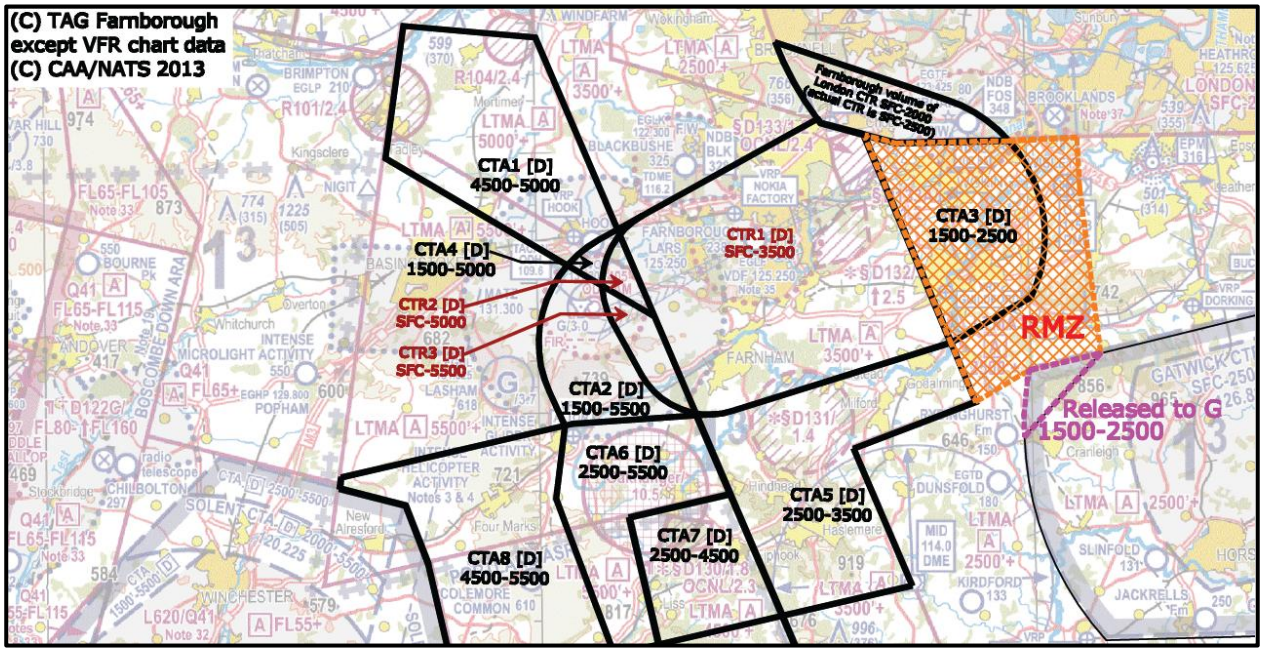
Farnborough Airport

Airspace Consultation

Part E: Aviation Technical Information

(This document uses technical language associated with the aviation industry)



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1. Introduction to Part E

1.1. This is Part E of the consultation material, which describes the proposed airspace changes for an aviation technical audience. It assumes that:

a. You have read and understood Part A; and

b. You have identified yourself or your organisation as one that has an aviation interest. Aviation may be your sole interest in this consultation, or it may be in addition to any local environmental interests discussed in Parts B, C or D. This part is especially of interest to commercial and GA flight operations, and to local aerodrome operators.

1.2. We will ask questions highlighted in a box like this.

1.3. Considerable care has been taken to make this consultation accessible to anyone who may wish to respond. The design and operation of airspace is, by its nature, a complex and technical issue. Part E is written for aviation experts and hence uses aviation-specific terminology which may not be familiar to laymen.

2. Justification for the establishment of IFR routes and CAS for Farnborough

2.1. As discussed in Part A, we gained planning permission to operate up to 50,000 movements per annum. In 2012 there were 23,000 movements at Farnborough, this is predicted to rise to between 32,000 and 50,000 in 2019.

2.2. The first thing we did was to assess the impacts of this growth on other airspace users, the existing CAS structures, and the wider route network.

2.3. Options that retain uncontrolled (Class G) airspace around Farnborough were considered at length – these are briefly explained below, including the 'do nothing' option. We considered what needed to be done in order to handle the forecast increase in traffic.

Concept one – Do nothing

2.4. We concluded that 'do nothing' is not a sustainable option. The existing airspace infrastructure is not currently robust enough to operate at the predicted 2019 number of TAG Farnborough movements, Specifically:

a. Traffic mix within the Farnborough operation and region is such that integration with other activities within Class G does not offer an efficient and sustainable operation;

b. Significant volumes of Class G operations occur in the immediate vicinity of Farnborough, without currently being afforded any structured method of integrating these with the IFR traffic;

c. Arriving Farnborough aircraft *staying within* London Terminal Control (LTC) CAS-enclosed flight levels to hold would be delayed in the PEPIS hold at or above FL70 whilst other Farnborough traffic is handled, and/or GA traffic is coordinated by LARS, and/or unknown traffic passes by. This would cause knock-on delays to LTC – even at today's activity levels, more than one airborne-holding Farnborough flight at PEPIS causes significant workload issues at LTC. If Farnborough gets busier *without* changing airspace arrangements, the likelihood of airborne holding at PEPIS would increase, delaying our aircraft, and the increased complexity at LTC would potentially delay other flights to other airports.

d. Arriving Farnborough aircraft *below* network (LTC) levels, i.e. those that are between PEPIS and the runway outside CAS, would be more likely to need delaying vectors, manual holding or orbiting. This would increase the likelihood of interaction with other GA users in areas where these larger, faster aircraft might not usually be encountered, with consequential issues of reaction, integration and safety. When these larger, faster aircraft operate outside CAS in the vicinity of GA they need to maintain the best visual awareness. This is done by operating at slower speeds than optimum, with reduced manoeuvrability due to flap/gear configuration. The cockpit visibility for aircraft are not primarily designed for the 'see and avoid' principle is also not comparable to that for a typical GA aircraft. These combined issues make it much more difficult for pilots of these aircraft, increasing their workload considerably.

Other GA users need to understand these limitations when operating in close proximity to Farnborough.

e. Departing Farnborough aircraft are currently regularly delayed on the ground, often on the runway engines running awaiting take-off clearance, whilst other Farnborough departures/arrivals are handled, and/or GA traffic is coordinated by LARS, and/or unknown traffic passes by. LTC cannot always accept multiple departures in quick succession, which occurs today from time to time. This scenario would get more likely when Farnborough gets busier as predicted - the likelihood of ground-holding would increase, delaying our aircraft, and the increased complexity at LTC could delay other flights.

f. In order to ensure separation from Farnborough's aircraft (which are generally fast moving executive jets, sometimes Boeing 737 or Airbus A320 sized), GA flights are managed and coordinated tactically. This can only occur ***if*** the pilot is communicating with Farnborough Radar ***and*** is willing to cooperate with temporary restrictions – these can, and do, occur anywhere in the vicinity of Farnborough, depending on the precise tactical situation at that moment. Unknown radar targets are to be avoided, as per standard ATSOCAS operations. These unknown targets, and pilots that are unable to cooperate with Farnborough Radar (e.g. due to their qualifications/equipage or the fact that our request would cause an unacceptable disruption to their intended task), are accommodated by ***penalising*** the Farnborough aircraft (delaying action, extended track miles, restricted climb/descent, orbits). This additional work is usually ***invisible*** to the unknown aircraft and other users unable to cooperate. It causes high workload for the controller and the executive jet pilot, due to multiple vectors in quick succession. The majority of pilots in contact with LARS do accept temporary restrictions whilst the Farnborough traffic clears their area. These temporary restrictions are usually of short duration, and result in some disruption to the GA pilot's desired flight.

Concept two – Other non-CAS structures and zones

2.5. Avoiding the establishment of CAS was looked at extensively, and options were considered using a combination of Transponder Mandatory Zones (TMZ) and Radio Mandatory Zones (RMZ) without CAS. In such an environment with predicted Farnborough traffic levels, a TMZ/RMZ combination would:

a. Enable Farnborough to know about all aircraft within the area concerned, but crucially would ***not*** enable controllers to effectively predict (or control) traffic interactions – Class G flight rules still apply

b. Inevitably require agreements to be made with local flying organisations that would allow certain flights (or categories of flights) to be exempt from the requirements. This reduces the controllers' confidence that they are fully aware of all flights likely to affect them, and that the primary radar targets observed would actually be complying with the mitigated requirements

c. Increase controller and pilot workload without providing a meaningful benefit

d. The current deconfliction minima would still apply. Controllers would benefit from knowing all the traffic operating in the region, but minima would still need to be achieved, and there would be no method for ensuring this beyond making requests of GA that could be refused; and

e. Initially *seem* more attractive and less restrictive when compared with CAS, however GA traffic could actually be offered more safe efficient integration and potentially more flexibility if CAS was present, and IFR flight paths could be guaranteed against a predictable GA traffic flow. VFR traffic operating in Class D CAS need be only passed traffic information against IFR traffic (and vice versa). Consequential restrictions would be diminished.

Concept three – CAS

2.6. We determined that our requirements would be most suitably met by the establishment of a CAS environment, with a small element of RMZ. This would provide the following benefits:

a. Arrivals to Farnborough would follow RNAV STARs (or if necessary be radar-sequenced) along a small number of predictable flight paths, reducing complexity and workload for the controllers and pilots. This would continue further up the ATC chain to LTC Swanwick, which would also benefit from workload improvements. In the event that airborne holding is required for any reason, this would occur inside CAS in a far more convenient location for both LTC and Farnborough, removing the risk of GA interactions, affecting fewer flights to/from other airports and reducing the overall complexity of their airspace also.

b. Departures from Farnborough would be far less likely to be significantly delayed on the ground. The systemisation and predictability of the proposed SID flight paths would allow each controller in the chain to know precisely where each departure would fly, how high it would be at each point along track, and what it would do next. This in turn would reduce the workload and complexity for Farnborough and LTC controllers, and would make the proposed intermediate link via Solent Radar (for about 65% of our departures) as simple as possible. It would also benefit RAF Odiham controllers and their interactions with our departures.

c. Pilots would be able to plan a predictable path which would reduce the likelihood of Farnborough-initiated temporary restrictions or disruption. CAS and CTRs would be available for (S)VFR transit as far as practicable by Farnborough Radar, subject to workload, VMC and associated consequences of SERA (see later). This would reduce the complexity of clearances (and reduce the chance of misinterpretation) and would allow the jet traffic the opportunity to use their climb performance to reduce interaction with other users.

d. Safety by design would normally suggest a larger CTR, but the retention of LARS West and the establishment of an RMZ to the east mitigates the infringement risk of the proposed smaller CTR. This would retain as much freedom as possible for GA aircraft whilst providing assurance to the controllers that the CTR would be unlikely to be inadvertently penetrated. We believe this is a good balance of GA freedom versus extensive establishment of CAS.

2.7. The designs described in Section 7 of this document developed from many options and took into account the needs of as many airspace users as possible.

2.8. The proposed classification of CAS below FL65 is Class D for the CTR and CTAs. Other classifications below FL65 would be either more restrictive for GA traffic (Class A, B, C), or would not support a predictable operation (Class E).

2.9. We are also proposing step-lowered Class A bases for airways Y8, L980, N514, N863, N859 and L151 over the coast around the Solent/Selsey Bill/Bognor Regis areas, in order to improve arrival and departure flows for Farnborough and arrival flows to Southampton/ Bournemouth. These would become additions to the adjacent Class A Worthing CTAs under the control of LTC.

2.10. The vast majority of GA in the UK operates over the mainland, however current Class G airspace over the Isle of Wight can be popular with GA up to the current base of FL105. Areas over the sea are less popular with GA.

2.11. We believe that, on balance, the majority of stakeholders have had their requirements met by the proposed designs. Where requirements have not been able to be met directly, several compromises have been incorporated into the design, mitigating the potential negative impacts on current GA activity as far as practicable.

3. Why choose Standard Instrument Departures (SIDs)?

3.1. Performance Based Navigation (PBN) SIDs to the RNAV1 standard are our preferred option. These require establishment of CAS, which matches our requirement to enclose and protect all routes to and from Farnborough.

3.2. This would improve the automation, systemisation and predictability of all departures. The CAS required for RNAV1 SIDs is the least possible.

3.3. Standard Departure Routes (SDRs), Omnidirectional Departures (Omnis), 'conventional navigation' SIDs and PBN SIDs were explored.

3.4. SDRs and Omnis were discounted as they are not suitable for flight-plan connection to the en-route network where the whole of the flight would be contained within CAS.

3.5. RNAV5 SIDs were discounted because their lower navigation standards would require enormous CAS corridors either side of the centreline in order to contain them. We always committed to reduce the impact on other airspace users by minimising the CAS 'take', and this would not be a reasonable way forward.

3.6. Conventional SIDs cannot be seriously considered because the CAA's policy is to replace existing conventional SIDs with PBN SIDs as opportunities arise over time. This means that new conventional SIDs would not be approved.

3.7. Higher categories of PBN such as RNP1 were considered. The advantages these would provide for Farnborough over and above the RNAV1 standard are small, and are outweighed by the more-common aircraft fleet equipage to RNAV1 standard. However, over time there is potential to refine the SIDs to a higher standard as the fleet equipage improves, and we reserve the right to explore that possibility.

3.8. Aircraft unable to comply with the RNAV1 standard would expect radar vectors, to follow the same track as the RNAV1 routes.

3.9. The most important issues for Farnborough departures are:

a. Noise impact in the vicinity of the airport;

b. The initial altitude to which aircraft may climb; and

c. The overall route, considering GA activity areas.

3.10. From a noise perspective, consideration was mainly given to the areas immediately surrounding Farnborough's climbouts, especially from Runway 24.

3.11. The initial altitudes to which departures climb are similar to, or higher than, today. The prediction is that ***actual*** departure climb profiles will be significantly higher and achieved earlier than today, once the departure is airborne and its 'fit' in the evolving tactical environment is identified (e.g. against Heathrow or Gatwick departures, or other Farnborough traffic). Farnborough would like to take advantage of the high performance aircraft utilising the airport.

3.12. Ideally, the routes would be direct to the airway network connectivity points but this would curtail and significantly disrupt GA activities, affect local communities and LTC operations. We believe we have struck a balance between these competing requirements, but such compromises inevitably means some changes to the ideal; in this case some of our proposed routes are longer in track length.

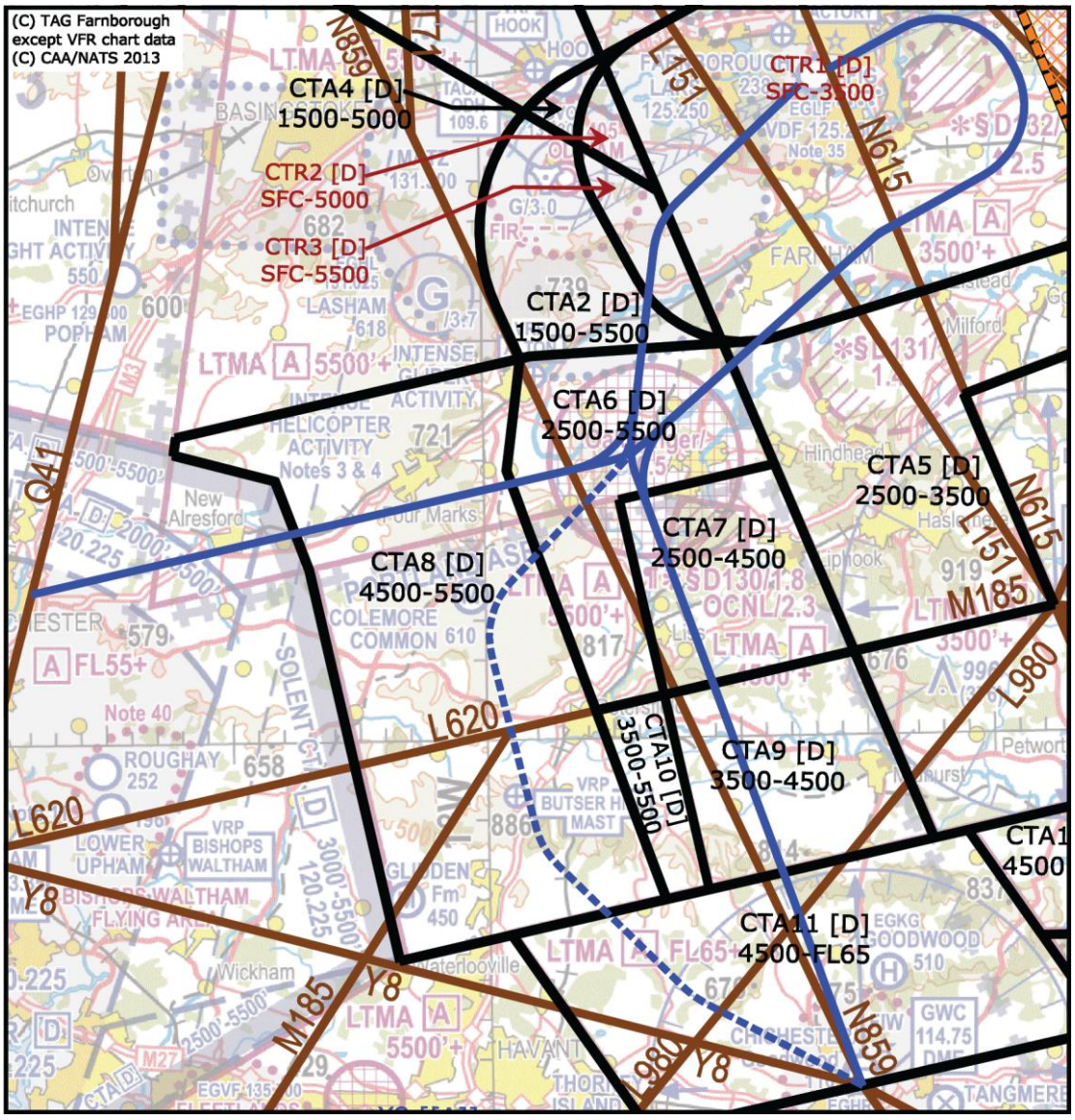

Figure E1: Schematic of proposed RNAV1 SIDs

Blue solid lines indicate the nominal centreline for the SIDs.

Blue dashed line is the alternate southbound SID should FUA be active to allow gliding in CTAs 9 & 10.

Airway centrelines in brown. Proposed CAS in black.

SIDs from Runway 06, in use 20% of the time – initial phase

3.13. The town of Farnborough surrounds the departure end and climbout for Runway 06 – there are no flight-paths that could reduce the over-flight of populated areas straight after takeoff.

3.14. The most logical conclusion for Runway 06 departures is to maintain the current legacy flight-paths for the initial phase:

a. Those that are over-flown immediately after takeoff would continue to be over-flown

b. No new areas that are not currently over-flown would be over-flown as a result; and

c. The current dispersal of traffic in a relatively wide U-shape would be concentrated into a tighter, more consistent U-shape, reducing the CAS requirement east of Farnborough and significantly reducing the likelihood of departures over-flying Woking and Guildford.

3.15. Today's northbound traffic from Runway 06 is directed towards CPT VOR when it has reached a position south abeam the airport.

3.16. Today's southbound traffic is directed towards GWC VOR when it has reached a position southeast of the airport, after completing the U-shape described in paragraph 3.14.c above.

SIDs from Runway 24, in use 80% of the time – initial phase

3.17. Under the climb-out of Runway 24 lies an unpopulated army vehicle training ground near the airport boundary extending to the southwest. To the west is the village of Church Crookham straight ahead, and the town of Fleet to the northwest. Today, these two populated areas are the most likely to be over-flown by departures straight after takeoff.

3.18. Today, departures are sometimes given a left-turn clearance to fly over the army land avoiding Church Crookham and Fleet, but sometimes must be given straight ahead or right-turn departures to avoid unknown traffic to the south or west.

3.19. It is possible using RNAV1 SIDs to formalise the avoidance of these populated areas the majority of the time by directing all Runway 24 departures to make a left turn straight after takeoff.

3.20. This would concentrate the flight-path at low altitudes over the large but unpopulated army training land, reducing the likelihood of over-flight of the populated village and town to the west and northwest.

3.21. Exceptionally, if RAF Odiham have a significant traffic numbers in their Runway 27 ILS pattern, these SIDs would need to be tactically modified so the first leg would be to climb straight ahead (as happens today), but these occurrence would be far less likely. Right turns after takeoff from Runway 24 would be extremely unlikely.

SIDs from both Runways – second phase, FUA not in use

3.22. The proposed SIDs would take the following path:

a. The departures would turn towards Oakhanger, avoiding Aldershot and Farnham (Runway 06) and Church Crookham, Fleet and Odiham (Runway 24).

b. On reaching Oakhanger, the departure would either continue climbing westwards towards Winchester joining airway Q41 and the main route network towards the southwest, north, and northeast, or they would turn climbing south towards GWC and the coast for the route network to the south.

SIDs from both Runways – second phase, FUA in use (30-80 days per year)

3.23. If the FUA was in use, only southbound GWC SIDs would be affected.

3.24. The proposed CTA9 and CTA10 would both be assumed to be occupied by gliders. The alternate (dashed blue) SID would leave Oakhanger to the southwest to Colemore Common into CTA8, turn south towards Butser Hill Mast then turn back towards GWC.

3.25. Subject to negotiation with the relevant association, this would be used between 30-80 days per year.

Non-RNAV compliancy

3.26. Aircraft unable to comply with RNAV1 standards (for whatever reason) would expect radar vectors for departure. Aircraft unable to meet the RNAV1 standard are relatively uncommon at Farnborough (circa 90% of the fleet is already capable). The remaining 10% non-certified will shrink over time as the fleet is updated.

4. Standard Arrival Routes (STARs) and the arrival pattern to final approach

4.1. PBN STARs to the RNAV1 standard are our preferred option. These require establishment of CAS, which matches our requirement to enclose and protect all routes to and from Farnborough. STARs to the RNAV5 standard are also proposed, to cater for Farnborough arrivals equipped only to that standard (approximately 10% of the fleet), and for Southampton and Bournemouth arrivals from the east. Radar vectoring would still regularly occur during the intermediate arrival phase in order to provide tactical benefits to all users.

4.2. This would improve the automation, systemisation and predictability of arrivals to all three airports, especially Farnborough. The CAS required for RNAV1 STARs is the least possible. The CAS required for RNAV5 STARs is much greater, which is why the RNAV5 STARs are proposed to end in a different location and much higher level, further away from the runways.

4.3. Higher categories of PBN such as RNP1 were considered. Farnborough's primary route to final approach would remain radar vectors to ILS. In the future we may consider RNP1 arrival transitions, potentially to SBAS or GBAS in lieu of ILS. The advantages these would provide for Farnborough over and above the RNAV1 standard are currently small, and are outweighed by the more-common aircraft fleet equipage to RNAV1 standard. However, over time there is potential to refine the arrival routes to this higher standard as the fleet equipage improves, and we reserve the right to explore that possibility.

4.4. The most important issues for Farnborough arrivals are:

a. Noise impact in the vicinity of the airport

b. The descent profile; and

c. The overall route, considering GA activity areas.

4.5. From a noise perspective, consideration was mainly given to the areas immediately surrounding Farnborough.

4.6. The prediction is that descent profiles will be higher for longer than today, once the arrival's 'fit' in the evolving tactical environment is identified (e.g. against Heathrow or Gatwick departures, or other Farnborough traffic).

4.7. Some of the routes are of similar track length, and others are longer than today in order to avoid curtailing popular GA activity areas, in particular between the west of the airport and CPT VOR. This is a compromise balance that we believe we have achieved, between the two competing requirements.

4.8. We believe the balance we have struck here is the right one.

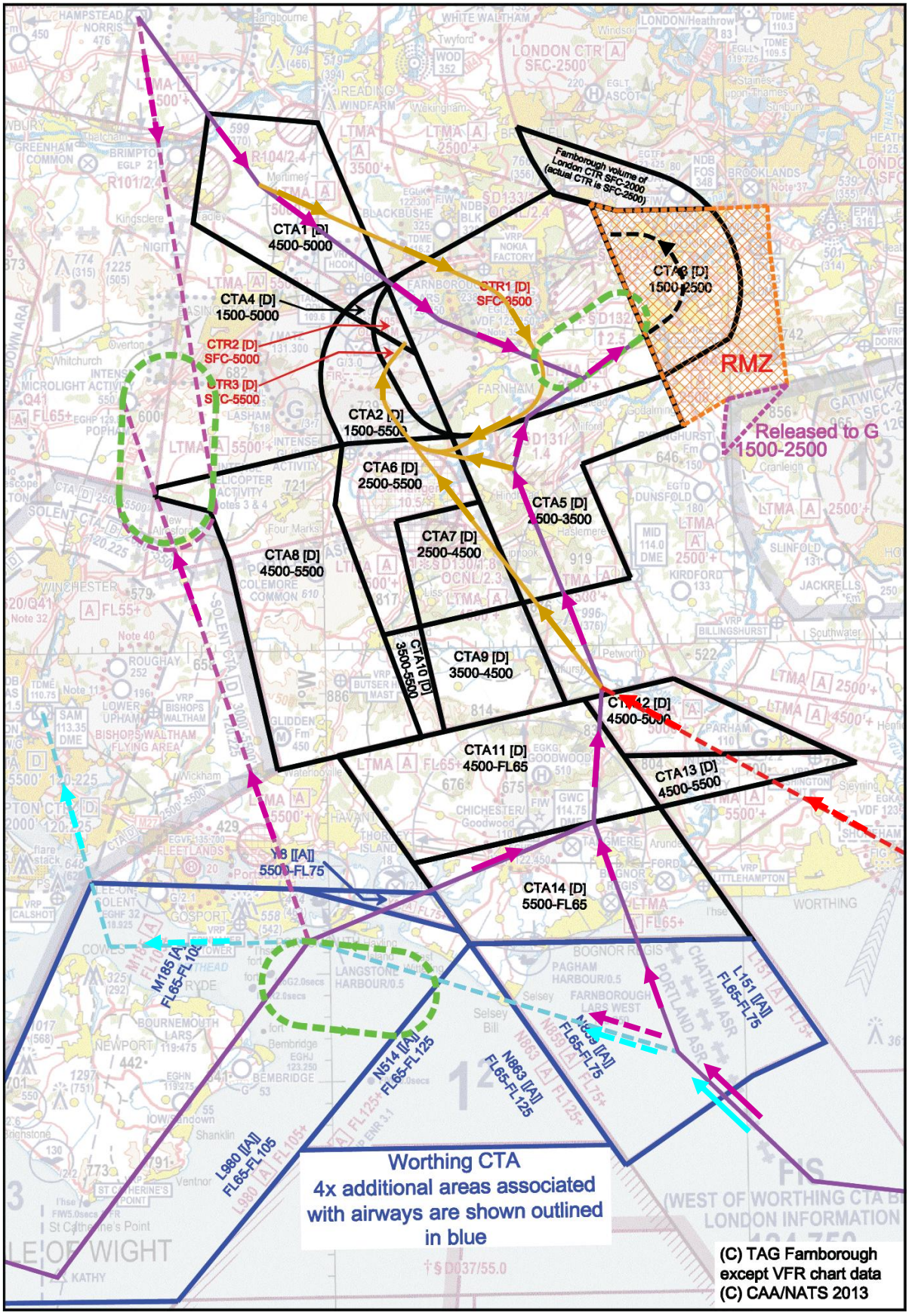

Figure E2: Proposed arrival routes schematic – see text overleaf for info on line colours

Arrivals from the North of Farnborough – Runway 24

4.9. RNAV1-capable arrivals from the north would flight plan CPT-new RNAV1 STAR, and follow the new STAR (purple solid line) to downwind left for Runway 24. Expect to terminate the STAR and take radar vectors along the black dashed line to final approach. The green dashed contingency hold at the end of the downwind leg would only be used in contingency circumstances.

4.10. RNAV5 arrivals from the north would flight plan CPT PEPIS as today, which would be converted into an RNAV5 STAR (purple dashed line towards the green dashed line PEPIS contingency hold). However, they should expect to take radar vectors along the RNAV1 STAR's track (solid purple line) to downwind left, then along the black dashed line to final approach.

4.11. These arrival procedures are very similar to the current all-vectored tracks.

Arrivals from the North of Farnborough – Runway 06

4.12. RNAV1-capable arrivals from the north would flight plan CPT-new RNAV1 STAR, and follow the new STAR (purple solid line) through CTA1. From there, expect to follow radar vectors along the brown line through the Farnborough overhead to downwind right for Runway 06, continuing to take vectors to final. The green dashed contingency hold at the opposite end of the downwind leg would only be used in contingency circumstances.

4.13. RNAV5 arrivals from the north would flight plan CPT PEPIS as today, which would be converted into an RNAV5 STAR (purple dashed line towards the green dashed line PEPIS contingency hold). However, they should expect to be vectored along the STAR track (solid purple line) then be vectored along the brown line through the Farnborough overhead as per paragraph 4.12 above.

4.14. These arrival procedures are similar to the current all-vectored tracks, though currently some arrivals join left base from CPT, which would be very unlikely under the proposal. The Farnborough-overhead turn is required in order to mitigate against excessive restrictions on GA operations in Class G west of RAF Odiham. The precise position of these legs is not as predictable as for Runway 24 due to the more tactical environment for Runway 06 arrivals. However, the general position for the arrival path would be much more predictable than today.

Arrivals from the Southeast of Farnborough – Runway 24

4.15. RNAV1-capable arrivals from the southeast would flight plan via a new RNAV1 STAR that crosses the south coast at Bognor Regis (solid purple line). However, it may be tactically advantageous to LTC to shortcut the STAR via the red dashed line over Shoreham, which is why CTA12 and CTA13 are that size and shape (see Figure E2). From this point, aircraft should expect to follow the STAR north then east, downwind left for Runway 24. Expect to terminate the STAR and take radar vectors along the black dashed line to

final approach. The green dashed contingency hold at the end of the downwind leg would only be used in contingency circumstances.

4.16. RNAV5 arrivals from the southeast would flight plan via a new RNAV5 STAR (purple dashed line, west towards the green dashed line contingency hold over the sea, then north to PEPIS green dashed line contingency hold). However, they should expect to be vectored along the RNAV1 STAR track (solid purple line) to downwind left, then along the black dashed line to final approach.

4.17. These tracks are similar to the current all-vectored tracks.

Arrivals from the Southeast of Farnborough – Runway 06

4.18. RNAV1-capable arrivals from the southeast would flight plan via a new RNAV1 STAR that crosses the south coast at Bognor Regis (solid purple line). However, it may be tactically advantageous to LTC to shortcut the STAR via the red dashed line over Shoreham, which is why CTA12 and CTA13 are that size and shape. From this point, aircraft should expect to take radar vectors along the brown line direct to right base. Sometimes it would be advantageous to the controller to keep the aircraft on the new RNAV1 STAR and then vector it left towards downwind right and right base from a point further north, as illustrated by the second brown line starting in CTA5. The green dashed contingency hold at the end of the opposite downwind leg would only be used in contingency circumstances.

4.19. RNAV5 arrivals from the southeast would flight plan via a new RNAV5 STAR (purple dashed line, west towards the green dashed line contingency hold over the sea, then north to PEPIS green dashed line contingency hold). However, they should expect to be vectored along the same tracks described in paragraph 4.18 above.

4.20. These tracks are similar to the current all-vectored tracks.

Arrivals from the Southwest of Farnborough – Runway 24

4.21. RNAV1-capable arrivals from the southwest would flight plan via a new RNAV1 STAR (solid purple line) that crosses the Isle of Wight towards a new contingency hold over the sea (dashed green line). From this point, aircraft should expect to follow the STAR east past GWC, then north, finally turning downwind left for Runway 24. Expect to terminate the STAR and take radar vectors along the black dashed line to final approach. The second green dashed contingency hold at the end of the downwind leg would only be used in contingency circumstances.

4.22. RNAV5 arrivals from the southwest would flight plan via a new RNAV5 STAR (same track as the RNAV1 STAR purple solid line) over the Isle of Wight towards a new contingency hold over the sea (dashed green line), then north (purple dashed line) towards the PEPIS green dashed line contingency hold. However, they should expect to be vectored along the RNAV1 STAR track (solid purple line) to downwind left as described above in paragraph 4.21, then along the black dashed line to final approach.

4.23. The current all-vectored tracks do not cut across to the east side of the proposed CAS before heading north, as these proposed STARs would. This is because the proposed SIDs would predominantly use the west side of the CAS, forming a one-way north-south system.

Arrivals from the Southwest of Farnborough – Runway 06

4.24. RNAV1-capable arrivals from the southwest would flight plan via a new RNAV1 STAR (solid purple line) that crosses the Isle of Wight towards a new contingency hold over the sea (dashed green line). From this point, aircraft should expect to follow the STAR east past GWC, then north and then take radar vectors along the brown line towards right base. Sometimes it would be advantageous to the controller to keep the aircraft on the new RNAV1 STAR and then vector it left towards downwind right and right base from a point further north, as illustrated by the second brown line starting in CTA5. The second green dashed contingency hold at the opposite end of the downwind leg would only be used in contingency circumstances.

4.25. RNAV5 arrivals from the southwest would flight plan via a new RNAV5 STAR (same track as the RNAV1 STAR purple solid line) over the Isle of Wight towards a new contingency hold over the sea (dashed green line), then north (purple dashed line) towards the PEPIS green dashed line contingency hold. However, they should expect to be vectored along the same tracks described in paragraph 4.24 above.

4.26. The current all-vectored tracks do not cut across to the east side of the proposed CAS before heading north, as these proposed STARs would. This is because the proposed SIDs would predominantly use the west side of the CAS, forming a one-way north-south system.

Arrivals to Southampton and Bournemouth Airports from the East

4.27. Maps of the expected radar vectored paths are shown in Part D.

4.28. All arrivals to both airports from the east would flight plan via a new RNAV5 STAR ending at SAM (light blue dashed line, partly masked by Farnborough STARs in dashed purple, across Selsey Bill).

4.29. Southampton arrivals should expect to take westward radar vectors along the Solent and then the north bank of Southampton Water to join the existing Runway 20 downwind left pattern. Arrivals to Runway 02[1] should expect vectors either along the Solent, staying over water until joining the existing downwind right pattern, or sometimes westward vectors over the Isle of Wight on a wide right base to join final approach at the Needles.

4.30. Bournemouth arrivals should expect to take westward radar vectors over the Isle of Wight to the Needles. For Runway 26, they should expect a right turn onto left base, joining the existing left base flow from the south, over Milford and Lymington. Runway 08 arrivals should expect to continue west towards Bournemouth, Sandbanks and Poole, joining the existing downwind right pattern.

1 Southampton recently consulted upon a Runway 02 GNSS approach. This is independent from, but complementary to, the proposal presented here.

4.31. These intermediate arrival paths are very different from current-day arrival paths, which route via GWC and stay north of the M27 towards SAM. However, they all join existing arrival patterns by the time descent to 4,000ft is given.

4.32. No other Southampton or Bournemouth arrival routes are affected. No departure routes from either airport are affected.

Non-RNAV compliancy

4.33. Aircraft unable to comply with RNAV1 or RNAV5 standards (for whatever reason) would expect radar vectors to final approach. Aircraft unable to meet the RNAV1 standard are relatively uncommon at Farnborough (circa 90% of the fleet is already capable). The remaining 10% non-certified will shrink over time as the fleet is updated.

4.34. Southampton and Bournemouth aircraft only need to meet the RNAV5 standard in order to fly within the LTMA, unless exceptional circumstances prevail. RNAV1 procedures are not proposed for these airports.

5. Balance employed when proposing dimensions of airspace structures, and connectivity

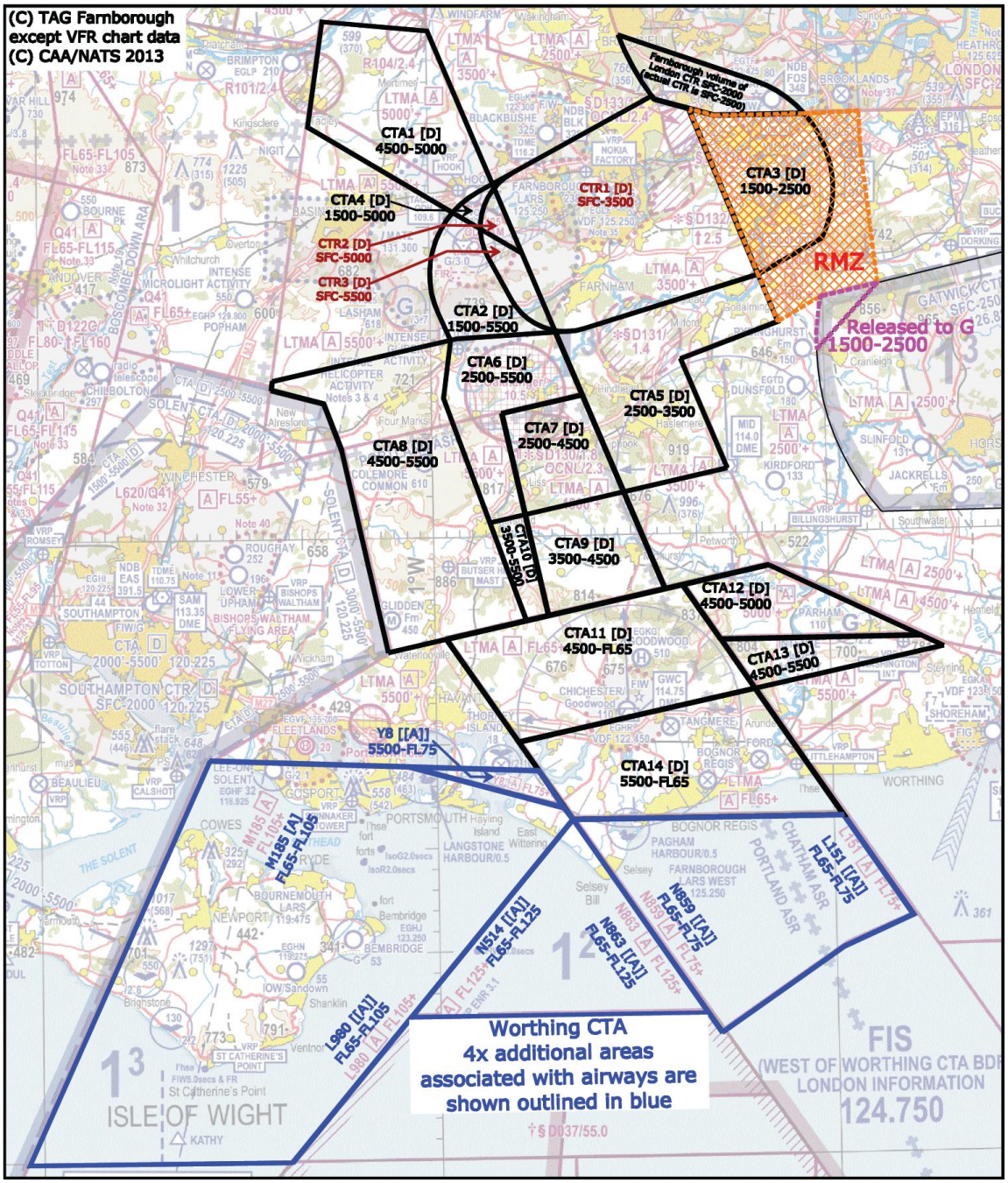

Figure E3: Proposed airspace structures overlaid on an extract of a VFR 1:500,000 chart

Black outlines illustrate proposed CAS boundaries.

Black text shows proposed Class D bases below existing Class A LTMA.

Dark red text shows Class D CTR areas.

Purple corner of Gatwick CTA *may* be released from Class A to Class G from 1,500ft-2,500ft (see paragraphs 5.41-5.44).

Orange area defines RMZ below existing LTMA and proposed CTA.

Blue outlines and text shows proposed Class A airway bases, below existing Class A airway bases, becoming part of the Worthing CTA Class A Complex.

5.1. This section is a summary of the reasons why the proposed airspace structures are the particular shape and size shown in Figure E3. This summary discusses how we balanced our requirements (based on the IFR routes already discussed) against those of other airspace users by minimising the CAS volumes we would need, and mitigating against the infringement risks of these smaller volumes.

5.2. More details of the evolution of the design are provided in Section 7, from Page E28.

5.3. The proposed CTA and CTR areas would be Class D, in order to accommodate VFR flight as far as possible, with the appropriate clearance. The majority of GA in this region occurs below 6,000ft.

5.4. Regarding balloonists specifically, access requests would be considered to any of the volumes as per conventional GA operations. As most professional balloon operations carry radios , Letters of Agreement could be arranged and progressed on request subject to negotiation.

5.5. Where airway bases are proposed to be changed (over the south coast/Isle of Wight), these would be FL65 apart from a tiny sliver of Y8 at 5,500ft, all of which would become parts of the Worthing CTA Class A Complex under LTC control.

5.6. An RMZ is also proposed, in the vicinity of OCK, shown in orange in Figure E3.

East of Farnborough

5.7. CTR airspace is proposed to protect IFR operations landing at, and taking off from, Farnborough. *CTR1 on* Figure E3

5.8. The lateral confines have been tailored to the minimum area required to facilitate tactical radar vectoring (arrivals and departures), proposed RNAV SIDs (see Section 3 on Page E8), and RNAV arrival routes (see Section 4 on Page E12). There is little requirement for airspace north of the extended centreline, due to already established noise sensitive areas and operational practice for aircraft handling in the area.

5.9. The northern boundary of the CTR is therefore only proposed to the minimum extent to protect the final approaches and climb-outs from Farnborough. The eastern edge of the CTR is aligned with existing airspace boundaries associated with the London TMA, for ease of promulgation. Blackbushe, after much discussion, would not be included within CAS, to give the based aircraft as much freedom as possible to operate independently as an AFISO unit. IFR Blackbushe aircraft joining or leaving airways would be integrated into the respective Farnborough pattern, benefitting from the enhanced efficiency and safety for as long as possible. Use of the Blackbushe ATZ would continue in a similar format to the airshow and CAS(T) operations.

5.10. The southern edge affords sufficient airspace to allow for both RNAV STARs and a radar-vectored pattern inbound for Runway 24, whilst still permitting GA access between it and the western edge of the Gatwick CTA. We have taken advice regarding the possible constriction of airspace in this region, and are negotiating with Gatwick regarding the release to Class G of the northwest corner of their CTA, in order to provide a wider Class G 'gap' between CAS volumes. We consider that an RMZ in this area would be beneficial to all.

5.11. The area of proposed CTA south of Fairoaks *CTA3 on* Figure E3 is proposed to allow unhindered GA operations to occur beneath IFR aircraft. It was considered during the earlier designs that this CTA should in fact be part of the CTR (i.e. having a base of the surface), in order to prevent/mitigate infringement risk to both this airspace and the London CTR. A base of the surface was not progressed due to the needs and requirements of Fairoaks (their operation would continue unhindered) and the possible impacts of any regulations introduced as a result of the Standardised European Rules of the Air (SERA), discussed later.

5.12. As part of the design process, the requirement to offer an additional transit route for GA VFR traffic was identified north of the extended centreline. Following extensive negotiation, a portion of the London CTR would be delegated to Farnborough up to 2,000ft, in agreement with LTC. *Shown between Fairoaks and Bracknell on Figure E3.* This area would technically remain part of the London CTR, and retain the classification of that area (currently Class A, however NATS has consulted on changing it to Class D as part of SERA and this is highly likely to be implemented late 2014). Fairoaks would receive an increased ability to transit via this area, more than what is possible today with LTC's Heathrow controllers. The project did consider GA requests for a formal release of this airspace to Class G, but this would expose Fairoaks to ATZ infringement risk, and would introduce additional complexity at the interface with the London CTR.

5.13. See Section 9 regarding recommended VFR transit routes through the proposed CTR via newly proposed VRPs.

Area West of Farnborough

5.14. The proposed CTR west of Farnborough *CTR1, 2, 3 on Figure E3* is the minimum amount of airspace required to protect a 3.5° glidepath for the Runway 06 final approach, and departing traffic from Runway 24. Consideration was given to raising the glidepath to higher angles, however this would not permit practical application of RNAV/RNP (such as SBAS/GBAS) arrivals in the future. Gliders from Lasham are the dominant GA user in this airspace and their presence has an effect on all users due to the vast numbers of aircraft they can have flying simultaneously. This affects RAF Odiham patterns, Farnborough patterns and other GA users. The proposed CAS is specifically designed to give as much access as possible to Class G for Lasham gliders. If you are a GA user we would welcome feedback on possible routes you might take through this Class G airspace and any reservations you might have about transiting Farnborough Class D as an alternative.

5.15. The southern edge of the CTR closes towards the western extended centreline – normally, each edge would remain parallel with the runway. This is a compromise which would reduce the volume of airspace converted from Class G, whilst remaining within acceptable criteria for radar vectoring.

5.16. The design of the western boundary *CTR2, 3 on Figure E3* is such that RAF Odiham remains entirely outside the CTR, allowing their requirements to be met to the maximum amount possible. However, the final approach to their Runway 27 and climb-out from Runway 09 would immediately penetrate the proposed CTR. We already work closely with RAF Odiham and would continue to do so (see later).

5.17. The CTA (base 1,500ft) west of the CTR *CTA2, 4 on Figure E3* is proposed for protection of the final approach for Runway 06. This is directly above RAF Odiham. An airspace sharing arrangement with gliding stakeholders is being considered, in order to allow access to this airspace, particularly when Runway 06 was not in use. By the nature of the operation at Lasham Airfield, a suitably robust mechanism for shared airspace ownership is yet to be identified, however we would welcome feedback. We considered establishing an RMZ in this area but felt this to be inappropriate due to the presence of Lasham gliders. We consider Lasham Gliding Society to be proactive, and would be able to manage their fleet appropriately to mitigate the infringement risk assuming this potential sharing arrangement progresses. CAS(T) arrangements for connectivity to airways would no longer be required, bringing benefits to Lasham gliders and other regular users throughout the year.

CTA area Northwest of Farnborough CTA1 on Figure E3

5.18. Aircraft arriving to Farnborough from the north currently do so by leaving CAS somewhere between CPT VOR and Farnborough's westerly extended centreline.

5.19. Various routing options were considered to enable these aircraft to be protected without making any amendment to airspace in this area. We considered these in order to avoid adverse impact on the diverse GA community in this area.

5.20. After significant investigation in combination with LTC controllers, suitable routing options were not identifiable within existing London TMA infrastructure in this area, including the Heathrow Radar Manoeuvring Area (RMA) for when Heathrow is operating easterly.

5.21. In order to continue to accommodate GA activity in this area, we have not proposed the most expeditious IFR inbound track for Farnborough Runway 06 arrivals from the northwest.

5.22. Instead, we have compromised the design to meet our minimum requirements in order to balance with those of the GA community, and to avoid overflying Fleet at low altitudes. We have proposed a very limited amendment to the volume of current airspace in this area.

5.23. A 500ft lowering of the existing CAS base (from 5,000ft to 4,500ft), together with a small 1nm lateral extension to the south, would enable arriving Farnborough traffic to remain protected by CAS whilst satisfactorily mitigating the potential impact on GA stakeholders.

Southern CTAs CTA5-14 on Figure E3

5.24. Volumes of proposed CAS south of Farnborough have been developed in order to allow our arriving and departing traffic to flow within a CAS structure, beneath current and future Gatwick and Heathrow traffic flows, whilst being as small as possible to reduce the change from Class G, mitigating the impact on GA.

5.25. The minimum lateral extent of each area is determined by interactions between Farnborough arrivals and departures versus Gatwick departures, and to a certain extent the Heathrow and Southampton traffic.

5.26. The bases of the CTA complex step upwards approaching the south coast. These CTA areas are proposed as Class D and the controlling authority would be Farnborough. CAS(T) arrangements for connectivity to airways would no longer be required, bringing benefits to regular users throughout the year.

5.27. We are considering Flexible Use of Airspace (FUA) in order to share CTA9 and CTA10 with the British Gliding Association, for their use under certain circumstances. Negotiations are in progress for this scenario, which would involve us using an alternate southbound SID routing via CTA6 and CTA8 then CTA11. This alternate SID is longer and would cause more fuel to be burned by our departures on days when this is active, if negotiations succeed.

Airways M185, L980, N863, N859 and L151 near/over the IOW/Solent/South Coast

5.28. We are proposing volumes of Class A CAS, base FL65, below these airways' existing Class A bases. There would be no change east of Littlehampton where the Class A base is 5,500ft, and no change west of Cowes/Lee-On-Solent where the Southampton CTR and Solent CTAs define the limit.

5.29. These connected volumes would accommodate traffic arriving into Farnborough, Southampton and Bournemouth from the east. These volumes are expected to be used regularly for the majority of this arrival traffic, moving the flow towards the coast or over the sea.

5.30. Within these connected volumes, a hold is proposed over the sea off the coast of Portsmouth as a contingency facility for Farnborough, Southampton and Bournemouth traffic FL70-FL100, with a FL65 CAS base. It is anticipated that the hold itself would be ***rarely*** used. New STARs would be drawn up to incorporate that contingency hold (see later for more information on STARs).

5.31. The classification of these airway base volumes is proposed to stay as Class A from FL65. The controlling authority would be LTC, and they would become associated with the Worthing CTA Complex. Discussion was undertaken with LTC with respect to Class C arrangements, but LTC explained that it would be difficult for their controllers to integrate successfully IFR and VFR aircraft in these volumes especially with low numbers and infrequent procedures. If you would be disadvantaged by Class A, feedback on access to these areas would be welcomed.

Funnelling effect in the vicinity of OCK

5.32. As part of the impact assessment of the various options considered, we are aware that the proposal has a potential 'funnelling' effect for aircraft that do not wish to, or are unable to, transit the proposed CAS with a clearance from Farnborough LARS.

5.33. We considered various methods to mitigate these impacts, such as:

a. Promulgation of suggested routes that would be segregated outside CAS. This has not been progressed due to the difficulty in mandating such routes in Class G

b. Defining multiple access points and routes inside the proposed CAS. This became a very complicated structure, and we agreed with GA stakeholders that it would be detrimental to pilot understanding

c. Defining a simple transit route structure. This is retained within the proposal, affording transit guidance around and through the proposed CAS, and existing line features retained for east-west transit

d. Continued provision of LARS West in the vicinity of the proposed airspace, to assist pilots in navigation around the proposal, mitigate risk of infringement, and provide guidance to assist pilots in operations in an area of high intensity. We have agreed to retain this service irrespective of ACP outcome

e. Considering establishment of a TMZ. This concept has been used in other areas in the UK to protect CAS from infringement. The continued service provision by LARS West achieves similar mitigation to infringement, and the adverse effect of non-transponder equipped transit traffic resulted in this not being proposed; and

f. Considering establishment of an RMZ. This would allow LARS West to provide traffic information, both generic and specific. In order to allow LARS West to mitigate the infringement risk, we are proposing a small RMZ east of the proposed CTR as shown in Figure E3.

   We welcome your feedback on these points. We will ask questions later in this document, in order to understand points of view of the GA user. We would especially welcome feedback from the microlight community, balloonists and gliders in addition to non-radio users.

5.34. A key issue for proposing an RMZ is the current aircraft equipage and pilot licensing of common airspace users in the region. This has influenced the areas proposed - many airspace users of areas to the west of the proposed CTR are unlikely to be able to comply with RMZ requirements. Exemptions could be considered, but would lead to a reduction in the efficacy of the RMZ[2].

5.35. RMZ principles for users in this area would be developed with GA associations, local users and the CAA.

5.36. Consideration was given to requirements of Surrey Hills Gliding Club at Kenley near Caterham, in a similar way to consideration given to Lasham to the west of the proposed CTR. The proposed RMZ boundary has been designed north through Ockham and south towards the Gatwick CTA corner, permitting non-radio operations from the east up to OCK to continue unhindered.

5.37. We are proposing relatively small CAS volumes that do not provide us with extensive internal 'buffers' to mitigate against potential infringing aircraft – infringement risk is an airport's major safety concern. This was a deliberate and balanced decision to minimise the extent of CAS required, resulting in less Class G needing to be converted to Class D.

5.38. We believe the proposed RMZ shown in Figure E3 is the smallest possible to reduce the risk of infringement from the east. We welcome feedback on the shape and extent of the proposed RMZ. It also mitigates the potential GA 'funnelling' effect in the vicinity of the northwestern corner of the Gatwick CTA between Dorking and Godalming. This is discussed further in paragraph 5.41 below.

5.39. We believe the establishment of a small RMZ region is a good balance between the competing requirements of:

a. ATC assurance against infringements (which would otherwise require more extensive CAS), versus

b. the freedom to operate unhindered within Class G (via no CAS and no restrictions at all).

5.40. Overall, we believe the best balance has been struck between the proposed establishment of minimal-sized CAS, the use of LARS, an RMZ to mitigate against infringements, and the freedom to fly in Class G around and below the proposed volumes.

5.41. Significant work was carried out in an attempt to secure the release of the northwestern corner of the Gatwick CTA to Class G from the current Class A 1,500ft to 2,500ft, offering a better selection of routes to the GA community below the LTMA Class A ceiling of 2,500ft, should they wish to transit in that vicinity. This area would also include continued provision of LARS service by Farnborough.

5.42. Gatwick Airport Ltd have kindly permitted us to consult on this, whilst we continue to negotiate for its formal release to Class G on behalf of the GA community.

2 See www.caa.co.uk/docs/33/20130809RMZPolicyDocumentFinal.pdf for more details.

5.43. If we are successful and Gatwick support the conversion to Class G, the funnelling effect would be mitigated by LARS, the new wider 'gap' below 2,500ft and the proposed RMZ.

5.44. If Gatwick are unable to ultimately support the conversion, the funnelling effect would remain, mitigated by LARS and the proposed RMZ.

Network connectivity

5.45. During the design process, routing structures were considered and developed, including those currently in use.

5.46. Predicted traffic increases precluded continued operation of today's routes, due to complexity to the northwest of Farnborough, associated with the existing traffic for Heathrow, Gatwick, Luton, Stansted and others.

5.47. The London Airspace Management Programme (LAMP) is planning various network changes to routes for all London TMA airfields, including Farnborough, and the route structures developed within this proposal need to be suitable for both our proposed implementation timescale and future LAMP timescales.

5.48. Combining this with the complexity mentioned in paragraph 5.46 above resulted in the requirement to move the current northbound departure flow, which currently routes towards CPT VOR shortly after takeoff.

5.49. The proposed route would instead take all departures southwest before joining airway Q41 northbound – for more details see the SIDs section later in this document.

5.50. This route change is expected to achieve an earlier climb than is possible today, and to a higher initial altitude. It also means less airspace would be required in a popular GA area, balancing our needs against GA activities.

6. Contingency procedures for Farnborough arrivals

Holding: Inbounds from the South

6.1. At Farnborough, the PEPIS hold is rarely used (once or twice a month). When holding does occur, it is usually because aircraft arrive earlier than planned, before the airport is open, or because low visibility (fog) prevents arrivals.

6.2. The previously discussed STAR fix for inbounds from the south also facilitates a new contingency hold over the sea. There would be four levels available (FL70 – FL100).

6.3. This southern holding facility would be shared between Farnborough, Southampton and Bournemouth, under the control of LTC Swanwick. It is not expected that this hold would be used regularly by any of the three airports.

6.4. Early arrivals to Farnborough from the southeast or southwest would be expected to hold at the new fix. LTC may decide to tactically reroute early arrivals from the north (via CPT) to the new southern hold, because holding at PEPIS usually causes disruption and complexity further up the air traffic control chain within LTC.

6.5. The new hold would reduce the 'damming' effect at PEPIS by moving the holding aircraft away from busy traffic flows.

Holding: Tactical contingency, near the Airport

6.6. For situations requiring tactical holding close to Farnborough the existing hold at TAGOX is currently available. Under this proposal it would be re-aligned/renamed and based upon a new holding fix, geographically very close to TAGOX. Realignment would support futureproofing the hold's design against RNAV criteria and would stay within the proposed CAS which is designed to enclose it.

6.7. This TAGOX-replacement hold would be available at 2,000ft and 3,000ft. Today, TAGOX is defined at 2,400ft, which is below current LTMA CAS.

Radio failure circumstances – Following RNAV1 STARs

6.8. If following any of the new RNAV1 STARs, it is expected that the full flight plan route to the TAGOX-replacement hold at 3,000ft near Farnborough would be flown.

6.9. There would be a new promulgated RCF route from the replacement hold - similar to today's route via the existing TAGOX contingency hold, detailed in the AIP pages AD-2-EGLF-8-1 to 8-6. The draft details of the radio failure route will be presented as part of the ACP.

Radio failure circumstances – Following RNAV5 STARs

6.10. From the north if following the new RNAV5 STAR to PEPIS, it is expected that the full flight plan route to PEPIS would be flown, to hold at FL70.

6.11. From the southeast and southwest if following the new RNAV5 STARs, it is expected that the intermediate contingency hold over the sea would be over-flown without entering that hold, and the STAR track to PEPIS would be flown, to hold there at FL70.

6.12. This would be followed by a new promulgated RCF route from PEPIS - this would be very similar to today's route via the existing TAGOX contingency hold, detailed in the AIP pages AD-2-EGLF-8-1 to 8-6. The draft details of the radio failure route will be presented as part of the ACP.

Likelihood of radio failure

6.13. The likelihood of these circumstances is extremely low - there is no record of the existing RCF route needing to be flown for a genuine radio failure.

7. Major design options (History)

7.1. Multiple versions of concepts were developed. In this document, they are referred to as 'Option (number)'.

7.2. Options 1 to 11 involved the consideration of the concepts described in Section 2, experimenting with elements from each concept and combining them at a very broad level.

Option 12

7.3. This was the first CAS option to be extensively taken to local stakeholders for input and consideration.

7.4. This option only attempted to manage traffic near to Farnborough and connectivity to the en-route network remained undeveloped. Routes for arriving and departing aircraft remained largely as today, however arrivals from the north to Runway 06 could not achieve a join onto final approach from the north.

7.5. This option also received challenge from stakeholders involved in GA activity due to the amount of required CAS northwest of Farnborough.

7.6. Because of the lack of connectivity to the network, this option was discounted.

Option 17

7.7. This option attempted to deliver network connectivity, by means of two laterally separated routes from the south (one for arrivals, one for departures), and a 'split' route to/from the north. The split route would be bi-directional, but achieve lateral separation between an arrival and a departure, by means of timed departure release.

7.8. The required CAS north of Farnborough was reduced by means of raising proposed CTA bases, and the 'Farnham orbit' was removed by establishing a northerly arrival track terminating at 10nm final for Runway 06 at 4,000ft.

7.9. This option received challenge from stakeholders involved in gliding activity at Lasham, due to the relatively low base of CTA areas in the normal areas for glider operations (3,500ft).

7.10. After further discussions with LTC Swanwick, the proposed network connectivity was also rejected, as complexity in the CPT VOR area had not been addressed.

7.11. This option was therefore not developed further.

Option 19

7.12. This option attempted to address the challenge received from the stakeholders involved in gliding activity at Lasham, in relation to the base of CTA areas in the immediate overhead of Lasham airfield.

7.13. Additional amendment was made to the volume of CAS east of Farnborough, previously shown with a 1,500ft CTA base. NATS LTC Safety Manager expressed an issue with infringement risk in this area, and requested the CTA be made a CTR, which the project agreed to.

7.14. In removing that CTA base, additional CAS was proposed north of Farnborough, to enable the retention of the bi-directional route for northerly traffic to have some lateral and vertical tolerance. The workload associated with separating arrivals versus departing traffic fell solely on Farnborough, and those members of the design team based at Farnborough were only persuaded to retain this option provided a commitment to carry out a radical redesign of existing London traffic patterns could be guaranteed.

7.15. The issues raised by the network connectivity regarding Option 17 remained unresolved, and the commitment to these radical changes could not be established within suitable timescales.

7.16. At this stage, gliding stakeholders also challenged the option, expressing concern about a proposed CTA (base of 1,500ft) to the east of Lasham.

7.17. Due to the difficulties in satisfactorily interfacing airspace, routes and procedures between Farnborough and LTC, this option was discounted

Option 20

7.18. The design attempted to address the issues of Option 19 with regard to route connectivity and interface with LTC. Advice was taken from the London Airspace Management Programme (LAMP) design team, so that a track for the northerly departures would route initially south from Farnborough then turn north later.

7.19. The re-routing of this traffic added additional considerations due to the interaction with existing Solent and en-route airspace. The workload associated with integrating this traffic was only envisaged with an overarching LTMA sector, described as 'Hampshire Radar'.

7.20. The routes for the majority of Farnborough traffic established to the south of Farnborough restricted the ability to manage traffic during unusual/intensive traffic volumes. Consideration was given to additional areas that could provide holding capacity, descent profiles suitable to match procedures in the en-route network and the Farnborough-proposed airspace. The proposal was to lower the existing airway base over the sea in the vicinity of the Isle of Wight, with provision of a contingency hold. This contingency hold will only be used for a maximum of four aircraft concurrently (FL70-FL100). This hold would only be used during abnormal operations at Farnborough, Southampton and/or Bournemouth. Abnormal operations would normally be associated with blocked runways or poor weather conditions, or an aircraft that arrived excessively early before the airport opened.

7.21. The option provided for extensive areas of Class G to be untouched, by routing the IFR traffic within L620, and proposed no additional airspace to protect northerly arrivals.

7.22. The project was unable to provide commitment to 'Hampshire Radar' as an operational concept due to a non-compelling business case at the time. Northerly arrivals leaving CAS had the same challenge as Option 19, and would not meet the TAG Farnborough requirements.

7.23. These difficulties resulted in Option 20 being discounted.

Option 21

7.24. Further stakeholder input from the gliding community in the South Downs area indicated that their operation would be affected by the proposals in Option 20.

7.25. In an attempt to enable their aircraft to route south of the River Rother, the Option 20 CTA area with a base of 3,500ft was trimmed to expose the River Rother to a higher base, mitigating their concerns.

7.26. Additionally, LTC project members suggested moving the departure track of aircraft ultimately routing to CPT to an area north of L620. This was to utilise an area where Heathrow and Gatwick traffic is rarely a factor, and it was suggested this would alleviate the workload issues associated with the 'Hampshire Radar' concept (Option 20) with the assistance of Solent Radar controllers based at Southampton ATC.

7.27. This option was not extensively exposed to local stakeholder input, as further analysis exposed an issue with achieving vertical separation for arriving and departing traffic from/to the south.

7.28. Farnborough controllers highlighted insufficient CAS available to satisfactorily descend into Farnborough, particularly on Runway 06. The draft additional CAS required was not justifiable when considering other stakeholders.

7.29. This option was further refined through Option 22 into Option 23 below.

Option 23

7.30. The additional CAS required by Farnborough controllers in order to vertically separate arriving and departing tracks from/to the south of Farnborough was delivered by providing an additional CTA base of 2,500ft and removing the previous change introduced in Option 21 for the benefit of gliding stakeholders in the South Downs area.

7.31. Consideration had been given to ensure SID tracks remain fully inside CAS until joining the en-route network, which is a theoretical requirement of CAP778. This would require even more CAS to be established unnecessarily, and would be too restrictive on GA activity. The project committed to seeking mitigation for CAP778 non-compliance. Existing SIDs across the UK replicate this situation in theory without excessive CAS, because the aircraft in reality are much higher than the minimum SID altitudes and remain within established CAS structures at all times.

7.32. Challenge from the GA stakeholders for this option remained as before (specifically the CTA base of 1,500ft west of Farnborough). Despite significant efforts, we have been unable to identify further enhancements to mitigate this issue, however we would welcome feedback.

7.33. Option 23 was refined into Option 24.

Option 24

7.34. An assessment of SERA and access arrangements generally for Fairoaks resulted in taking the eastern edge of the proposed Farnborough CTR and raising the base to 1,500ft (creating a CTA in that area instead). This had been a feature of earlier options.

7.35. SVFR lanes were developed for a north-south transit route, to facilitate capacity to GA.

7.36. Further input from LTC requested a re-alignment of the proposed contingency hold over the south coast. All previous options had this east of the Isle of Wight. Option 24 moved this further north in the Solent, south of Portsmouth and Hayling Island.

7.37. Option 24 was formally simulated by controllers from LTC Swanwick, Farnborough and Southampton at the NATS Air Traffic Control Simulation Centre. This established the overall concept, but highlighted a number of operational issues which needed to be addressed.

7.38. In addressing these operational issues, Option 24 was refined into Option 25 recommended for consultation (detailed in full below, and illustrated in Figure E3 on Page E18).

Option 25

7.39. Routes to and from the south were realigned to offer 5nm separation between them. This enables controllers to 'procedurally' manage the traffic, without coordination between Farnborough and LTC Swanwick, increasing traffic handling capacity, and reducing controller workload. The route realignment required a small additional area of airspace between Alton and Petersfield to comply with CAP778. This additional area was designed to keep Petersfield outside the proposed changes.

7.40. The precise position of the new routing points was chosen to ensure the previously released information was amended to the absolute minimum.

7.41. This option was simulated for a further period involving RAF Odiham, Southampton, Farnborough and LTC Swanwick.

7.42. The team concluded that this design would effectively deliver the requirements of most of the stakeholders. Therefore, the project team determined that Option 25 was the version to be taken to public consultation.

7.43. The challenge from gliding stakeholders regarding CAS proposed near their operation remains. Since the second simulation, it was suggested that using FUA to release CTAs 9 and 10 under certain circumstances could be workable, and an alternate southbound SID was designed in order to avoid those CTAs. We welcome feedback on the proposed FUA and alternate SID. An observer from Lasham Gliding Society was present at this simulation to enable their members to further understand the airspace usage.

7.44. Although Option 25 is a refined design, there are potential consequences to the SERA[3] Class D VMC criteria which must become UK law in December 2014.

7.45. The CAA intends to apply for a derogation from the VMC minima in advance of it becoming law.

7.46. The CAA's intent is to change the as-consulted-upon '1,000ft vertically, or 1,500m laterally, from any cloud' to the CAA-proposed 'if at or below 3,000ft and flying at 140kt or less, clear of cloud in sight of the surface'. The latter matches today's Class D VMC criteria.

7.47. Note that there is no guarantee that the CAA will be successful in its derogation. Therefore we present Option 25 in two states: one where SERA is implemented with the VMC criteria derogated as above (our preferred outcome) and one where SERA is implemented where the CAA have been unable to secure derogation. SERA's major effect would be on the availability of VFR flight within the CTR with respect to transit requests.

The tables below explain the Farnborough design team's interpretation of the impact SERA would have, for each volume of proposed CAS.

a. Table E1 details the impacts for the proposed CTR assuming derogation is successful and VFR is available most of the time.

b. Table E2 details the impacts for the proposed CTR should the CAA fail to secure derogation and VFR is available less often.

c. Table E3 details the impacts for the proposed CTAs.

3 Standard European Rules of the Air, specifically the impact of SERA.5001 vs the current UK-filed Difference to ICAO Annex 2 Table 3-1. The CAA seeks derogation to preserve this Difference, allowing continued application of the VMC at Rules of the Air 2007 Rule 27(3) within Class D airspace.

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
CTR1 CTR2 CTR3 Class D SERA Derogation Successful	Minimum CTR to protect IFR arrivals and departures for both Runways, compliant with CAP778 requirements.	Transit aircraft require clearance to enter airspace.	Proposal would establish a (S)VFR transit corridor through the airport overhead. VFR conditions would be common. Controller capacity exists to afford transit requests. SVFR conditions would be less common. Such transits may be restricted during periods of IFR operation at both Farnborough and RAF Odiham.
		RAF Odiham pattern penetrates the CTR.	Local procedures and Letters of Agreement permit airspace access for RAF Odiham.
		RAF Odiham ATZ partially in CTR including 618VGS/Kestrel operations	Letters of Agreement delegate a volume to RAF Odiham for VFR operations. Western edge of CTR designed to exclude RAF Odiham overhead from CTR.
		Aircraft routing WOD – OCK effectively 'blocked' without a transit clearance	Volume of London CTR delegated to Farnborough. Associated procedures introduced to permit (S)VFR transit of the delegated airspace.
		Blackbushe ATZ partially in CTR	Letters of Agreement delegates a volume to Blackbushe for VFR operations. Southbound departures during SVFR conditions would likely be restricted. VFR conditions more common, SVFR conditions less common
		Aerobatic operations commonly occur within the SE corner of the proposal	VFR entry requests can be made to Farnborough. Suitable segregation of operations against IFR patterns will be required. In SVFR conditions there would be more restrictions, unless IFR traffic was not expected. VFR conditions more common, SVFR conditions less common
		Danger Areas EGD132/133/133A are within the proposed CTR	Local arrangements with the Danger Area Authorities would continue
		Fairoaks traffic may wish to route via the CTR proposal	London CTR delegation utilised to afford Fairoaks an entry/exit route, based on line features, avoiding the CTR area. In SVFR conditions there would be a reduction in capacity within the delegated area. VFR conditions more common, SVFR conditions less common

Table E1: Option 25 Impact Analysis – CTR assumes SERA Class D VMC derogated to permit VFR flight clear of cloud in sight of surface

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
CTR1 CTR2 CTR3 Class D SERA Derogation Unsuccessful	Minimum CTR to protect IFR arrivals and departures for both Runways, compliant with CAP778 requirements.	GA Transit aircraft require clearance to enter airspace.	Proposal would establish a (S)VFR transit corridor through the airport overhead. VFR conditions would be less common. Controller capacity exists to afford transit requests during these conditions. SVFR conditions would be more common. Such transits may be severely restricted during periods of IFR operation at both Farnborough and RAF Odiham.
		RAF Odiham pattern	As per Table E1
		RAF Odiham ATZ	As per Table E1
		Aircraft routing WOD – OCK effectively 'blocked' without a transit clearance	Volume of London CTR delegated to Farnborough. Associated procedures introduced to permit (S)VFR transit of the delegated airspace. SVFR conditions would be more common. Such transits may be severely restricted during periods of IFR operation at both Farnborough and within the London CTR.
		Blackbushe ATZ partially in CTR	Letters of Agreement delegates a volume to Blackbushe for VFR operations. Southbound departures during SVFR conditions would likely be restricted. SVFR conditions more common, VFR conditions less common
		Aerobatic operations commonly occur within the SE corner of the proposal	VFR entry requests can be made to Farnborough. Suitable segregation of operations against IFR patterns will be required. In SVFR conditions there would be more restrictions, unless IFR traffic was not expected. SVFR conditions more common, VFR conditions less common
		Danger Areas EGD132/133/133A	As per Table E1
		Fairoaks traffic may wish to route via the CTR proposal	London CTR delegation utilised to afford Fairoaks an entry/exit route, based on line features, avoiding the CTR area. In SVFR conditions there would be a reduction in capacity within the delegated area. SVFR conditions more common, VFR conditions less common

Table E2: Option 25 Impact Analysis – CTR assumes SERA Class D VMC criteria for VFRs to remain 1,000ft vertically, or 1,500m laterally, from any cloud

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
CTA2 CTA4 Class D	Required to protect Runway 06 arrivals. Standard CAP778 containment rules reduced with lateral boundary proposed to be 2nm away from nominal track of arrival (usual requirement 3nm). Possible increase in Farnborough ILS glide angle to avoid CTA creation, or to restrict size was considered but not progressed. Airspace share with gliding activities considered and being progressed.	Farnborough pattern vectoring area is restricted	Procedures to allow vectoring closer to the edge of airspace than normal, with mandatory traffic proximity warning to IFR pilots.
		Highly restrictive to normal gliding activity in that area	Whilst a formal airspace sharing arrangement has not currently been developed, we will engage with the gliding community further to establish if a robust mechanism could be developed to allow regular access to this CTA when it is not required for IFR protection. Farnborough would consider an airspace access/sharing agreement during significant activity dates (competitions etc.)
		RAF Odiham underneath CTA, and common circuit patterns transit its lateral area	Local procedures and Letters of Agreement permit airspace access to RAF Odiham, with suitable coordination.
		618VGS/Kestrel area of operation within the proposed CTA	Local procedures and Letters of Agreement permit airspace access. Current Visual Approach procedures during Runway 06 operations mapped across to new proposal.
		Transit traffic may be 'blocked' without a suitable clearance	Local education and publications to encourage pilots to utilise alternative transit routes around the CTA. These would be through the Farnborough overhead (subject to Table E1 and Table E2), or with LARS West, routing west of Lasham. Existing unit practice to warn pilots of high traffic density, and other operations (i.e. gliding at Lasham) remain in place.
CTA3 Class D	Protects Runway 24 arrivals and 06 departures. Originally considered to be part of CTR in order to mitigate infringement risk - this was discounted due to adverse effects on GA activities, and converted to CTA.	Fairoaks operations route underneath	Letters of agreement and procedures to permit Fairoaks to operate under the CTA, which were extensively used during Olympic airspace, and shown to be robust.
		Funnelling point created proximate to the NW corner of the Gatwick CTA	The project considered release of part of the Gatwick CTA to Class G to widen the gap between the two airspace structures. This is under negotiation (see paragraph 5.41). LARS West service provision to assist pilots in situational awareness in the area. Creation of RMZ to: • ensure transit pilots are able to be informed about each other; and • mitigate the infringement risk.

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
		Commonly used Helicopter routes within the London CTR exit in the vicinity of this CTA	Common levels used would either be below the CTA, or transit issued by Farnborough in advance of leaving the London CTR.
CTA1 Class D	Protects IFR arrivals from the north, whilst still avoiding significant airspace 'take' from Class G operations	GA activity impacted by base lowered by 500ft Additional 1nm of lateral footprint to the south	Base lowering held at only 500ft, and the proposed area would be Class D to facilitate VFR transit requests when no IFR aircraft are expected. IFR aircraft would be transferring from LTC to Farnborough within this CTA, and provision of traffic information on VFR flights would not always be possible.
CTA5 CTA6 CTA7 Class D	To enable IFR sequencing, with particular reference to Runway 06 where inbound and outbound traffic will require to cross tracks. Additionally to protect outbound traffic for both Runways and enable sequencing of Runway 24 arrivals. Laterally dimension required to create two routes separated by 5nm, to ensure the interface with London Control is robust.	Base would be lowered from LTMA levels to a significant level for GA traffic	Class D airspace proposed, allowing (S)VFR transit when able. Area proposed is the minimum volume to meet ATC requirements. Any increased complexity in the ATC system would reduce overall capacity for other airspace activities.
		Lateral funnelling of transit traffic wishing to route N–S towards Solent CTAs and Lasham	Such traffic may be better served routing via the proposed (S)VFR transit lane through the Farnborough overhead (subject to Table E1 and Table E2). Service provision by LARS West will be retained.
		Gliding operations aiming to return from the NW to Parham (and other sites SE) would be unlikely to be able to route underneath this area, and make it back to destination.	Design proposals, specifically CTA8, CTA9 and CTA10, permit deviation from a direct route. Whilst not ideal, other options do not provide suitable segregation of IFR and other activities.
CTA8 Class D	Provides airspace to protect N and SW departures in interface between Farnborough and Solent/LTC.	Lasham operations beneath CTA 8 restricted vertically to 4,499ft, as per CTA1.	Lowering of base unavoidable when compared with alternative options where lower CAS was considered north of Lasham. Potentially, this area would also be used southbound when FUA airspace sharing of CTA9 and 10 is in progress – an alternate SID would probably be level at 5,000ft in this area. In considering common areas of operation, we believe the balance is that this is the least restrictive overall.

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
		Vertical 'cap' on transit traffic underneath the CTA	Majority of transit traffic is generally at altitudes below the proposed base of 4,500ft. We believe the proposed 'cap' would not be a large impact on the majority of transit traffic
CTA9 CTA10 Class D	Provides an area of airspace for the interface between LTC and Farnborough. Base of 3,500ft is required when considering Farnborough traffic is unable to stay higher than 4,000ft against Gatwick traffic procedurally climbing to 5,000ft above. This 5,000ft Gatwick SID climb is already higher than current day procedures at the request of Farnborough. Higher climb gradients from Gatwick were considered, but this was not possible following feedback from principle Gatwick operators.	Significant impact on gliders in the vicinity of the South Downs, who commonly operate south of the River Rother up to 4,499ft.	Attempts to restrict the airspace to portions north of the River Rother were shown to not be effective for IFR separation purposes. The airspace base has been stepped up from lower CTAs as close to Farnborough as practicable. Airspace proposed is Class D, permitting VFR transit requests. Farnborough would consider an FUA airspace sharing arrangement with competent organisations during significant activity dates (e.g. competitions etc.). This would require additional use of CTA8 due to the southbound SIDs would be relocated temporarily when this FUA was activated. FUA is subject to continued investigation and negotiation.

CAS Volume Number	Design Methodology	Impacts	Mitigations/Notes
CTA11 CTA12 CTA13 Class D	Provides an area of airspace for the interface between London Control and Farnborough. This is primarily for inbound traffic, and climb through of outbounds.	Impact on gliders in the South Downs area, Parham airfield overhead and via Goodwood Goodwood Spitfire school may be affected.	Base of airspace proposed kept at 4,500ft would permit most activity to be carried out below. IFR aircraft would be transferring from LTC to Farnborough within this CTA, and provision of traffic information on VFR flights would not always be possible. STARs from the south would flight plan via CTA11, however CTAs 12 and 13 would get regular tactical use by LTC (see para 4.15). We welcome specific feedback from Parham Gliders - further modifications of CTA 12/13 may be possible Feedback welcomed and access arrangements considered. Goodwood Airport potential for GPS approach discussed and airspace design may be modified as requested and practicable.
CTA14 Class D	Provides CAS for LTC to manage Farnborough traffic at the link to the en route network	1,000ft less Class G availability below the LTMA, 'capping' activities to 5,499ft.	Majority of activity is generally at altitudes below the proposed base of 5,500ft. Class D affords VFR access subject to clearance. We believe the proposed 'cap' would not be a large impact on the majority of activities.
Airway volumes from the south coast (L151, Y8, M185, N859, N863, L980 and N514) Class A	To facilitate new contingency hold and segregation of Solent/Farnborough traffic Southampton and Bournemouth arrivals from the east would be realigned off the south coast. Offers descent/climb underneath Gatwick/ Heathrow traffic flows	Lowering of the base to a common FL65 level may affect some military operations in connection with Danger Area EGD037. Y8 'sliver' (only 5.5nm^2) base would need to be 5,500ft to align with adjacent CTAs.	Majority of activity below CAS in these areas is generally below 6,000ft. We believe lowering these bases would not impact significantly on these activities. The proposed contingency hold has been realigned to avoid additional CAS being required inside EGD037. These volumes would become part of the Worthing CTA Complex, adjacent to the east. Class A CAS does not afford VFR access. LTC would control these areas.

Table E3: Option 25 Impact Analysis – CTAs. This depends far less on SERA Class D VMC derogation

8. Discounted design options

8.1. Due to the complex and restricted area around Farnborough, design options were severely limited by Heathrow (RMA, SID, future designs, environment, commercial pressure, current airspace separation requirements) and Gatwick (RMA and SID designs). This results in airspace being lower than ideal as Farnborough are having to operate beneath the procedures of these other airports.

8.2. An option which has been considered which provided the amount of airspace around Farnborough similar to other airfields in the UK created too many issues, not only with the link to the en-route network but also the diverse GA community.

8.3. The resulting designs reduced the amount of CAS required, but also found a solution to managing the departures in a manner which provides connectivity to the network, and leaves airspace 'free' in the vicinity of Lasham Airfield, a particularly intense GA activity area.

8.4. A further consideration was given to the area to the northwest of Farnborough. Ideally a small amount of airspace in addition to the proposed CTA would allow joining Runway 06 final from the north on left base. However even this small amount of airspace has been discounted as the effect on the GA community would be great.

8.5. Additionally, NATS En-Route Ltd are progressing a Navigational Aid withdrawal program. This is making way for Area Navigation (RNAV) to replace the way aircraft navigate around the skies, as part of FAS.

8.6. RNAV procedures were considered for the whole of the Farnborough airspace, and many routes within the design are to RNAV1 criteria.

8.7. Introduction of an RNP environment for Farnborough would result in a delay to the project due to regulatory process and aircraft equipage. Provision is made for this to be introduced at a later date when required.

8.8. The current design is based on RNAV1 and RNAV5 criteria, with radar vectoring support.

8.9. See Table E4 for more detail on discounted design considerations.

Other design methods considered	Disadvantages	Benefits	Reasons for not progressing
Continued operation in Class G	Continuation of current lack of predictability with an expected increase in movements to Farnborough leading to further efficiency issues. Increase in airspace user risk exposure when any increase in movements is factored into the operation. Inefficient operation of IFR aircraft. LTMA capacity affected whenever Farnborough unable to expeditiously manage traffic	GA traffic unaffected by proposals Separation standards not applicable to Class G	Would not provide adequate protection for TAG Farnborough traffic as it increases, therefore the requirements are not met. All operators in the airspace subject to displacement and increased interaction with possibility to enhance safety and efficiency not taken.
Higher mandated climb gradients at Heathrow (than already proposed here)	Increased costs to Heathrow operators Environmental impact (noise, local air quality potential)	Farnborough departures could climb higher earlier, and arrivals remain higher for longer than the option proposed.	Not acceptable to Heathrow Airport
Higher mandated climb gradients at Gatwick (than already proposed here)	Increased costs to Gatwick operators Environmental impact	Farnborough departures could climb higher earlier, and arrivals remain higher for longer than the option proposed.	Not acceptable to Gatwick Airport
Await LAMP Phase 2 developments	Details of what LAMP Phase 2 will or could deliver is not yet clear. Timescales of LAMP Phase 2 do not meet TAG Farnborough's requirements The disadvantages applicable to Class G operation above would also apply until/if Phase 2 is introduced. Would not alter significantly those portions of CAS proposed close to Farnborough	Farnborough-specific benefits are not able to be quantified yet	All operators in the airspace subject to displacement and increased interaction with possibility to enhance safety and efficiency not taken as LAMP 2 would not deliver low level connectivity to runway.
Raising glidepath angle at Farnborough to 4.4°	Not all operators can accept such a gradient. Not futureproofed for RNAV arrival requirements. Possible restriction on aircraft operating above certain weights Certification requirement over and above current AOCs	The increase in base altitudes of CTAs close to Farnborough would increase by 1,000ft, but to enable stabilised approaches those bases would extend further towards the west (overhead Lasham Airfield)	No genuine benefit to Farnborough or to other airspace users

Other design methods considered	Disadvantages	Benefits	Reasons for not progressing
RNP1 Arrivals to the runway threshold	Approvals for such arrivals not available within customer timescale requirements. Containment of RNP1 arrivals not significantly less than detailed in the proposed controlled airspace. Not all operators could comply with RNP1 approach and landing requirements at this time	Lower controller involvement/workload. Future strategy for ILS replacement built into concept. Predictable routing of arriving IFR traffic. Cockpit workload reduction. Significant environmental benefits in terms of track keeping.	Regulatory approval timescales for UK RNP1 design guidance for arrivals do not meet TAG Farnborough's requirements, therefore this option not yet progressed. However, in future, we may progress this (following standard CAP725 airspace change guidance and with CAA guidance). Flight planning requirements have led us to propose new routes to RNAV1 standard, terminating at a suitable point for radar vectoring and radio failure procedures.
Airspace sharing with gliders in the Lasham area, via the competent association	Difficulty of promulgation. Arrangements for return of airspace when required by Farnborough not able to be robust. Operational risk of infringement not being acted upon. Does not provide a universal benefit to other GA traffic. Weather conditions where options may be explored are not conducive to effective use. Flexibility of operation for gliders would be reduced due to a need to 'control' access.	Lasham gliding operations may continue with little impact during certain operational configurations.	Manageable small areas of airspace may be delegated with robust arrangements. We welcome further dialogue and feedback.
TMZ/RMZ with no supporting CAS	Aircraft are not obliged to adhere to controller requests, leading to inefficient and unpredictable IFR operations. Deconfliction minima as per Class G still exists with associated ramifications for Farnborough and GA community Final approach and climb out tracks still within Class G and exposed to non-participating or non-compliant transit aircraft. Equipment and pilot licence requirements preclude some operations. Non-radio and non-transponder-equipped arrangements would be required, increasing operational complexity.	Creates a known traffic environment (in terms of who and what is in the airspace) Class G activity does not require specific clearance. Promulgation areas would be less complex than proposed CAS.	Lack of suitable IFR segregation and 'control' of transit traffic. Does not meet TAG Farnborough requirements.

Other design methods considered	Disadvantages	Benefits	Reasons for not progressing
Final Approach 'corridor' of airspace with no en-route connectivity	Corridor not wide enough to satisfactorily react to infringement. Interface between LTC, Farnborough LARS and a join onto final approach is sufficiently complex to be poorly understood. Runway 06 protection would still impact upon other stakeholders, and be a large vertical 'column/wall'.	Significantly smaller CAS requirement.	Would not provide adequate protection for TAG Farnborough traffic as it increases, therefore the requirements are not met.
Class E CAS instead of Class D	VFR flight is not necessarily known, with higher risk of incident Class E is not available for CTRs under SERA and all Class E CTRs in the UK have been changed to Class D.	VFR flight available without a clearance	Class E CTR not available under SERA from December 2014. Class E CTAs would not provide adequate protection for TAG Farnborough traffic as it increases, therefore the requirements are not met.
Short Approach Arrivals	Would require ground infrastructure to offer visual references. Unclear under what criteria the prescribed route could be designed. Weather criteria would limit availability. Airspace structures to protect standard approaches would still be required.	Weather dependent possibility of airspace sharing, albeit with similar challenges to robust operation as per airspace sharing discussion above.	TAG Farnborough requirements not met within mandated timescales as traffic increases. Not universally adopted in the UK. This option has therefore not been progressed at this time, but remains a possibility. We are actively considering these approaches following discussion with operators to consider benefits.

Table E4: Details of discounted design considerations

9. General GA operations in the vicinity of proposed CTR

9.1. The design concept for the proposal has always been to establish the minimum CAS required for protection of our IFR operations, allowing maximum use of Class G for other activities and to provide for (S)VFR transits as much as possible. Farnborough remains committed to working with the GA organisations and local airfields to encourage pilots to request transit of the airspace, including offering a simplified RT package, training package and publicity

9.2. The use of CTA bases rather than a wider CTR affords more areas for the GA to utilise than for other similar CAS-equipped aerodromes.

9.3. The CTR is proposed to contain revised VRPs, enabling expeditious transit clearances to be issued against IFR operations, with suitable traffic integration. The routes provide a north-south transit 'lane' through the Farnborough overhead, which replicates common transit routes today.

9.4. Consideration of the RAF Odiham instrument pattern has been factored into this, and when the pattern is active, VFR transits may be given a clearance at a lower altitude than current operations, in order to achieve satisfactory integration.

9.5. Additional VRPs are proposed, providing a recommended set of routes to cross the proposed CTR north-south and east-west in order to integrate with our IFR arrivals. Familiar line features would be retained.

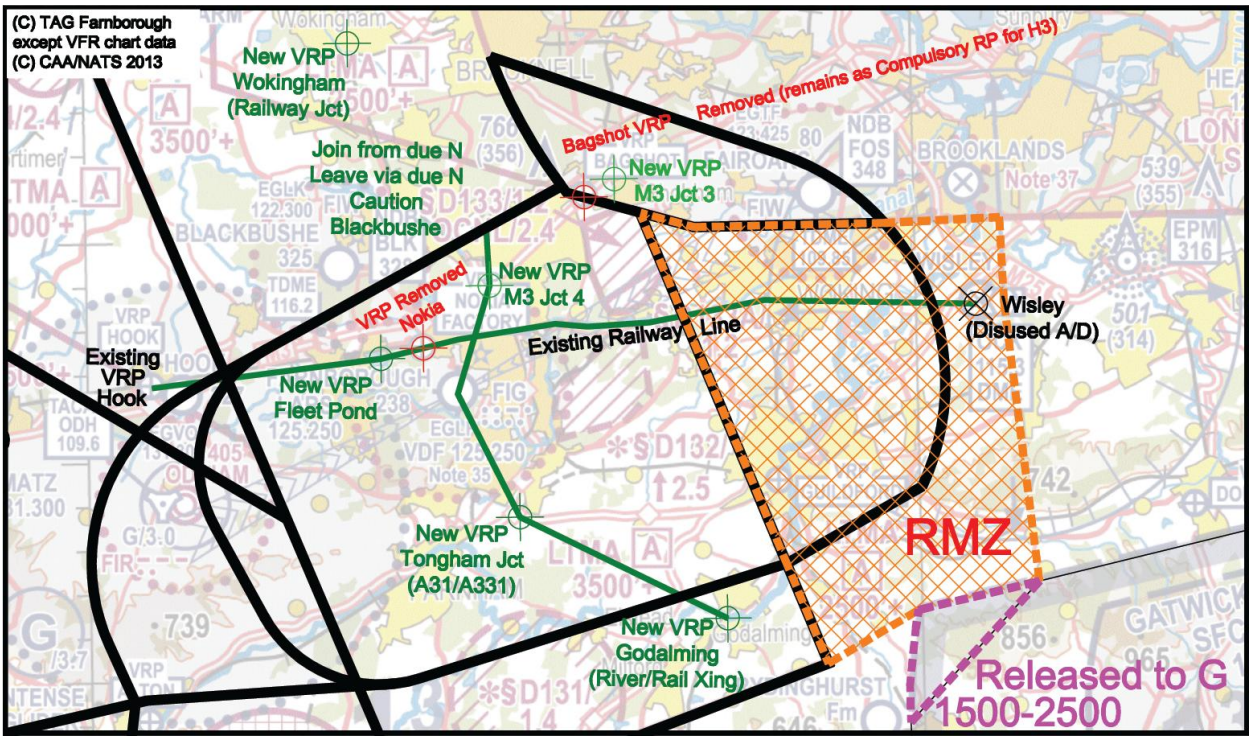

Figure E4: Proposed changes to VRPs and recommended transit routes through the CTR

Green text highlights new VRPs. Red text highlights removed VRPs. Black text is existing (unchanged) commonly used visual references. Orange hatching is proposed RMZ. Pink triangle is the sliver of Gatwick CTA proposed to be released to class G to 2,500ft.

9.6. The new VRPs are proposed as:

a. Godalming (specifically where the River Wey crosses the railway line)

b. Tongham (the A31 junction with the A331)

c. M3 Junction 3

d. M3 Junction 4

e. Wokingham (specifically where the two railway lines join); and

f. Fleet Pond.

9.7. The Nokia VRP would be withdrawn. The Bagshot VRP would be withdrawn from the 250K and 500K VFR charts, however it would remain as a compulsory reporting point for rotary traffic joining or leaving the London CTR via H3.

9.8. The northbound recommended transit route would be Godalming-Tongham-Farnborough Overhead-M3 J4-track north until outside the CTR (due to proximity of Blackbushe ATZ). The southbound transit route would be the reverse, again recommending aiming for the CTR boundary and the M3 J4 from due north in order to avoid Blackbushe ATZ.

9.9. The westbound recommended transit route would be Wisley disused airfield-Woking to follow the railway line-Fleet Pond-Hook, the same as today except Fleet Pond replaces the Nokia VRP due to its improved visibility from the air.

9.10. SVFR access to the CTR is possible, but to a lower capacity than that available in VFR operations. Separation requirements for SVFR versus IFR operations lead to an increased likelihood of delayed clearance or re-routing of the SVFR aircraft. We held simulations to develop this, which highlighted a particular impact when Farnborough and RAF Odiham are operating at high intensity at the same time. The regulatory requirement to ensure that SVFR does not hinder IFR operations also has an impact on the available transit capacity.

9.11. We are aware of the SERA developments, and we highlighted various impacts SERA would have on us to the CAA as part of their consultation process. The most significant one of these is a change in the ratio of transit traffic requesting SVFR, when VFR would have been acceptable prior to SERA. In light of the impacts mentioned above, the volume of transit requests expected would be less likely to be afforded un-delayed access without adjustments to the possible impact of SERA. The CAA intend to mitigate the possible impacts mentioned here by derogation of the Class D VMC from SERA to match today's permitted clear-of-cloud-in-sight-of-surface at or below 3,000ft. However, it is not certain that they will succeed.

9.12. We considered other methods of reducing transit delay. Additional controller provision (with additional RTF frequencies) would not increase capacity of the system, due to increased controller-to-controller coordination requirements, and in fact could lead to a less resilient operation. We will consider other options during and post-consultation to mitigate against potential mid-air conflict due to the accuracy of routes flown by aircraft using GPS. This may include a 'gate' concept rather than defined specific VRPs.

GA transits north of the Gatwick CTA

9.13. See discussion of RMZ and Gatwick CTA Corner in Section 5 above.

10. Blackbushe

10.1. Blackbushe requirements at the inception of the project were to be included in the process, and if CAS was available to protect their operations, they may be happy to accept.

10.2. We identified that a likely side effect of such a proposal would be a requirement to operate Blackbushe under ATC provision as opposed to the current AFISO structure. This ultimately would not be financially viable to Blackbushe.

10.3. The design proposed therefore leaves Blackbushe outside the proposed CTR. A portion of the Blackbushe ATZ lies within the proposed CTR but would be delegated to Blackbushe under a Local Flying Area agreement.

10.4. IFR traffic to/from Blackbushe would still be accommodated within the overall traffic pattern, in order to sequence it against the Farnborough IFR operation.

11. Fairoaks

11.1. The airspace proposal has been extensively discussed pre consultation with Fairoaks, in light of their close proximity to the Farnborough operation. The proposals allow continued operations as they do today, with the added flexibility of a new London CTR delegation to Farnborough, with an entry/exit lane for Fairoaks use.

11.2. This proposed lane approximately follows the roads A319 and A322 between Chobham and Bracknell. It crosses the current helicopter route H3 inside the London CTR, and can link with the existing Burnham-Ascot route. LTC have been consulted on necessary interface arrangements.

11.3. The delegated volume of the London CTR would also allow transit access for non-Fairoaks based traffic, but risk mitigation requirements against the Fairoaks operation may require transit clearances to be issued allowing for the Fairoaks traffic underneath. The best procedure would be Fairoaks traffic operating not above 1,500ft and non-Fairoaks traffic to operate at 2,000ft, all VFR. In SVFR conditions this route would not be available.

11.4. Note that this corridor is designed to facilitate ***transit across*** the CTR corner.
It is not designed to be used by those wishing to operate continuously in this location e.g. continuous orbits or multiple back and forth transits.

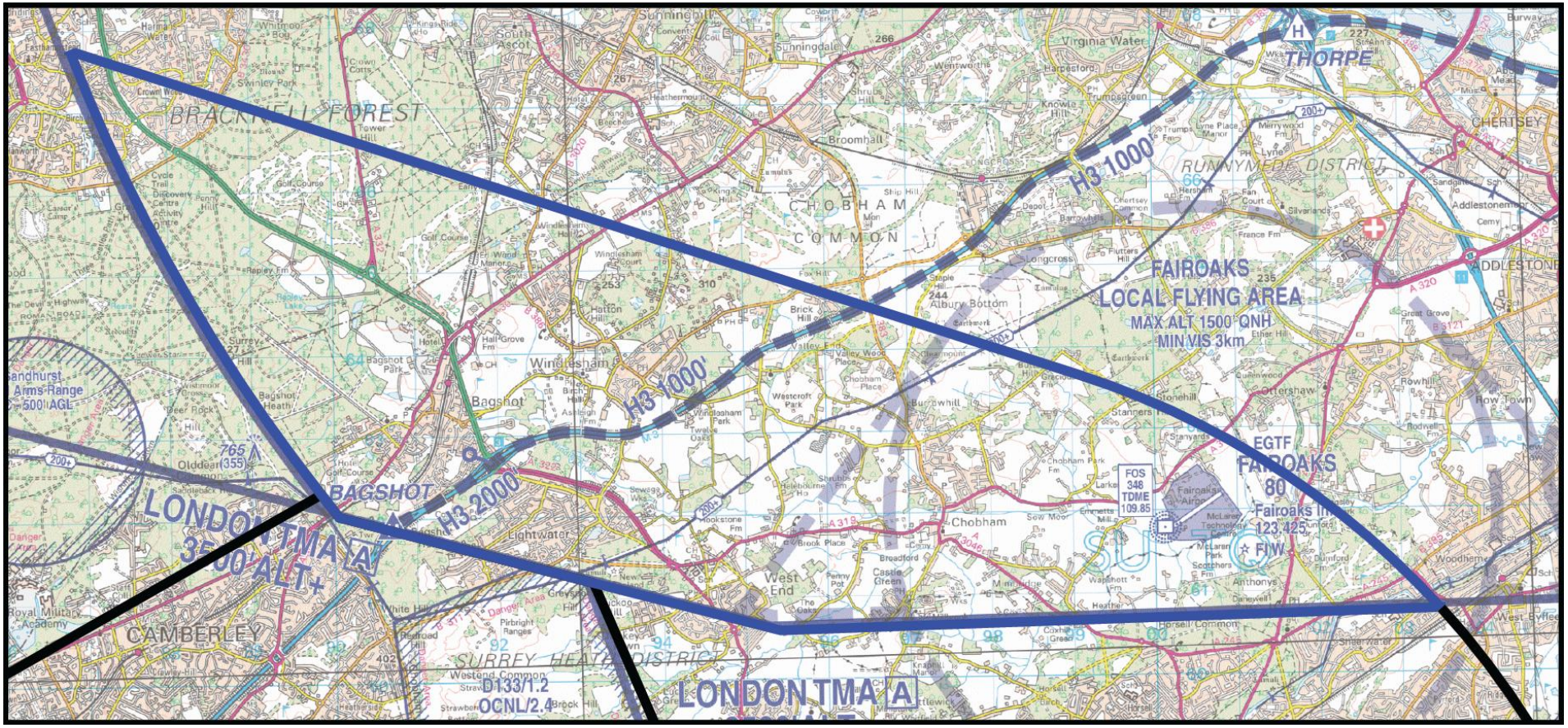

Figure E5: Portion of London CTR delegated to Farnborough to 2,000ft, primarily for Fairoaks use to/from Bracknell/Sandhurst area (VFR)

12. RAF Odiham, including 618 Volunteer Glider Squadron and Kestrel Gliding Club

RAF Odiham traffic

12.1. As part of development work in the simulator, RAF Odiham and Farnborough controllers highlighted a sub-optimal traffic interaction during certain runway configurations.

12.2. RAF Odiham permits us to propose an amendment to two of their current SID procedures to reduce the operational impact. We assessed what changes could be achieved, and have proposed the following:

a. Odiham CPT 27 IFR Departure: Minor adjustment to post-departure lateral track when establishing on the inbound radial to CPT. This results in the track being more northerly (further west than today), and removes the partial turn back towards Farnborough. These are used on average 25 times per month, weekdays only.

b. Odiham HAZEL/SAM 09 IFR Departure: Complete change from the current left turn through 270° over Odiham, to a SID that climbs straight ahead for 3.5nm before turning south towards GWC VOR, and ultimately establishes on a radial to SAM VOR. The benefit of this would be to segregate this SID from the Farnborough Runway 06 base leg, which would have more traffic on it under the design proposal, due to the constraint of airspace 'take' to allow other stakeholders continued access to their common areas of operation. These are rarely used, about twice per month on average, weekdays only.

12.3. It is not expected that this change would cause issues for the aviation community, and should move the Chinook operation on the HAZEL/SAM 09 SIDs further away from Lasham. See Figure E6 overleaf for more details.

618VGS/Kestrel

12.4. Existing operations within the RAF Odiham area, without ATC coverage, for the benefit of 618 Volunteer Gliding Squadron and Kestrel Gliding Club, are integrated with Farnborough IFR operations in a number of ways.

12.5. The proposed CAS would encompass the common areas of operation for 618VGS and Kestrel, utilising the existing and enhanced arrangements and also adding to the access for Kestrel specifically.

12.6. VFR flight would continue to be possible without significant impact when the VMC meet the SERA requirements (whether derogated or not).

12.7. Possible options to standardise shortened Runway 06 arrival procedures using RNAV technology have been considered, but significant ground infrastructure would be required, and the possibility of achieving the requirements is not clear at this stage.

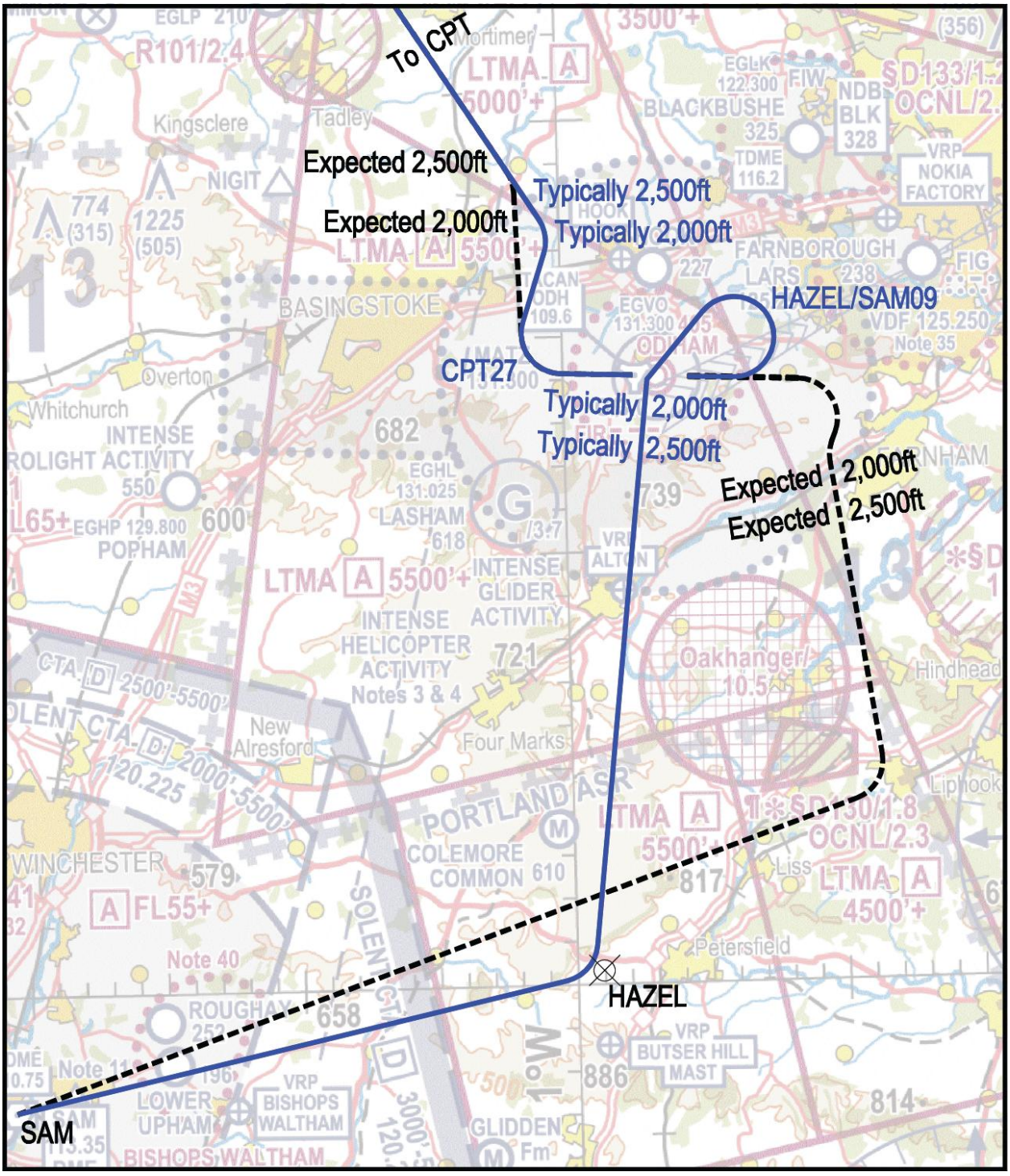

Figure E6: Current Odiham SIDs in Class G (blue), proposed (black dashed)

13. Southampton and Bournemouth Airports

13.1. NATS Solent Radar (the controlling authority for Southampton and Bournemouth traffic) has been heavily involved in the project, and Bournemouth ATC has also been engaged.

Farnborough northerly, easterly and southwesterly departures via Solent airspace

13.2. Traffic routing to/from Southampton and Bournemouth from the southeast interacts with the current and proposed traffic flows for Farnborough.

13.3. The design proposal includes increased flexibility for these aircraft, where the lateral tracks of arrivals and departures are segregated, allowing for more expeditious climb, combined with additional flexibility for arrivals. These changes occur predominantly over the sea.

13.4. A key option to reduce the size of the CAS required was achieved by routing Farnborough's northerly, easterly and southwesterly departures through existing airspace, which is currently used by Solent Radar traffic, to join airway Q41 south of PEPIS. Simulations confirm that this airspace (and Solent Radar) has the required capacity to accept this traffic.

13.5. In order to improve arrangements with LTC in the vicinity of the south coast, the main arrival path to Southampton and Bournemouth from the east would be shifted south of the coastline over the sea. This would lengthen arrival tracks with some runway configurations, but would stay the same or reduce in others. It would also significantly reduce the net population over-flown in the region.

13.6. For greater detail on the proposed arrival routes from the east to Southampton and Bournemouth, see paragraphs 4.27-4.32 on Page E16, and also see Part D of this consultation.

14. Gliders at Lasham / Lasham Aircraft Maintenance Base/ Southdown Gliders at Parham / Surrey Hills Gliders at Kenley

Gliders at Lasham

14.1. Throughout the early stages of the design phase, Lasham Gliding Society (LGS) and the British Gliding Association (BGA) were invited to offer their requirements to be included within the design concept.

14.2. In all stakeholder interactions, there is invariably a compromise that must be struck, and we have adjusted the proposed CAS in a number of ways in order to attempt to address as many of LGS and BGA requirements as possible.

14.3. Further consideration was given to possible airspace sharing arrangements that could be deployed. Certain areas of the proposed airspace are principally for operations on only one of the runways at Farnborough, and if a robust 'sharing' procedure could be developed, there is an opportunity to offer this. The operations at Lasham are essentially uncontrolled and often without RTF fitted to the gliders. This would make the switching of airspace from 'Lasham' to 'Farnborough' difficult to carry out in a manner guaranteed to reach all airborne gliders in good time. However, we seek your feedback on the airspace sharing concept.

14.4. By ensuring Lasham and its immediate area remains outside proposed CAS, and by limiting amendments to existing airspace to the north of Lasham to a small region, we have increased our aircraft's track mileage (both for departures to, and arrivals from, the north). The current practice of turning Runway 06 arrivals onto final approach from the south at a shorter than usual range from touchdown is retained, which again ensures the minimum CAS requirement in the vicinity of Lasham.

14.5. We have engaged with LGS and BGA regarding their requirements and will continue to do so during this consultation and beyond.

Lasham Aircraft Maintenance Base (Lasham ATC)

14.6. Lasham ATC operates an airliner maintenance facility at Lasham aerodrome, and has regular (but small in number) IFR traffic operations – these tend to be airliner sized.

14.7. Lasham ATC expressed a wish to have their operation contained within CAS. This requirement is at odds with the LGS requirements. The project assessed that, because current Lasham ATC operations are carried out in Class G and they are relatively infrequent, this situation could continue, enabling LGS to retain flexibility.

14.8. IFR traffic would be managed in a similar way to today, joining CAS after departure, and leaving CAS inbound. Farnborough controllers would continue to provide services to this traffic and integrate it with other activities. We will continue to engage with Lasham ATC.

South Downs Gliding Club at Parham

14.9. Parham is located under the eastern edge of the proposed CAS. They carry out operations within the lateral and vertical confines of some of the CTA areas we propose to establish.

14.10. Their requirement was to continue to allow Parham operations to route to their northwest, especially towards Lasham.

14.11. We have engaged with Parham regarding their requirement and will continue to do so during this consultation and beyond.

Surrey Hills Gliding Club at Kenley

14.12. Kenley is located near Biggin Hill Airport. They carry out operations within the lateral and vertical confines of some of the CTA areas we propose to establish.

14.13. Their requirement was to continue to allow SHGC operations to route to their west, via Guildford and Lasham.

14.14. We have engaged with SHGC regarding their requirement and will continue to do so during this consultation and beyond.

15. GA Activity over the Isle Of Wight, Solent and Selsey Areas (Class A airway bases being lowered)

15.1. LTC has requested these Class A airway bases be lowered to FL65 south of the coast and over the Isle Of Wight, in order to improve their management of arrivals to Farnborough and the Solent. This would add four more CTAs to the Worthing CTA Class A Complex. See also paragraph 5.31 on Page E23.

15.2. The majority of GA VFR activity beneath these airways already occurs below FL65. However, we are aware that some activity takes place between FL65 and FL125.

15.3. We believe that the potential capping of GA VFR activity below FL65 due to this proposal would still meet the requirements of as many users as possible most of the time. We welcome your feedback on this.

16. Effect on Heathrow and Gatwick Operations

Heathrow today and the near term

16.1. The proposed airspace design for Farnborough is situated underneath the Heathrow departure routes to the south and southwest (MID and SAM SIDs).

16.2. To provide separation of these SIDs from our proposed CAS, increasing their promulgated minimum climb gradient was required. Heathrow's departures already meet or exceed the new climb gradient, therefore there would be no change to engine settings etc – the new formal minimum gradient would simply establish a 'wedge' beneath the existing actual gradient. Two major UK airlines have been consulted and do not object to the proposed gradient changes.

16.3. There would be no change to Heathrow's SID tracks over the ground due to this change.

16.4. A portion of the London Control Zone would be delegated to Farnborough, primarily for Fairoaks and GA transit use (see Section 11).

16.5. Heathrow Airport Ltd (HAL) has agreed to the proposed changes.

Gatwick today and the near term

16.6. Currently, Gatwick's SAM and KENET SIDs theoretically end at 4,000ft. However, they always climb higher earlier.

16.7. Raising the Heathrow SID gradients allows a procedural raising of these Gatwick SIDs beneath, from terminating at 4,000ft to 5,000ft.

16.8. Gatwick's departures already meet or exceed the new climb gradient and are not held down to 4,000ft anyway, therefore there would be no change to engine settings etc – the new formal minimum gradient would simply establish a 'wedge' beneath the existing actual gradient. Two major UK airlines have been consulted and do not object to the proposed gradient changes.

16.9. There would be no change to Gatwick's SID tracks over the ground due to this change.

16.10. Gatwick Airport Ltd (GAL) has agreed to the proposed gradient change.

16.11. We are negotiating with Gatwick regarding the release of part of the CTA to Class G – see paragraphs 5.41-5.44.

Heathrow and Gatwick in the longer term

16.12. Future projects involving NATS and Heathrow Airport would lead to wider changes to SID tracks and gradients. This is a separate project which is being coordinated with our project, meaning that future Heathrow changes would not require subsequent changes to the proposal detailed here.

16.13. In October 2013, the London Airspace Consultation was launched[4], detailing proposed changes to Gatwick SIDs amongst other changes further away from Farnborough. These proposed changes (whilst still in the early design phase) are being coordinated with our project, meaning that future Gatwick changes would not require subsequent changes to the proposal detailed here.

4 That consultation closed 21st January, before this consultation launches

17. Fuel and CO_2 calculation method

17.1. See Part A Section 10 for more detailed information on fuel use and CO_2 emissions due to this proposal. This section of Part E describes what happens today, and the method we used for making the calculations leading to the results in Part A Section 10.

17.2. Today, northbound departures via CPT can route that way relatively soon after takeoff. Under the proposed SIDs in this document, Runway 06 departures to the north would have the largest increase in fuel use, followed by Runway 24 departures to the north. This is because we have designed the new departure routes to fly south and west before joining airway Q41, in order to combine a net reduction in population over-flown with the avoidance of the airspace region northwest of Lasham.

17.3. Arrivals would be less affected by track lengthening in the vicinity of the airport. Currently, if the GA and/or RAF Odiham situation permits, *and* LTC *and* our approach radar controller have been able to provide a rapid descent, about half the Runway 06 arrivals from the northwest can join left base at a relatively short final. The remaining half from CPT are either too high to make the descent, or other (GA, Odiham etc) traffic prevents the manoeuvre being planned and executed by the radar controller. These flights follow the standard longer pattern (overhead the airport/crosswind/ downwind right /right base), which would become the new standard pattern for *all* Runway 06 traffic arriving from the northwest.

17.4. The detailed calculation spreadsheets will be available to the CAA upon request as part of the ACP, once any potential changes due to this consultation have been considered and incorporated if appropriate.

17.5. The process we followed was:

a. The aircraft type mix was extracted from a typical data sample.

b. BADA dataset (v3.8) and the NATS specialist tool 'KERMIT' was used to calculate the typical fuel usage and CO_2 emissions per nm for various types or categories of aircraft at cruise levels.

c. We calculated the differences in track mileage between the current and proposed typical tracks between common points, for each runway configuration, for arrivals and for departures to/from each direction.

d. We applied these changes in route length to calculate the overall change in fuel usage per aircraft type. In changing the route length, we are effectively changing the distance flown at cruising levels.

e. We used typical annual figures to multiply up the usage per aircraft type.

f. We then applied relevant forecasts to these numbers in order to estimate traffic levels for the proposed implementation year (2015) and for 2019.

g. These steps lead to the fuel and CO_2 figures quoted in Part A Section 10.

18. Questions

18.1. In this part, there are 17 specific questions we would like you to answer (plus a general question). This part is aimed at the aviation industry, including pilots and aircraft operators who use the airspace in the Farnborough area and over the south coast near the Solent.

18.2. Each question assumes that you have read and understood the relevant sections of this document, and other relevant parts of this consultation.

18.3. To respond to this consultation please complete the online questionnaire which can be found at:

www.Consultation.TAGFarnboroughAirport.com

18.4. All the questions in the online questionnaire for Part E are given below. It is highly recommended that you prepare your answers to the questions in advance.

Question E1 – Justification for Route Establishment (see Section 2)

This question is about the *concept* of establishing formal IFR routes.
We will ask about the *specific routes* later.

Farnborough's air traffic movements are predicted to increase beyond the point where 'do nothing' remains a sustainable option.

We believe the establishment of formal IFR departure and arrival routes is the safest way to manage this increase, because it would make the flight-paths very predictable for *all* airspace users.

Do you agree with our justification that establishing formal IFR departure and arrival routes is the best way to safely manage the increase in Farnborough's traffic?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E2 – Justification for establishing RNAV1 SIDs (see Section 3)

This question is about the *concept* of establishing RNAV1 SIDs.
We will ask about the *specific routes* next.

The establishment of RNAV1 SIDs is the best way to manage our departures through this region, because it would make the departure routes more predictable for *all* users *and* would meet with the forthcoming FAS requirements for PBN procedures UK-wide. It would also require the least possible airspace.

SDRs, Omnis, RNAV5 SIDs and 'conventional' SIDs were discounted due to either being unsuitable for the required task, or for requiring excessive airspace 'take'.

Do you agree with our justification that establishing RNAV1 SIDs is the best way to safely manage the increase in Farnborough's traffic with the least possible change in airspace at low altitudes?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E3 – Balance - Proposed tracks for specific RNAV1 SIDs (see Section 3)

This question is about *balance*, regarding the *specific tracks* of the RNAV1 SIDs proposed.

Figure E1 on Page E9 shows the proposed tracks for our SIDs, including an occasional-use southbound SID if FUA is negotiated and activated.

Paragraphs 3.9-3.12 describe our priorities and the balance / compromise we strike between these priorities.

The subsequent text in Section 3 describes why each SID is proposed to follow that particular track.

Do you agree with the way we balanced noise impact, initial altitudes and avoiding GA areas for the proposed SID tracks?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E4 – Justification for establishing RNAV STARs (see Section 4)

This question is about the *concept* of establishing STARs.
We will ask about the *specific routes* next.

The establishment of RNAV1 and RNAV5 STARs is the best way to manage arrivals through this region, because it would make the arrival routes more predictable for *all* users *and* would meet with the forthcoming FAS requirements for PBN procedures UK-wide.

RNAV1 STARs require the least possible airspace at lower altitudes near the airport.

RNAV5 STARs require much more airspace, but they are designed to end at much higher altitudes further away from the airport(s).

We would still expect aircraft to accept radar vectors to final approach and to short-cut the STARs where appropriate (or if not suitably equipped), retaining flexibility.

Do you agree with our justification that establishing RNAV1 and RNAV5 STARs is the best way to safely manage the increase in Farnborough's traffic with the least possible change in airspace at low altitudes?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E5 – Balance - Proposed tracks for specific RNAV1 STARs (see Section 4)

This question is about *balance*, regarding the *specific tracks* of our arrivals.

Figure E2 on Page E13 shows the proposed tracks for our arrival routes, including RNAV1 STARs that end at low altitude near the airport, RNAV5 STARs that end at high altitude some way from the airport, and the most likely radar vectoring tracks.

Paragraphs 4.4-4.7 describe our priorities and the balance / compromise we strike between these priorities.

The subsequent text in Section 4 describes why each arrival route is proposed to follow that particular track.

Do you agree with the way we balanced noise impact, descent profiles and avoiding GA areas for the proposed arrival tracks?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E6 – Balance for proposed dimensions of Class D CAS at lower and intermediate altitudes (see Section 5)

This question is about *balance.* It is about proposing the fewest possible restrictions to airspace users (Class D CAS at low and intermediate altitudes, affording VFR flight with clearance, and potentially releasing a volume of Gatwick CAS to Class G), whilst remaining confident that infringement risks have been mitigated as much as possible.

Do you agree with our balance - that the Class D CAS proposed here is the minimum required, consistent with safely mitigating against infringement risks?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E7 – Balance for proposed dimensions of Class A CAS (airways) at higher altitudes (see Section 5)

This question is also about *balance.* It is about proposing the fewest possible restrictions to airspace users at higher altitudes whilst remaining confident that links to and from the en-route airway environment via LTC are as predictable and efficient as possible.

Do you agree with our balance - that the Class A CAS proposed here is the minimum required, consistent with efficient use and safely mitigating against infringement risks?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Question E8 – Funnelling in the vicinity of OCK (see Section 5)

This question is about *proposed mitigations* for this potential scenario.

In order to mitigate against the potential funnelling between the proposed Farnborough CTR/CTA and Gatwick CTR/CTA, we explain in Section 5 that an RMZ in the Class G volume west of OCK, combined with a potential release of a triangle of Class A to Class G at the northwestern corner of the Gatwick CTA, would provide the least restrictive solution to other airspace users *without* needing to establish additional Class D CAS.

Remember that the triangle release of Class A to Class G is *under negotiation* and may ultimately not be supported by Gatwick. The size of the triangle is the largest possible, allowing Gatwick's operation to continue unhindered.

LARS would continue to provide ATSOCAS on request, regardless of this proposal.

Which statement best describes your opinion about funnelling in this area?

Choose one option from the RMZ section below, and one option from the Triangle Release section below that.

If none apply, select 'Other' and send us your comments:

1 The RMZ would mitigate the effect of funnelling because it would create a known environment without restricting GA operations

2 The RMZ is too small to be an effective mitigation (add comments if you wish)

3 The RMZ is too wide and restrictive (add comments if you wish)

4 Funnelling in this area is unlikely even if there was no RMZ

5 Other (please add comments)

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1 The triangle release of Class A to Class G would reduce the likelihood of funnelling because it would provide more track and altitude options without restricting GA operations

2 The triangle release of Class A to Class G is too small to be an effective mitigation (add comments if you wish)

3 Funnelling in this area is unlikely even if the triangle was not released back to Class G.

4 Other (please add comments)

You are welcome to provide a statement to support your answers.

Question E9 – Airspace Sharing – FUA – Gliders only

This question is about the *potential benefit of FUA* and comes in two parts.

Part 1 – CTAs 9 and 10 specifically

In Section 3 paragraph 3.23-3.25 and Section 5 paragraph 5.27 we described how an alternate southbound SID might be employed, temporarily ensuring that two volumes of Class D (CTAs 9 and 10) would not be used IFR by Farnborough aircraft for defined periods. This could potentially benefit organised gliding events organised by the competent organisation. The CTAs would remain available to all VFR users upon request, i.e. they would not be 'reserved' for sole use of gliders.

Note that this depends on negotiations still to be had, and must require the establishment of robust safety agreements between party organisations.

To what extent do you agree with the following statement: FUA would benefit the gliding community if CTA9 and 10 could be 'cleared' of IFR aircraft by activating a pre-arranged agreement (details to be negotiated)?

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

Part 2 – Other volumes of proposed CAS

Please consider the *other* volumes of CAS shown in Figure E3 (not CTA9 or CTA10).

If you believe an FUA arrangement would benefit your organisation, which of the remaining CAS volumes would be the most appropriate for us to consider?

Select as many as you wish from the list below.

CTA1	CTA2	CTA3	CTA4
CTA5	CTA6	CTA7	CTA8
CTA11	CTA12	CTA13	CTA14
	CTR2	CTR3	

You are welcome to provide a statement to support your answer.

Question E10 – VFR transit through the proposed CTR (see Section 9)

This question is about *VRPs and transit routes*. If you regularly fly VFR in this area, please use your local knowledge to consider these places and tell us how suitable you think they would be.

The railway line Woking to Hook and vice versa is an already-established existing line feature, and Wisley disused aerodrome is also an established landmark.

If these suggestions are not suitable, please suggest a local alternative.

Godalming (specifically where the River Wey crosses the railway line)

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

Tongham (A31 junction with A331)

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

M3 Junction 3 at Lightwater

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

M3 Junction 4 at Frimley

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

Wokingham (specifically where the two railway lines join)

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

Fleet Pond

This VRP is suitable ***OR*** This VRP is unsuitable, a local alternative is (please describe)

You are welcome to provide a statement to support your answer.

Question E11 – For VFR pilots - regarding Class D transit in general

This question is about *how often* you, as a pilot, contact a Class D ATC unit to request VFR transit of a CTR or CTA.

Do you already use standard RT procedures to request entry to Class D CAS within the UK?

1 Very familiar with the procedure and regularly make a request
2 Familiar with the procedure and sometimes make a request
3 Somewhat familiar with the procedure but rarely make a request
4 Very rarely make a request

If you did not answer 1 or 2, what could Farnborough ATC do to *improve* that likelihood?

Which of the following would be useful to you, as a VFR pilot flying in the vicinity of Farnborough's CAS if it was implemented? Choose all that apply.

1 Presentation or roadshow by ATC staff to local flying organisations
2 Visits by local flying organisations to Farnborough control tower
3 Articles in GA magazines or newsletters
4 Other (please describe)

You are welcome to provide a statement to support your answer.

Question E12 – For VFR pilots - transit through the proposed delegated corridor of the London CTR (see Section 11 and Figure E5)

This question is about *the likely use of this transit corridor* between Fairoaks and Bracknell.

If you regularly fly VFR in the Farnborough area, please use your local knowledge to consider this bi-directional corridor, and tell us how useful you think it would be.

In SVFR conditions it would not be available for general transit – it would only be available for Fairoaks arrivals and departures.

Assuming the Farnborough CTR and CTAs are implemented as per this proposal, to what extent would you be likely to request access to this corridor?

1 Often
2 Sometimes
3 Occasionally
4 Infrequently
5 Rarely or never

You are welcome to provide a statement to support your answer.

Question E13 – For VFR pilots - the Isle of Wight, Solent and Selsey areas (see Section 15)

This question is about *the likely impact* of the proposed lowering of Class A airway bases on VFR GA in this region.

Assuming the Class A airway bases are lowered to FL65 as per this proposal, how often would your operation be impacted in this area?

1 Often
2 Sometimes
3 Occasionally
4 Infrequently
5 Rarely or never

You are welcome to provide a statement to support your answer.

Question E14 – Aircraft operators and IFR pilots using TAG Farnborough Airport

This question is about *your support* of the proposal, based on your opinion of how it would affect your IFR operation.

In particular, please consider whether this proposal would bring the stated benefits of a predictable and efficient service to your operation, and balance the scale of these benefits against the potential short-term fuel increase for certain routes.

To what extent do you support this proposal as detailed in our consultation?

1 Strongly support
2 Somewhat support
3 Neutral
4 Somewhat object
5 Strongly object

You are welcome to provide a statement to support your answer.

Question E15 – Powered GA VFR pilots – Where would you fly if CAS is implemented?

This question is about *where* you, as a powered GA pilot, would choose to fly, assuming the CAS presented here is implemented. This question comes in two parts – one about the general impact of CAS, the second specifically about transiting the vicinity of Lasham.

Tell us whether you would request a transit, or if you would fly around the new CAS (and if so, where), or whether you would choose to operate in a different place from today (where?)

We have provided a template based on the descriptions of the main blocks of CAS in Section 5 – you may use this template, or supply your own equivalent text. Structuring your response like this makes it easier for us to analyse your feedback, making it more effective on your behalf.

General impact

Regarding *this* airspace structure…

The CTR
CTA3 and the RMZ to the east of Farnborough
CTA2 and CTA4 to the west of Farnborough
CTA1 to the northwest of Farnborough
CTA5-CTA14 complex to the south of Farnborough
Airways/CTAs over the IOW/Solent/South Coast

If I was planning to fly in this vicinity, I would…

Contact LARS to request a CAS or RMZ transit
Fly beneath the CTA
Avoid this area by flying around it to the north
Avoid this area by flying around it to the south
Avoid this area by flying around it to the east
Avoid this area by flying around it to the west
Avoid this area and fly elsewhere (please briefly describe where)
Other (please describe)

You are welcome to provide a statement to support your answer.

Flights in the vicinity of Lasham

If I was flying from the south or east of Farnborough, and did not intend to transit the new CTR, I would probably fly…

New Alresford – CPT staying well west of the Lasham area

Ropley – CPT staying west of the Lasham area

Four Marks – CPT avoiding the Lasham intense glider activity circle on the VFR chart

Alton – Lasham overhead – CPT

Alton – request transit of CTA2 and transit the Odiham ATZ, remaining east of the Lasham intense glider activity circle on the VFR chart

Other route (please describe)

You are welcome to provide a statement to support your answer.

Question E16 – Use of Farnborough LARS West 125.25MHz

This question is about *your use of Farnborough LARS West.*

How do you currently use it and how would you use it if the proposal was implemented?

Which two statements best describe your current use of LARS West, and how you think you would use it if this proposal was implemented?

Choose one from each column

Today, I…	If this proposal was implemented, I...
1 Use LARS frequently	1 Would use LARS more often
2 Use LARS occasionally	2 Would use LARS about the same as today
3 Use LARS rarely/never	3 Would use LARS less often

You are welcome to provide a statement to support your answer.

Question E17 – The Overall Proposal from an aviation perspective

This question is about the *balance* of the proposal as a whole.

We know that it is impossible to satisfy the requirements of all airspace users all of the time.

We have considered the requirements of as many users as we can, and have invited comment at early design stages in order to inform the evolution of the proposal to its present state.

We have discounted many options that restrict other airspace users excessively.

We believe that this proposal provides the best balance for all airspace users in the vicinity of Farnborough.

To what extent do you agree with the following statement:

This proposal as a whole has considered the competing requirements of airspace users, and has produced a balanced design.

1 Strongly agree
2 Generally agree
3 No preference
4 Generally disagree
5 Strongly disagree

You are welcome to provide a statement to support your answer.

General Question

If there is something that you think we should know that hasn't already been covered by the questions in this document (or by other questions in other parts of this consultation), please provide a statement.