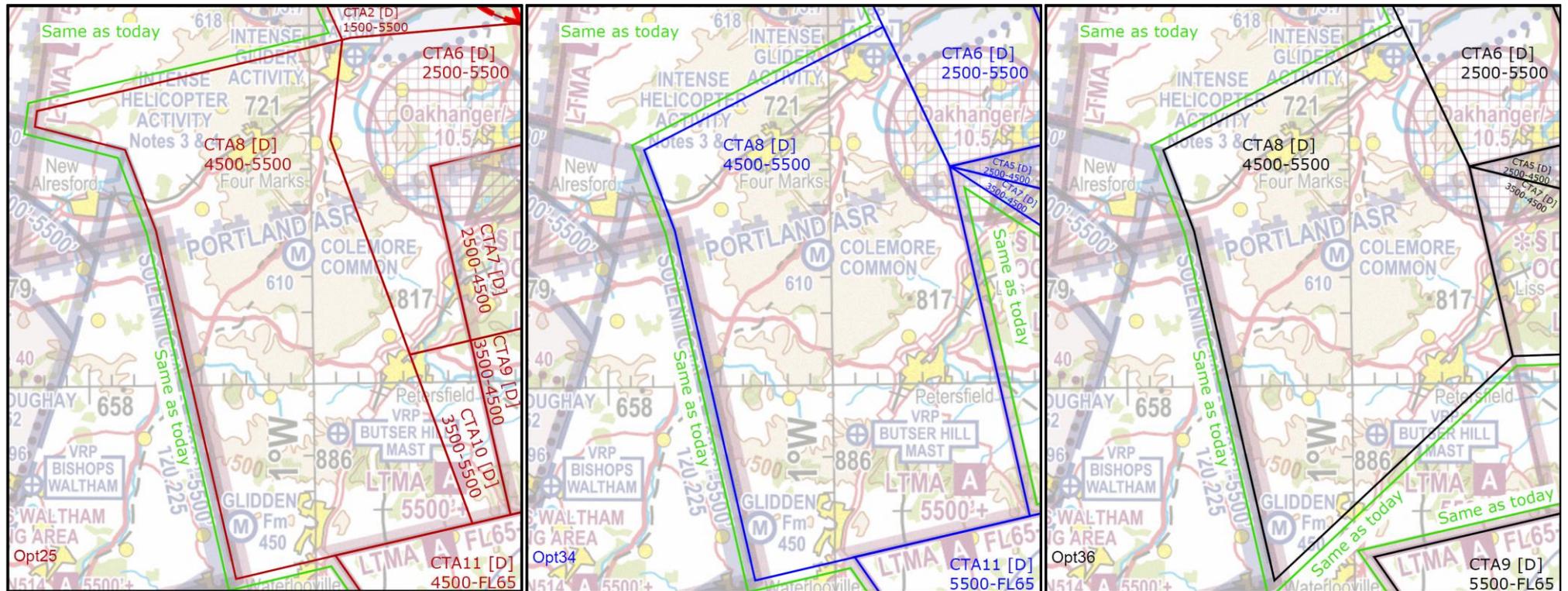


Figure 8 Comparison of Option 25 (left), Option 34 (middle), Option 36 (right)

- 4.15. The evolution from Option 25 can be seen, as volumes were reshaped. The green outlines highlight areas where there is no change from today's CAS.
- 4.16. Option 25's CTA8 was reshaped into Option 34's CTA8, now truncated into Option 36's CTA8.
- 4.17. This mitigates the impact on airspace users southeast of Petersfield and Butser Hill. It allows GA flights such as gliders to remain higher for longer before dropping below 4,500ft in order to remain outside CAS.
- 4.18. CTA8 remains Class D, accessible via clearance to all radio-equipped aircraft, including unpowered.

CTAs 4 and 7 – west of MID VOR

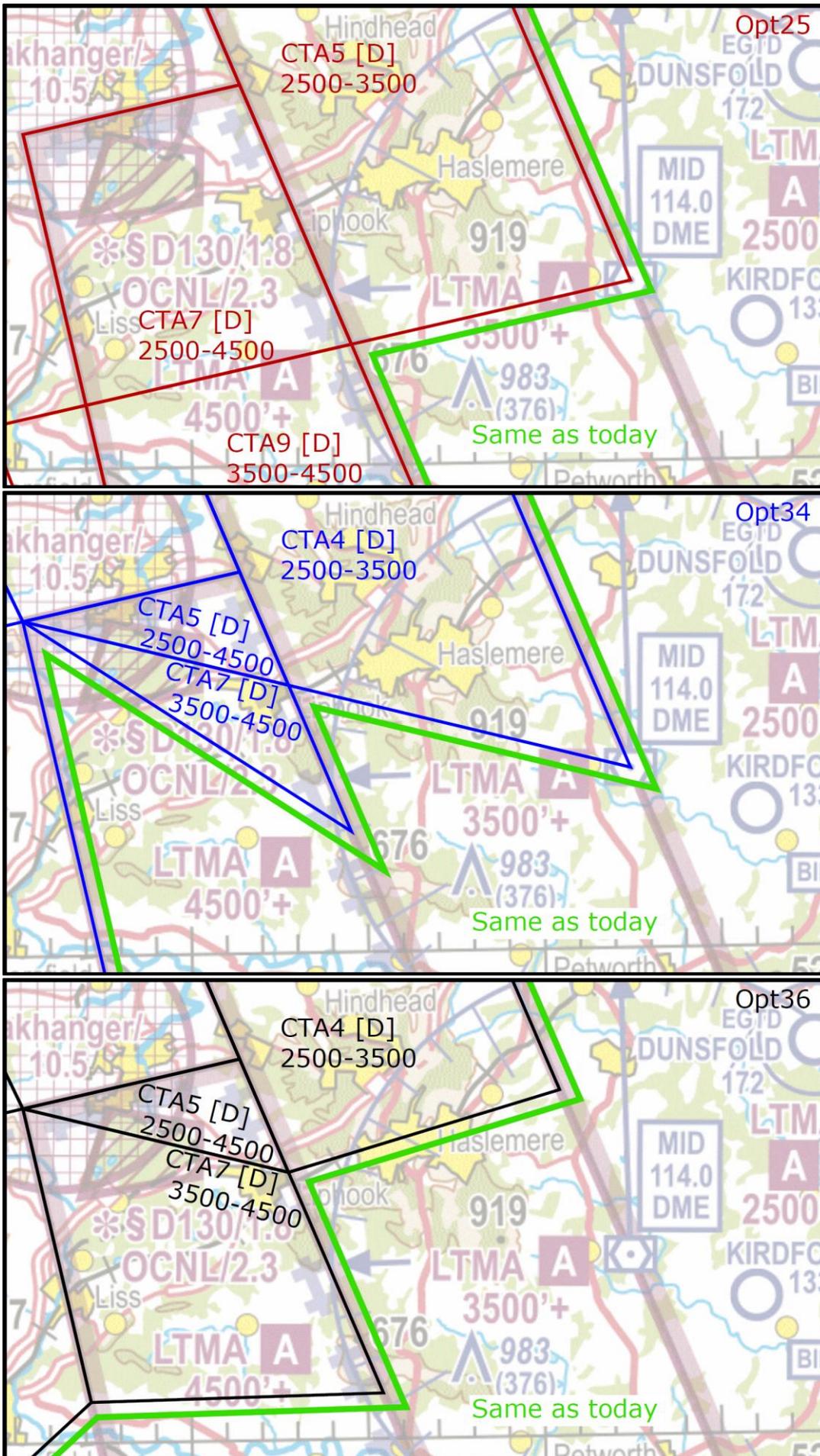


Figure 9 Comparison of Option 25 (top) with Option 34 (middle) and Option 36 (above)

- 4.19. The evolution from Option 25 can be seen, as volumes were reshaped. The green outlines highlight where there is no change from today's CAS.
- 4.20. Option 25's CTA5 was reduced into Option 34's CTA4, which has now been truncated into Option 36's CTA4.
This mitigates the impact on airspace users in the vicinity of MID VOR. Navigation becomes simpler because the boundary crosses Haslemere, in line with Dunsfold and Liphook.
- 4.21. Modifying the STAR to route further west has allowed deletion of, or a significant reduction in size of, the CTAs discussed up to this point. All of these reductions mitigate the impacts on airspace users.
- 4.22. Option 34's CTA7 has been widened into Option 36's CTA7. This wider volume is required to protect the RNAV1 STAR route in its new position further west than in Option 34, and also to provide vectoring space for Runway 06 arrivals. For a full overview, including the STAR position, see Section 7 on pages 18 and 19.
- 4.23. CTA7 remains Class D, accessible with a clearance to all radio-equipped aircraft, including unpowered.

Summary of Section 4

- 4.24. Most of the airspace changes result in further reductions in the need for Class D CAS.
- 4.25. CTA7 is the only place where slightly more Class D CAS is required for Option 36 than in Option 34. It remains smaller and higher than the equivalent CTA7 in Option 25, matching Option 25's CTA9 base altitude of 3,500ft (top of Figure 9).
- 4.26. As stated in paragraph 4.5.c, Option 36 is 18% smaller in volume and 14% smaller in area than Option 34 described in Feedback Report Part B in July 2015.
Additionally for comparison, Option 36 is 38% smaller in volume, and 31% smaller in area, than Option 25 as consulted upon in 2014.
- 4.27. This overall reduction in CAS requirement is a significant mitigation of impacts on airspace users in the region.

How to respond to this consultation

- 4.28. Please see Section 5 on page 16 for details of how to respond to this consultation.

5. How to respond to this consultation

Please read this page fully before you write your response.

- 5.1. There are two ways to respond:
- Write us an email: consultation@tagfarnborough.com with the subject 'Airspace Consultation'. Your email should not be larger than 5Mb. See below for a template, describing the things we need you to include.
 - Email is our preference. If you are unable to use email, send us a letter to the following address:

Airspace Consultation
TAG Farnborough Airport
Hampshire
GU14 6XA

Please use a recorded delivery service.

- 5.2. Consultation closes at 7pm on Wednesday 2nd November 2016.

Stakeholders that are mainly interested in environmental impacts

- 5.3. Section 3 is most relevant to you, starting at page 7. In particular, parish councils, South Downs National Park and members of the public who live or work within the blue consultation area shown in the illustrative maps. We are interested in your response even if you think it will not make any difference to you.
- 5.4. In addition to your name, please include the following specific information:
- Whether you represent an organisation such as a parish, or are writing as an individual.
 - The address (including full postcode) of the place most relevant to this consultation, for example your home or your workplace. This allows us to identify precisely where you think these differences could occur, and will make your response more effective.

Stakeholders that are mainly interested in airspace and aviation technical matters

- 5.5. Section 4 is most relevant to you, starting at page 11.
- 5.6. In addition to your name, please include the following specific information:
- Whether you represent an organisation such as a flying club, or are writing as an individual.
 - The Option 34 and Option 36 CTA volumes, as numbered in this consultation. This allows us to identify precisely where you think these differences could occur, and will make your response more effective.

Response template for all stakeholders

- 5.7. Using a standard format makes it easier for us to interpret responses, which in turn makes each response more effective. Please write your response like this:

Your name

Which organisation you represent, if any

Your address and contact details

Your comments, including the specific place(s) where you think there would be *changes* of impact due to this proposal.

Comments are also welcome if you think there would be *no change* of impact.

6. Compliance with the airspace change process, and what happens next

Compliance

- 6.1. If you have questions or comments regarding the *conduct* of the airspace change process (e.g. adherence to CAP725 guidance), please contact the CAA:

Airspace Business Coordinator

Ref: TAG Farnborough Additional Consultation

Safety and Airspace Regulation Group

CAA House

45-59 Kingsway

London

WC2B 5TE

Email: airspace.policy@caa.co.uk

Note: These contact details **must not** be used for your response to this consultation. If you do so, your response may be delayed or missed out.

- 6.2. The **original** eight-week consultation period was agreed with the CAA because this area has already been the subject of a TAG Farnborough Airport airspace consultation in 2014.
- a. **However following stakeholder comments at the first public meeting we have extended the consultation by four weeks, making the total duration twelve weeks.**

What happens next?

- 6.3. After the consultation period closes, we will analyse the responses and publish a report summarising the feedback received. We will include relevant information about the consultation in general, and any other information we think might be useful.
- 6.4. This will be called Feedback Report Part C. We expect it to be published in Autumn 2016.
- 6.5. We will then submit an addendum to our Airspace Change Proposal (ACP) to the CAA, based on this consultation document and Feedback Report Part C.
- 6.6. The CAA will then study the proposal, including this modification. The CAA will decide if it has merit, and will publish a decision on its website.
- 6.7. If the CAA approve this proposal, we plan to implement the changes not before March 2017.

7. Appendix: Aviation chart comparison

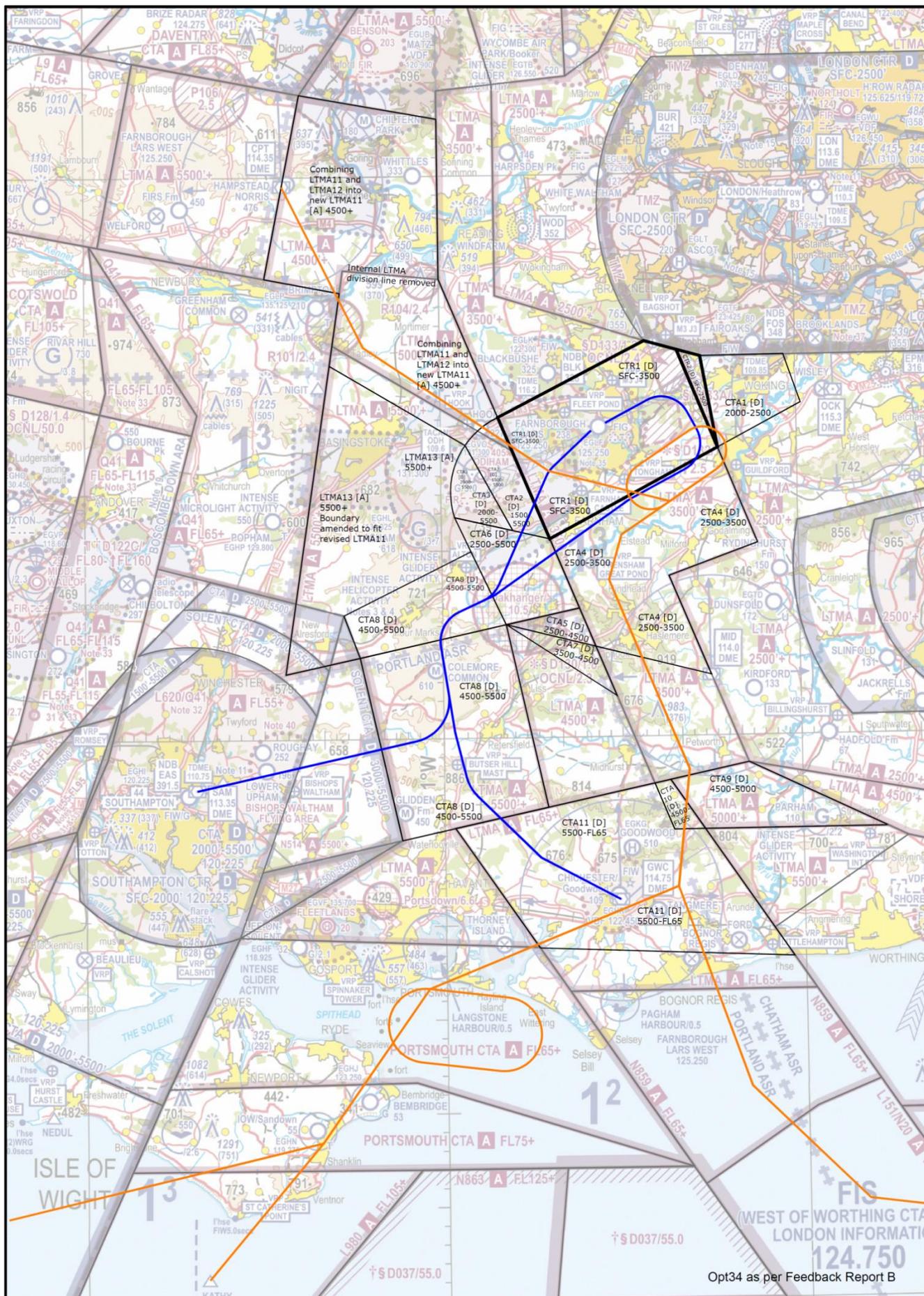


Figure 10 Overview of Option 34, including RNAV1 flight procedures

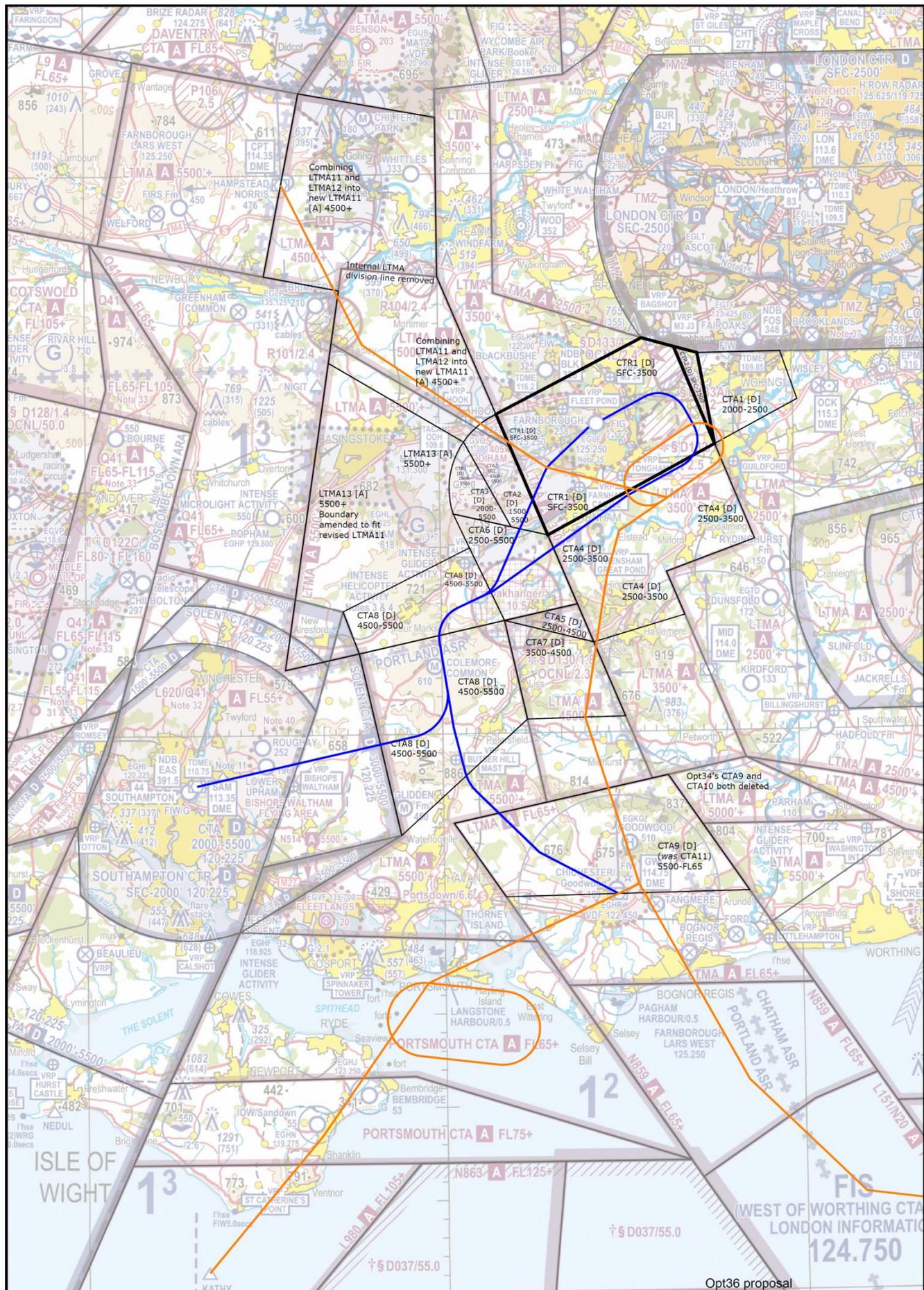


Figure 11 Overview of Option 36, including RNAV1 flight procedures

8. Appendix: Current radar track data

- 8.1. We took some of our radar data and used a special analysis tool to show where arrivals to TAG Farnborough Airport flew, over a five day period in June 2016.
- 8.2. This tool shows different colours depending on how often a place was overflowed.
- 8.3. The background map in Figure 12 below is the result of that analysis.
- 8.4. We then overlaid arrows illustrating the overall spread of the flightpaths, and added the blue consultation area.
- 8.5. We used the same analysis tool to identify typical altitudes of flights as they descended towards the airport.
- 8.6. We combined this spread-map with the altitude data to create Figure 2 on page 8.

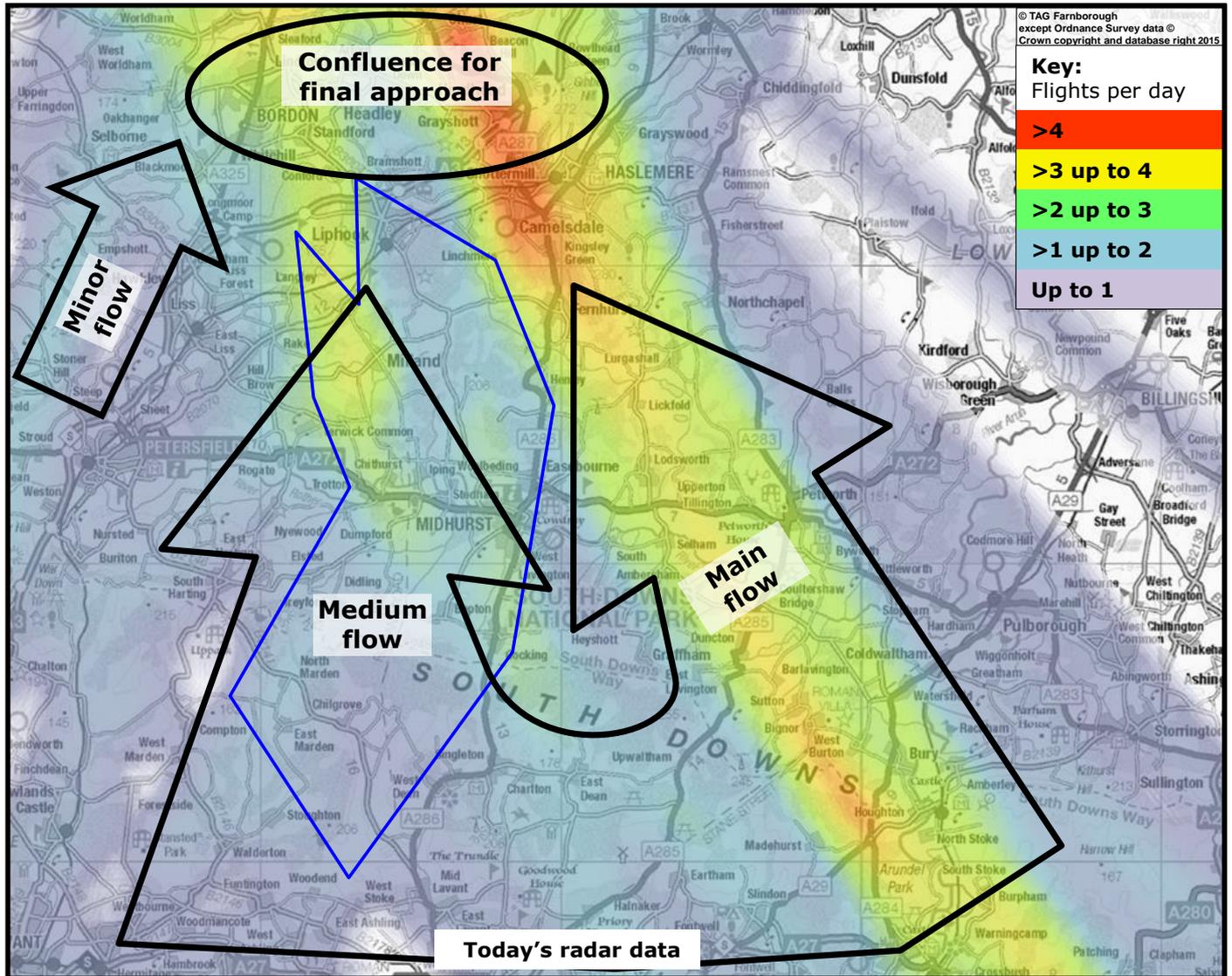


Figure 12 Radar track density data showing five days of arrivals (9-13 June 2016). This is the same map area as Figure 1, Figure 2 and Figure 3.

9. Appendix: Design options we also considered

- 9.1. This consultation document describes our preferred design for the modified arrival path and airspace arrangements. It is known as Option 36, and is the design that most achieves the benefits described in paragraphs 2.5 to 2.7.
- 9.2. This appendix briefly describes other designs we considered, and their evolution.

Keep the current arrival route arrangement:

- 9.3. Not progressed.
There would be no benefits as stated in paragraphs 2.5 to 2.7.

Keep the arrival route arrangement described in the original 2014 consultation:

- 9.4. Progressed. The benefits stated in paragraphs 2.5 to 2.7 would be partially achieved. That design was known as Option 25. Consultation feedback resulted in the evolution to Option 34 as published in Feedback Report Part B in 2015.

Use the arrival route arrangement described in Feedback Report Part B:

- 9.5. Progressed. The benefits stated in paragraphs 2.5 to 2.7 would be generally achieved. That design was known as Option 34. Analysis of the air traffic control simulations found opportunities for further enhancements, see paragraphs 1.9-1.10 on page 3. It was subsequently modified into Option 36 as per this document.

Use a route part-way between the Feedback Report Part B route and the route arrangement proposed in this document:

- 9.6. Not progressed. That design was known as Option 35.
Advantage – less additional consultation would be required, than this Option 36.
Disadvantage – unable to fully exploit the opportunities described in paragraphs 1.9-1.10.

End of document